

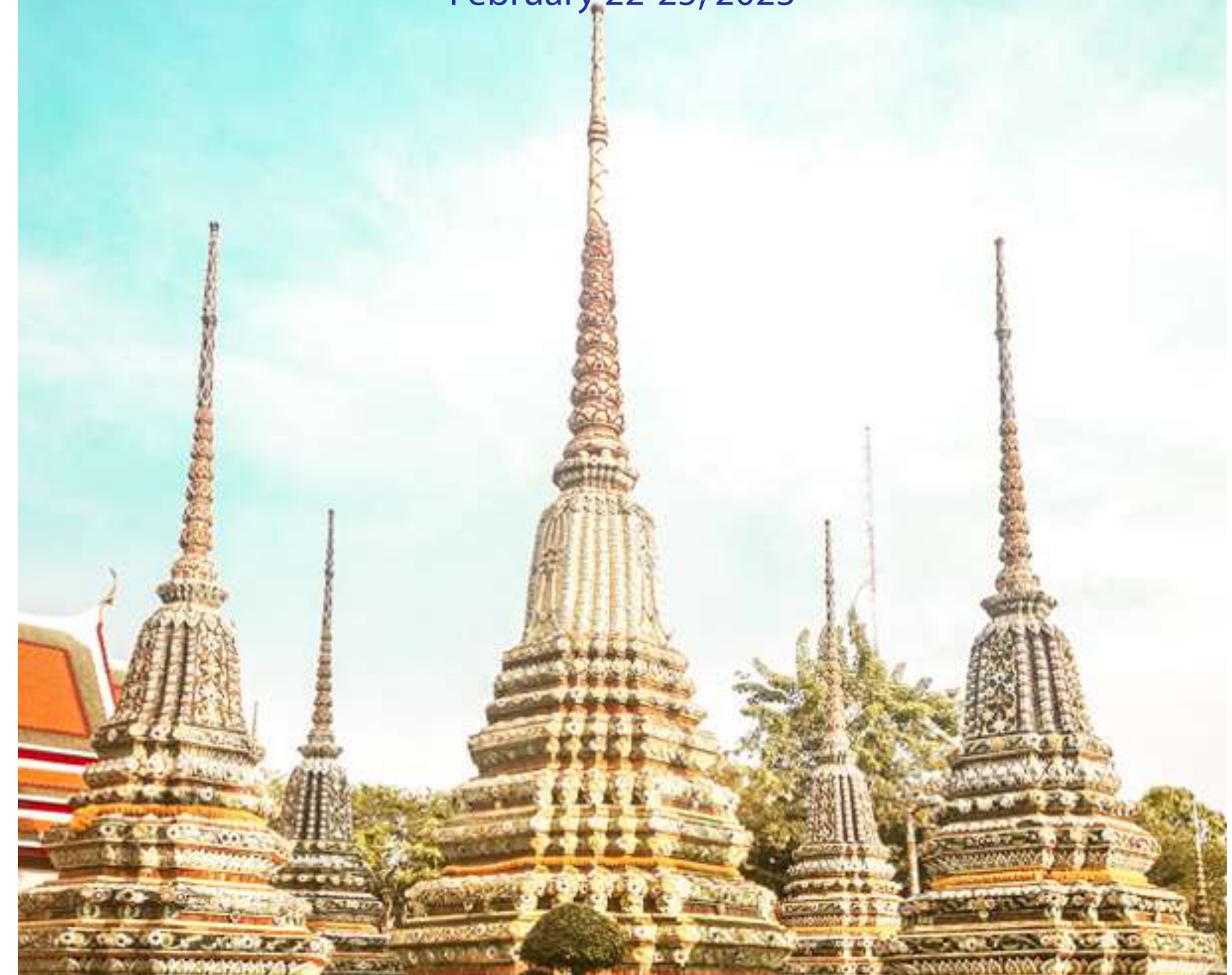


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26nd International Conference on IT Applications and Management

Coming of the Intensely-Networked Cyber-Physical Meta-Universe

February 22-25, 2023



International ITAM Society



Korea Data Strategy Society



Nat'l Inst. of Development
& Administration, Thailand



26nd International Conference on IT Applications and Management

Coming of the Intensely-Networked Cyber-Physical Meta-Universe

22-25 February, 2023

Host: NIDA Business School, Bangkok, Thailand

Co-host: Korea Data Strategy Society, International ITAM Society

Supported by Korea Data Industry Promotion Agency, Tiberio, en-Core, Colosseum

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Note on ITAM-26, Bangkok

The whole world is going through a massive transformation. The transformation is observed in every facet of our economic and social life. The key driver of this change is the emerging technologies that enables the convergence of the physical world and cyber world. The new convergence is an un-precedent level of mix of the processes, structure, and governance of the way we produce, consume, and share the value systems. Highly intelligent algorithms and data of the new technologies reside at the core of the newly spreading additive production systems, emerging mobility and transportation infrastructures, and the new way we interact with people and machine of extreme diversity. These changes, in turn, are leading a critical shift in the culture of our society and the mind of individual human users. Creative thinking, cultural fusion, restructuring of global value chain, sharing of new cultural products, and the infusion of meta universe into daily life are quickly becoming a new normal. Intensively networked cyber-physical technologies, in every sense, enable these changes. On the other hand, the social divergence by generation, by world-view, by value system within a same social boundary becomes another aspect of the new normal.

Technology, however, is not the sole source of changes. Recent global experiences of pandemic disease, political and military conflicts among groups of nations, impacts of climate changes, aging demographic structure of leading economies, sense of crises in energy and water supply are some of the other major sources of the coming of new world paradigm. Intensively networked world also provide shared understanding of these massive problems and potential new ways we can cope with the challenges. Technology-based coordination and collaboration among groups of people of global village are not given without intensive efforts of the members. Sharing of our experiences in learning, teaching, and knowledge creation is one important basis of our hope to move into a better future. Empathy and enhanced level of trust based on it will take time, but they are the key stakes we can rely on. Finding out the better ways to use technologies toward this ends.

ITAM-26 in Bangkok, Thailand, is surely ourcherishable platform to share knowledge, experience and perspectives of participants, who performed research on technological and human aspects of the transformation. The latest in-person ITAM conference was two years before this one. The preparation the conference in this sense has become a renewal of challenges. I appreciate the hosting chair, Professor Thanachart Ritbumroong of NIDA and his colleagues for their efforts in preparing the conference. I also appreciate all the chairs, board members, delegates, sponsors, and supporting staffs for their active contribution to this event.

Namjae Cho

Chairman, International ITAM Society
Professor, School of Business, Hanyang University, Korea

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[PROGRAM]

Pre-Conference Symposium (February 22, WEDNESDAY)

Time	Symposium “Future of Asia”
16:00~18:00	Chair: Namjae Cho (Chairman, International ITAM Society, Hanyang U. Korea) Keynote Speech 1 Speaker: Parag Chandrakant Mankeekar (Founder and CEO, RealLives, India) Theme: Empathetic Civilization and Technology Uses and Abuses Keynote Speech 2: Speaker: Kanes Rajah (Founder, CEPD London, UK) Theme: Is Asia Fired Up or On the Fire
18:30~20:00	Welcoming Dinner

Conference Inauguration and Plenary Session (February 23, THURSDAY)

Time	ITAM-26 Program
08:15~09:00	Registration
09:00~10:30	Plenary Inauguration Session
09:00~10:30	Opening Announcement - Thanachart Ritbumroong (Chair of Org. Committee, NIDA, Thailand) Welcoming Remarks - Pramote Luenam, Ph.D. (Dean, NIDA, Thailand) Greeting - Jung Seung Lee (President of KDSS, Hoseo U., Korea) - Namjae Cho (Chairman, International ITAM Society, Hanyang U. Korea) Software Donation ceremony to NIDA and MOU sign-up - Kora Data Agency, Tiberio, WareValley Keynote Speech : Speaker: Invited senior executive from Thailand Bank Theme: Prospects of Digital Banking

Parallel Technical Sessions (February 23, THURSDAY)

(Papers and presentations will be posted at <http://www.itamsociety.org/>)

Time	Track A	Track B	Track C
Session 1 11:00 ~12:40	Session A1 Digital-based Innovation and Data Universe Chair: Jaehoon Whang (Yonsei U., Korea)	Session B1 Developments in Leadership Chair: Kanes Rajah (CEPD London, UK)	Session C1 Event Analysis and Social Change Chair: Akkaranan Pongsathornwiwat (NIDA, Thailand))
	An Application of Resource-Based Theory on External Data Monetization Strategy Jatturong Yingmuang, Thanachart Ritbumroong (NIDA, Thailand)	How Networking competence Influences Career Control: A parallel Multiple Mediation Model Mohit Pahwa, Santosh Rangnekar (IIT, Roorkee, India)	Study of Residents' Psychological States During COVID-19 Epidemic Period Liu Liu, Gaoyang Zhang, Qiyun Xue, Weihui Dai (Fudan U., China)
	Analysis of Success Factors of Electric Scooter Sharing Service Using User Review Text Mining Kyoung-ae Seo, Jung Seung Lee (Hoseo U., Korea) Jaehoon Whang(Yonsei U., Korea)	Do Mindful employees fit well in the community: A sequential model through wisdom and person-organization fit Rahul Khurana, Santosh Rangnekar (IIT, Roorkee, India)	Covid-19 and Digital Transformation of Society Yanki Hartijasti (U. Indonesia)
	Fostering Safe and Positive Messages with Social Listening Analytics Pornpitpat Juta (Chitralada Tech. College, Thailand), Uthai Tanlamai (Chulalongkorn U., Thailand), Thamakorn Supathanarangsri (Lazada, Thailand), Rattipon Tanya (Atapy, Thailand)	I-Ching's Approach to Contemporary Leaderships Anthony S. C. Tsui (Bright Ocean Education Group, China) Oliver H.M. Yau (Hong Kong Metropolitan U.) Bernard Lee (U. Oxford, UK), Otto Ng (United Theological Seminary)	Developing people's sustainability using organizational social sustainability framework: A conceptual model Alka Kumari, Manvendra Pratap Singh (Nat'l Inst. of Tech. Rourkela, India), Arpita Chakraborty (Amalfarm, India)
	Utilizing AI to create competitive advantage in an organization: Resource orchestration perspective Puphat Maneechan, Thanachart Ritbumroong, Songwut Ahmornahnukul (NIDA, Thailand)	Perseverance and stress tolerance as mediators between positive affect to future and openness Aakash Khindri, Santosh Rangnekar(IIT, Roorkee, India)	Supply-side Dynamics of Gig Economy in the Global South: Implications of Unlimited Supply of Labor Akarapat Charoenpanich, Sukrit Vinayavekhin (Thamasat U., Thailand)
		Conceptualizing Sustainable Educational Leadership in the Modern World Bernard Lee, Liam Gearon (U. Oxford, UK), Oliver H.M. Yau(Hong Kong Metropolitan U.)	Decoding India's skill deficit: Exploring strategies that bridges the skill gap Ruby Sengar(JIIT, India) A.C. Joshi (CPP Doon U. India)

12:40~14:00	Lunch Break		
Session 2 14:00~15:40	Session A2: IT and Social Transformation Chair: Myeong Gil Choi (Chung Ang U., Korea)	Session B2 Work Practice And Insights Santosh Rangnekar (IIT, Roorkee, India)	Session C2: Scientific Methods in Social Change Chair: Chanokporn Klinsopon (Chulalongkorn U., Thailand)
	Modelling the Constructs of Municipal Solid Waste Management in Smart Cities in India: An Empirical Study Rashmi Rekha Purty, Vikas Thakur (Nat' l Inst. of Tech. Rourkela, India)	Enhancing training effectiveness through co-worker support: the moderating role of personal interaction Anjali Dutta, Santosh Rangnekar (IIT, Roorkee, India)	Developing optimal demand forecasting models for a very short shelf-life item: A case of perishable products in online's retail business Wiwat Premrudikul, Akkaranan Pongsathornwiwat, Songwut Ahmornahnukul (NIDA, Thailand)
	Governance Implications of Platform Strategy Jong-Won Kwon, Su-Hyun Yoo, Min-Kyoung Seo, Kiyeon Kim (Korea Testing Lab), Gyeong-min Kim(Ewha Womans U., Korea)	Job Satisfaction among employees of an organization Pragya Singh, Saloni Singla (IIIT, India)	Development of a Hybrid Exploratory Factor Analysis and Logistic Regression model for predicting factors affecting electric vehicle adoption in Delhi Shaurya Mall, Ramesh Anabanandam (IIT, Roorkee, India)
	Presentation Tool For Online Meeting Platform: Design the optimization online meeting and presentation for business Chalika Chandrawat, Narongrit Srisuksai, Pareena Wittayapaisitsant (NIDA, Thailand)	Participative Management Style and Learning at Work: The Parallel Mediation Effect of Vitality and Directive Performance Management Nilesh Kumar Tiwari, Santosh Rangnekar (IIT, Roorkee, India)	Comparative Analysis of Feature Selection Techniques for Average Speed Prediction Shivangi Singh, Santosh Rangnekar (IIT, Roorkee, India)
	Text Analyses of the Ambassador Role of K-Pop Celebrity in Corporate Marketing Namjae Cho, Titania Agnes Sudarmaji, Giseob Yu (Hanyang U., Korea)	Perception and attitude of health professional and policy makers towards marketing and promotional activities of pharmaceutical industry in Nepal. Malati Basnet, Sateesh Kumar Ojha, Malati. basnet(Lincoln U. College, Malaysia)	A Conceptual Framework for Selecting Appropriate Lean Tools to Increase Productivity in Small Beverage Businesses: An Integrated Fuzzy AHP and TOPSIS Approach Chanokporn Klinsopon (Chulalongkorn U., Thailand)
	An Exploratory Study on SNS Use and Loneliness in Middle- aged and Older Ages Sanghee Park, Namjae Cho (Hanyang U., Korea)	Individual and group-based idea generation: review and future direction Ashish, Santosh Rangnekar (IIT, Roorkee, India)	Nudge theory for the evaluate the effectiveness of the Bagmati River Dilly Ram Bhatta (Lincoln U. College, Malaysia)
15:40~16:00	Coffee Break		

	Session A3: Invited Corporate Presentations Chair: Hans Lee (Litalco, Korea)	Session B3 Innovation and Change Management in Practice Chair: A.C. Joshi (CPP Doon U. India)	Session C3: Entrepreneurship and Family Business Chair: Yanki Hartijasti (U. of Indonesia)
Session 3 16:00~17:40	Presentations by Invited Companies from Korea and Thailand.in Emerging Industries 1. Tmax - Leading Data Management Technology (David Kim, Managing Director of Tmax Asian/ Aus.) 2. Total Logistics Platform based on AI Solution and Global Warehouses Network (Jinsu Park, CEO of Colosseum, korea) 3. Advanced Business Analytics (CEO of Data Cafe Thailand) 4. Digital Twin in Practice (CEO of Asset Activator, Thailand)	Effort of trade union to improve labor relation of manufacturing industries in Nepal. Ganesh Pant (Lincoln U. College, Malaysia) Study of moving bed biofilm reactor at Guheshwori Waste Water Treatment plant Ashish Ghimire, Sateesh Kumar Ojha (Lincoln U. College, Malaysia) Bijay Thapa (Kathmandu U. Nepal) Nelson Gurung, Lokesh Sapkota(Soil Water & Air Testing Lab. Nepal) Ayush Nath Ghimire (Kathmandu U. Nepal) An evaluation of public transportation system Kathmandu Metropolitan city Milan Pant (Lincoln U. College, Malaysia) The Role of Forensic Accounting in Reducing Financial Corruption and Frauds: A Study in Nepal Arjun Niroula, Sateesh Kumar Ojha (Lincoln U. College, Malaysia)	Application of information technology to promote community-based tourism among entrepreneurs of homestays in Mae Hong Son Province Sancha Panapaeng, Phattharamon Phanphaeng (Chiangmai Rajabhat U., Thailand) Does Nepal prosper using mountains optimally in tourism for generating income? Surya Bahadur Ghimire (Lincoln U. College, Malaysia) Analysis of Factors Influencing the Owner Mind of Family Business Successors and their Effects on Succession JongHwan Lee, Namjae Cho (Hanyang U., Korea) A Study on the Conflict Between an Incumbent CEO and a Successor in a Family Business Yunseok Lee, Namjae Cho (Hanyang U., Korea) What does Sustainability at the Individual Level, Organizational Level, National and Super international Level Mean in a Technology-Driven Era Sateesh Kumar Ojha Lincoln University College
17:40~18:00	Valedictory Session Valedictory Remark Namjae Cho (Chairman, International ITAM Society, Hanyang U. Korea)		
18:30~21:00	Conference Banquet		

Post-Congress Industrials Visit and Cultural Activities (February 24 & 25)

Time	Events		
(February 24, FRIDAY) 09:00~16:00	Visit 1: NIDA Smart Logistics Center Lunch Break Visit 2: Company visits (JWD, Thailand) Use Chartered bus leaving from Jasmine City Hotel.		
(February 25, SATURDAY) 09:00~16:00	Optional Cultural Group Tour to Museums and Temples		
 (IITAMS) International ITAM Society	 Korea Data Strategy Society	 Nat'l Inst. of Development & Administration, Thailand	

An Application of Resource-Based Theory on External Data Monetization Strategy

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Abstract

Although data monetization has been widely discussed in IS literature, there is only a few studies discussing how to manage the entire process. Organizational resources and how they are managed are believed to be crucial to this monetization process. Thus, this study employs Resource-Based Theory (RBT) to investigate how organizations successfully manage the monetization process. Qualitative data obtained from in-depth interviews with a group of key staffs directly related to data monetization reveals two stages of external data monetization. The initial stage of external data monetization mainly emphasizes building a data-driven foundation using user-friendly tools like data visualization tools while the mature stage of external data monetization concentrates on expanding advanced data utilization to external partners.

Keywords

Resource-Based Theory (RBT), organizational resources, capability, data-driven organizations, strategy development, external data monetization, competitive advantages, business network

Introduction

The opportunities to create value from the data of companies are increasing exponentially. The process of leveraging data to generate quantifiable economic benefits in a firm is also growing. The topic of generating value from designing data for internal use is extensively mentioned in many academic works of literature. Nevertheless, they pay less attention to designing and providing data to outside parties for monetizing data [1].

With a competitive advantage, we can outperform our rivals by offering superior goods and services at lower prices. According to resource-based theory (RBT), a company has a variety of resources that are valuable, rare, inimitable, and non-substitutable (or simply VRIN) can be used to gain a competitive advantage in investment [2]. The previous study also found that companies can gain a competitive advantage by building capabilities and applying RBT to develop big data analytic capabilities [3]. Therefore, we believe that RBT will be able to create the capabilities to sell data products. Furthermore, existing research does not study how organizational resources affect data monetization strategies on external parties: directly selling data, selling insight, and selling analytics-enabled platform [4].

With this study, we concentrate on improving knowledge of the interplay between organizational resources and successful data monetization. We emphasize especially on organizational resources have an impact on the approach of data monetization. Our interest lies in reconfiguring their resources according to changing data strategy and market conditions. The obstacles and limitations to data monetization are another area of concern in this study.

As a result, we conducted in-depth qualitative interviews with three people from three organizations that represent three industries. We study business and data strategy for selling data products from experienced data-driven organizations. The interviewees had extensive experience using data for business purposes and had titles such as head of analytics, digital technology manager, and IT director for data platform. To identify patterns and potential best practices, we examined the interview data and categorized them in the theoretical foundations of our study.

The structure of this paper is as follows. We start with a summary of data monetization and focus on the external monetization approach. The resource-based theory is reviewed in terms of dimensions required for big data activities. We then explain the research approach and detail of data collection and analysis. After that, the result of the study, together with managerial implications,

is introduced and discussed. Finally, it concludes the limitation of this study and suggests future research opportunities.

Literature reviews

Data monetization

Data monetization is understood to be the process of generating revenue from data and its derivatives[5]. The organization can extract and refine its data to create additional products and utilize them for internal purposes (cost reduction, revenue boosting) and external purposes (sell data products) [4]. In this paper, we look into the external path to data monetization. Selling data, selling insight, and selling analytics service or platform are the three main business models for external data monetization.

Selling data

Offering data direct to a third party is the simplest way of externally monetizing a company's data. Anonymized and aggregated data are provided either to intermediate companies or end customers who then analyze the data to find insights. With this approach, the ownership of the data is transferred to the purchaser. For instance, telecommunications company Vodafone sells aggregated and anonymized customer geolocation data to the navigation platform. A better understanding of how people and vehicles move by the navigation platform results in more useful route suggestions.

Selling insight

Integrating internal and external data sources and using analytics skills to deliver actionable insights reports is the meaning of this approach. Remarkable insights or benchmarks are sold to the buyer, but original data access is constrained. The risks associated with data privacy and security related to selling data are eliminated by selling analyses or insights instead [4]. Moreover, developing insights allow a company to charge more for offerings that are more sophisticated and use the insights for buyers' operations [6]. On the other hand, there are typically fewer clients for this data product because of more complex or specific insight.

Selling analytics service or platform

Providing the service or platform of data analytics to the buyers has a higher revenue potential compared to selling data and selling insight. Without permission to own the raw data, the company usually includes data visualization to make data easier utilized for the customer. Besides, this type of data monetization takes more big data capability to develop the product. For example, Facebook supports users to target their advertisements to particular user groups based on their user data, which helps Facebook sell advertising space.

Resource-based theory and data monetization

The potential value of data as a source of competitive advantage and a way to diversify revenue streams has been

acknowledged by businesses. Although, data technology will certainly rise in the future, but organizations should concentrate on other resources, besides technology, which is equally crucial for utilizing big data. A major obstacle to the success of data monetization is said to be a lack of readiness or do not make decisions in response to data. Another challenge is recruiting new talent and educating current workers in big data-specific skills, as big data requires novel managerial and technical skills that are not commonly covered in academic settings[7].

Resource-based theory (RBT) recognizes as a powerful theory to explain how organizations can produce a competitive advantage from the collection of tangible and intangible resources they own or have under their control[8]. According to RBT, internal resources and capabilities allow an organization to implement a value-creating strategy to generate revenue. Furthermore, to achieve sustained competitive advantage, a firm's resources and capabilities should be valuable, rare, inimitable, and non-substitutable[9]. Numerous recent (and earlier) studies consider RBT as one of the most compelling theories to explain the connection between organizational resources and firm performance in the fields of information systems (IS) and other areas of business

Gupta[3] further divides these resources into three categories: tangible resources (e.g., data, technology, and basic resource), human resources (e.g., managerial, and technical skill), and intangible resources (e.g., data-driven culture and intensity of organizational learning). The division of resources into tangibles, human skills, and intangibles has been referenced frequently in the literature on big data capability. For instance, Keshavarz et al.[10] use three categories of resources in creating a theoretical contribution while Lange et al.[11] use for classifying resources in data-driven business model realization. Accordingly, to categorize various resources that will be covered in the next parts, we adhere to the same classification.

Tangible resources

RBT describes tangible resources as ownable things that can be purchased or sold in a market. A company's ability to monetize its data will increase with the quality of the data they own. Yet, over 90% of data that can be owned is provided in unstructured formats (such as images, videos, voices, and texts), thus advanced big data technology and equipment are needed to assist businesses in obtaining insightful and profitable information [12]. In addition, basic resources like financial support are required, particularly given that big data investments are taking some time to produce meaningful economic benefits [13]. We agree with the previous study that reflects tangible resources in the dimension of data, technology, and basic resources.

Human resources

A firm's human resources are the workforce of an organization with experience, knowledge, problem-solving skills, leadership qualities, and interpersonal skills. The literature has suggested that in order to fully utilize the potential of big data activities, a team of individuals with both technical-related skills and management-oriented skills must be assembled [14]. With advanced data managerial skills and technical skills, organizations will be better at taking actions to adjust business activities, effectively integrating and analyzing big data, and improving organizational performance [12]. In the same direction, this study considers that managerial and technical big data-specific skills are two crucial components of a big data company's human resources.

Intangible resources

The value of intangible resources is highly dependent on context and lacks definite boundaries. According to the literature, intangible resources do not clearly appear on firms' financial statements like tangible resources. However, big data intangible resources can continuously encourage businesses to better adapt to dynamic internal and external environments. Therefore, the success of the organization and its sustainable development are also determined by intangible resources. Academic literature has noted that organizational learning and a data-driven culture are essential elements for successful big data activities [12].

Research method

Research approach

This paper primarily takes a qualitative approach to the research problem by identifying the impact of organizational resources on the approach of data monetization. Traditionally, various disciplines have used qualitative research approaches to describe "how things are"[15]. With this approach, people can gain a better understanding of subjects that are weakly understood or discover a new perspective on well-known phenomena. Individual and focus group interviews, participant observation, and other techniques are frequently used in qualitative methods. Therefore, a semi-structured interview method was used to collect data from data-driven organizations in this study. With this method, the topic was given more attention and there was a chance to discuss other factors that affect the external monetization of data.

Data collection and analysis

We seek opportunities to investigate organization resources and an overview of data monetization activities regardless of the industry. Additionally, we wanted to include companies at various stages of data monetization to increase our understanding of the challenges associated with as well as successful and unsuccessful strategies. 3 companies in the 3 industries agreed to participate in the

study with the help of our advisor who has a wealth of experience in data monetization initiatives.

In this research, the case evidence was collected mainly from in-depth, semi-structured interviews. We chose interviewees with knowledge in data and IT management, general business management, or new business venture development for their organizations. The first interviewee is an IT director from a company in the cement and building supplies industry. She has 25 years of experience. The second respondent is the organization's digital technology manager who works in the machinery and equipment industry. The third interviewee is the head of analytics for the financial technology (fintech) company and has almost 20 years of experience. Each interview lasted between 30 and 60 minutes. If the interviewees gave us their consent, we conducted the interviews by audio-recording; if not, we took notes.

The following topic of questions was included in the interview guide: (1) how much did the interviewee's company and industry use data, (2) what kind of resource that essential to external data monetization, (3) what kind of data/insight that the company sold to other organizations, including to whom, and how, (4) what kind of analytics-enabled platform service that the company provides to other organizations, including to whom, and how, (5) other relevant issues.

In every topic of questions, we focus on the data strategy of organizations in monetizing data. We carried out the text analysis by identifying words, sentences, and themes. The key elements from the interview data in the case studies were analyzed by supporting with theoretical foundation presented in the literature review.

Data analysis

Stage of external data monetization

Three of the companies under study didn't plan and concentrate on selling the data product in its initial stage. Basically, they want to use data internally for improving their business process, planning to optimize their cost and increase the organization's revenue. However, when organizations have strong capabilities in data management and analysis for supporting their existing business model from the organization's resources, the business team will start to understand and see an opportunity to monetize the organization's data product with their stakeholder in the business network such as dealers, partners, and suppliers. According to performing interviews, the stage of resource management for external data monetization can be classified as initial stage and mature stage.

Initial stage

assets such as an organization's data, data platform, and money for investing in data projects are examples of tangible resources that a company owns or controls for data monetization. Organizations have these resources to some degree, for instance, the data is generated by the

business process and stored in some traditional databases such as manufacturing data, accounting data, and financial data. The problem is those data typically are useless to the business team at the initial stage because they lack the expertise to transform data into value, don't recognize a chance to monetize data, and lack goals and need for data. Additionally, some people struggle with data usage due to poor data quality, a lack of data standards, and multiple sources of data which encounter data consolidation challenges. The interviewees believed that Business Intelligence especially data visualization tools are the most user-friendly tool and simplest tool for turning data into value for the business user. To support data visualization, the data warehouse and reporting dashboard are built from the business problem and business KPI by collaborating between the data team and the business team. For example, an informant said:

Data visualization skills are very meaningful and should be a fundamental skill of all employees like Microsoft Office skills. Data visualization tools are more efficient than general tools for extracting insight from the same amount of data, and they are also well-designed to be simple to use.

Human resources can also play an important role in initiatives and implementing data-driven strategies, as well as adapting to market and technology changes. In the initial stage, the data team should consist of technical and business skills in one person because they need to understand the business requirement and develop data infrastructure for supporting the business process. Organizations can educate IT support staff about data infrastructure and data visualization to transform them into data engineers, who communicate and keep supporting business teams with data. Furthermore, business users need to be trained to perform data analyst tasks. Informants from different companies said:

In the pilot phase, we have a few data engineers, who fill the data into a data warehouse like adding supplies into inventory. At the same time, we should develop data analysts for using those supplies in their business area. Since there aren't many advanced analytical projects in the early stages, we temporarily outsource the role of data science.

According to the resource-based theory, intangible resources like organizational structure, culture, and reputation are valuable assets for a business. A goal of the initial stage is to build a data-demanding culture for a high-potential business team that is interested in and expand the culture to other business units. Flatter organizational structures enable greater agility, quicker learning, and faster adaptation to a new way of working. It seems that the leadership visionary is also very crucial in this stage because technical challenges must be resolved along with the development strategy to build the goals and needs of business data users. Two interviewees said:

Data monetization and technology implementations are possible at this stage because the leader recognizes the importance of data analytics. There is no prohibition; allow the data team to assist business teams in solving problems. They are happy to see business users who try and learn to work with data that can be used to improve their business outcomes. They encouraged the establishment of in-house training for business users by having instruction from the data team

Even in the early stages of data monetization, once organizations have the capability to build data visualization for business purposes, business teams will begin using dashboards in talking or sharing data visibility with business partners and suppliers. Utilizing data in discussions and planning together, business partners will realize the impact of data-supported decision-making, which creates the need for them by chance, and leads to the opportunity for the new business model of selling data visualization to partners so they can view their own performance.

Mature state

When an organization becomes more data-driven, internal data is no longer sufficient for business users. The need to purchase data and insight reports from external sources, such as farmland information, traveler purchasing data, and marketing research, arises as a result of the increased demand for information in various dimensions. When purchasing an insight analytic report from a third party, organizations should request raw data to ensure that the data was properly analyzed. Moreover, it allows organizations to perform their own analysis or create custom visualizations that may not be included in the original report. The data team should create and integrate machine learning models with traditional tools that business users are already familiar with. In addition, an automated system for routine tasks should be developed. Investment in data technology will increase, same as will emphasis on data tool management to maximize return on data investment while ensuring compliance and security.

During the mature stage, the organization should properly manage the role and accountability of the data team and data users. Almost all business users can produce and utilize data visualization to improve their business operations. To reduce the workload of the data team that supports them, business users should receive Structured Query Language (SQL) training, so they are able to query data independently for an unusual business answer. Furthermore, the data team needs to have more specialized knowledge to answer complex business problems. For predictive and prescriptive analytics such as fraud prevention, demand forecasting, credit scoring, and root cause analysis, data scientists will play a more significant role. Interpersonal skills are more required for the data team to convince and communicate with business team members about data-supported decision-making and

show them the business impact of using machine learning (ML) models. Once the business team realizes the value of data assets, they will initiate new business models of external data monetization by selling data products to their business partners. An informant said about the challenge of explaining AI/ML:

Unable to explain AI/ML to business users is a failure of the data analytics team. In general, business users can't understand the technical term of the machine learning model such as confusion matrix or ROC curve. We must prove the model's performance via business metrics such as the growth of user number, growth of revenue, and reduction of cost. If business users don't buy in the idea of AI/ML, data monetization will never succeed.

To maintain a solid foundation of data-driven culture and grow as a competitive advantage, knowledge management needs to be prioritized. Ensure that all departments are able to access the e-learning course for self-learning and provide onsite training for anyone, such as new team members, who needs more guidance and support to do their job effectively. Besides promoting data literacy and expertise, sharing knowledge and skills across different teams and departments may improve the collaboration and productivity of employees.

For external data monetization, there are various use cases and data products depending on the main business model and business network. A crucial element of reliable data generators and data consumers is a good business network including suppliers, dealers, business partners, affiliated companies, and clients. When organizations have an excess data use case, a good understanding of their business network's needs and expectations may lead to identifying and providing the right fit data products for external monetization. For example, demand forecasting is a tool that suppliers need in order to understand the demand of their clients and plan for stocking raw materials, which organizations can take some benefit and discount in providing the demand data. In general, organizations can offer customer data, sales performance dashboards, and inventory management tools to dealers, which impact the dealership's profitability. Business partners and affiliated companies are normally interested in sharing a report of analytic insight and leads (or prospects) of their business. In the case of a fintech company, they can sell a platform that includes their users that have the potential to become customers in the future for business partners. However, once the business team establishes a new way to monetize the data, the data team also should be given some authority to say no to protect the organization's data and ensure that the organization truly benefits from the deal.

Competitive Advantage in External Data Monetization

According to performing interviews, the ability to access and provide valuable data to data consumers is one of the most significant competitive advantages of external

data monetization. Some organizations know in-depth relationship details in their customer network, which makes them own very useful data for planning and offering to suppliers. Some businesses have insight and a list of potential customers that is beneficial for external third parties because they know widely about their customer behavior. Although the uniqueness of data is essential, the culture of self-improvement and continuous learning is also indispensable in creating new data products and new business models of data monetization.

Discussion

This study explores the different ways to monetize data externally by considering various types of organizations' resources and capabilities that always are mentioned in RBT. The companies under study were pioneers in data utilization and data technology compared to other organizations in their industry. They are data-driven organizations with high readiness to invest in a data resource, but external data monetization is not their main business objective. Most data monetization is used for increasing the organization's revenue and improving the effectiveness of business processes.

Many external data consumers are stakeholders in the business network who have no expertise in analyzing data by themselves. This kind of data consumer favors data products more than unprocessed data even though we have a unique source of data. Organizations have to transform into analytic insight reports or provide user-friendly platforms or services that it is easy to consume data. To increase the chance for external data monetization, organizations must have excess internal data utilization and identify the needs of their stakeholders. Furthermore, in order to familiarize those stakeholders with data and increase demand for data consumption, sometimes we must create a need for them to use data. Nevertheless, some partners with high data maturity in industries like financial, telecommunications, and eCommerce still prefer internal raw data from our organization. So, there is enough opportunity to sell anonymized data to them.

Internal data utilization capability is an important key component for external data monetization. We found that the ability of business teams to utilize their data resources is a primary driver for selling data products to their stakeholders. Since business teams always deal business directly with unmatured data consumers, the business team is well familiar with their needs and characteristics. On the other hand, the maturity of a business team and a data-driven culture come from leaders' data strategies and the data team's support. Although leaders and data teams do not initiate business models in externally monetizing data, it is still necessary to effectively manage and use the data in a way that aligns with the internal business objectives to improve the data maturity of an organization. Moreover, building and maintaining trust with data consumers is also necessary

for the process of external data monetization. The reputation and value of data products may be increased by ensuring data privacy, security, transparency, and ethical use of data.

Managerial implications

According to our results, external data monetization provides an opportunity for organizations to generate revenue by selling data products to stakeholders. However, this process can be challenging particularly for organizations that do not have a primary business in external data monetization. We propose five steps that organizations can take to improve their chances of success in external data monetization regardless of industry. The steps include:

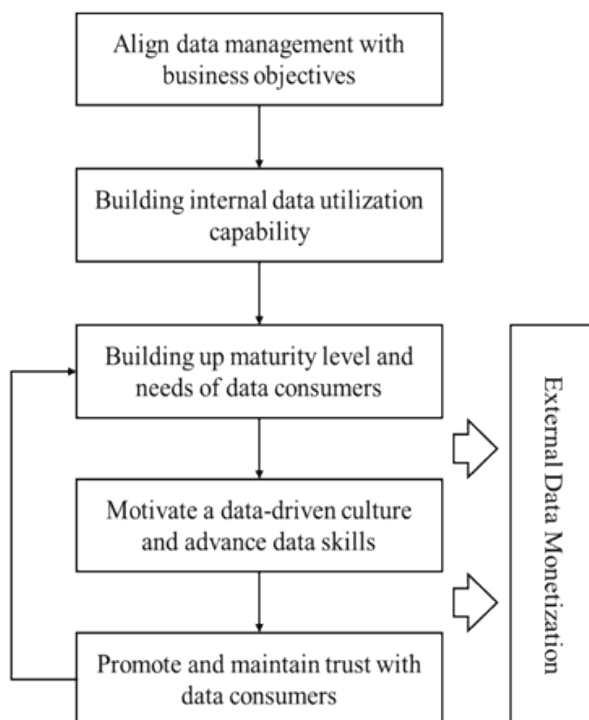


Figure 1 - Recommended Steps on External Data Monetization.

Align data management with business objectives

To improve data maturity and increase the value of data, organizations must effectively manage and use their data in a way that aligns with their internal business objectives, simply by implementing business intelligence. This may require the development of a data strategy and the support of leadership and data teams.

Building internal data utilization capability

One of the key drivers for successful external data monetization is the ability of business teams to utilize their data resources effectively in their position. Organizations should prioritize building this capability by investing in the necessary resources and training.

Building up maturity level and needs of data consumers

To increase the chances of successful external data monetization, organizations should identify the needs of their stakeholders and provide their data products and services accordingly. This may include offering unprocessed data, transforming raw data into analytics insights, or providing user-friendly platforms or services. In some cases, organizations have to create demand for the data by allowing potential customers to try out the product or service before committing to a purchase.

Motivate a data-driven culture and advance data skills

To create new data products for sale, organizations should support a culture that utilizes data in business processes. The development and implementation of advanced data projects, such as using ML or AI to improve the efficiency of work, could show the value and potential of data within the organization. The creation of data-driven systems and processes, as well as employee training and support, also be required in this step.

Promote and maintain trust with data consumers

Trust is a key factor in external data monetization, and organizations should build and maintain trust with their data consumers by ensuring data privacy, security, transparency, and ethical use of data. This can help to enhance the reputation and value of organization data products.

To sustain external data monetization, we suggest that organizations should regularly assess the needs of data consumers, keep support applying advanced data analytics and maintain a reputation of organizations' data (as shown in Figure 1). By consistently following the last three steps, the organization may automatically build up resources and capabilities to monetize data both internally and externally. In addition, resources and capabilities will always have a potential competitive advantage in their market.

Conclusion

The overview of the study aims to understand the role of organizational resources and capabilities in successful data monetization strategies. The study focuses on external data monetization, which involves selling data products or services to external parties. The study uses resource-based theory (RBT) as a theoretical framework and conducted in-depth qualitative interviews with data experts from three different organizations across three industries.

External data monetization is a complex process that involves multiple factors and considerations. Organizations that are successful in monetizing their data externally typically have strong internal data utilization capabilities, a data-driven culture, and the ability to identify and meet the needs of their stakeholders. Business teams play a central role in this process due to their familiarity with data consumers and their needs, and leadership and data teams can help to foster a data-driven

culture and align data management with internal business objectives. In order to increase the chance for external data monetization, organizations may need to transform their data into more consumable forms or create a need for data use among their stakeholders. However, it is important to recognize that different data consumers may have different preferences and needs, and organizations should be flexible in their approach to data monetization in order to meet the diverse demands of the market. Trust is also a key factor in external data monetization, and organizations should focus on building trust with data consumers through responsible and transparent data use.

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Analysis of Success Factors of Electric Scooter Sharing Service Using User Review Text Mining

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Abstract

This study aims to analyze service improvement and success factors of electric scooter sharing service companies by using text mining after collecting reviews of shared electric scooter service applications among various models of sharing economy. In this study, the factors of satisfaction and dissatisfaction of service users were identified using the term frequency inverse document frequency (TF-IDF) technique, and topics for each keyword were extracted using the Latent Dirichlet Allocation (LDA) Topic Modeling technique. According to the analysis results, the main topics were entertainment, safety, service area, application complaints, use complaints, convenience, and mobility. Using the analysis results of this study, employees and researchers of electric scooter sharing service companies will be able to contribute to the improvement and success of related services.

Keywords

Electric Scooter, Text Mining, Topic Modeling, TF-IDF, Word2Vec

Introduction

As smart cities are spreading as a solution to problems caused by rapid urbanization, ‘Smart Mobility’ is naturally becoming more important [1]. Smart mobility is a new transportation service that combines smart devices and transportation services, and can be called a new transportation system [2]. As the mobility environment changes, the requirements of shared mobility users are also increasing, and the connection service between transportation means to save users' travel time is also becoming increasingly important. Shared bicycles and shared electric scooters are representative means of shared mobility as means of moving from public transportation pick-up and drop-off points to destinations. As the number of users of shared electric scooters is rapidly increasing, research on this is also being actively conducted. Existing studies were sample research using questionnaires [3], text mining research using news articles [4], and topic modeling research using public data [5].

However, text mining analysis, which is a study that identifies users' intentions by directly extracting extensive review data using reviews written by users of shared electric scooter services, is still incomplete.

This study collects online review data written by users who used the electric scooter sharing service of the Play Store, analyzes the reviews, extracts key keywords, extracts positive and negative words, and classifies them by keyword. The purpose of this study is to examine the social issues and consumer awareness of the electric scooter sharing service by using the contents, and to suggest the direction of improvement and development of electric scooter sharing service companies and electric scooter devices.

This study limited the scope to domestic sharing electric scooter service applications among several business models of the sharing economy. ‘Wise App-App Analysis/Retail Analysis’ In August 2021, four companies were selected among the electric scooter sharing service companies in the sharing service app rankings to collect online reviews. Among the top service providers, text mining analysis was conducted after collecting review data, excluding sharing service companies whose electric scooter sharing service was launched after 2020 or whose number of reviews was less than 2,500.

2. Related research

2.1. Sharing economy

The sharing economy refers to a consumption culture in which transportation means, lodging, places, and goods are shared with others, and not in possession of goods, but in cooperative consumption in which products or goods to be used necessary or selectively are shared. It can be said to be a model that creates new value by sharing objects or spaces owned by individuals or companies [6].

People have come to enjoy a convenient and affluent life by sharing products or goods rather than sharing knowledge, and using social and human networks as a concept of sharing rather than ownership, cooperative consumption using information technology is being achieved. Recycling of resources reinforces interconnectedness between people and revitalizes the local economy, and shared services have contributed greatly [7].

As sharing economy services become more active, various studies are being conducted academically as well. Looking at related research cases, there is a study [8] that uses user reviews of the accommodation sharing platform Airbnb to extract words with high frequency and extract topics to identify users' intentions, and text mining to identify academic trends related to the sharing economy. There are studies that have identified the flow of related research using frequency analysis and topic modeling [9].

2-2. E-Scooter sharing

The electric scooter sharing service refers to a service that uses an electric scooter, which is one of personal mobility devices that can run on electricity using an electric motor, for the purpose of renting for a short period of time. Unlike shared bicycles, there is no designated place for rental and return, and it is characterized by being able to return at any location within the service area [10].

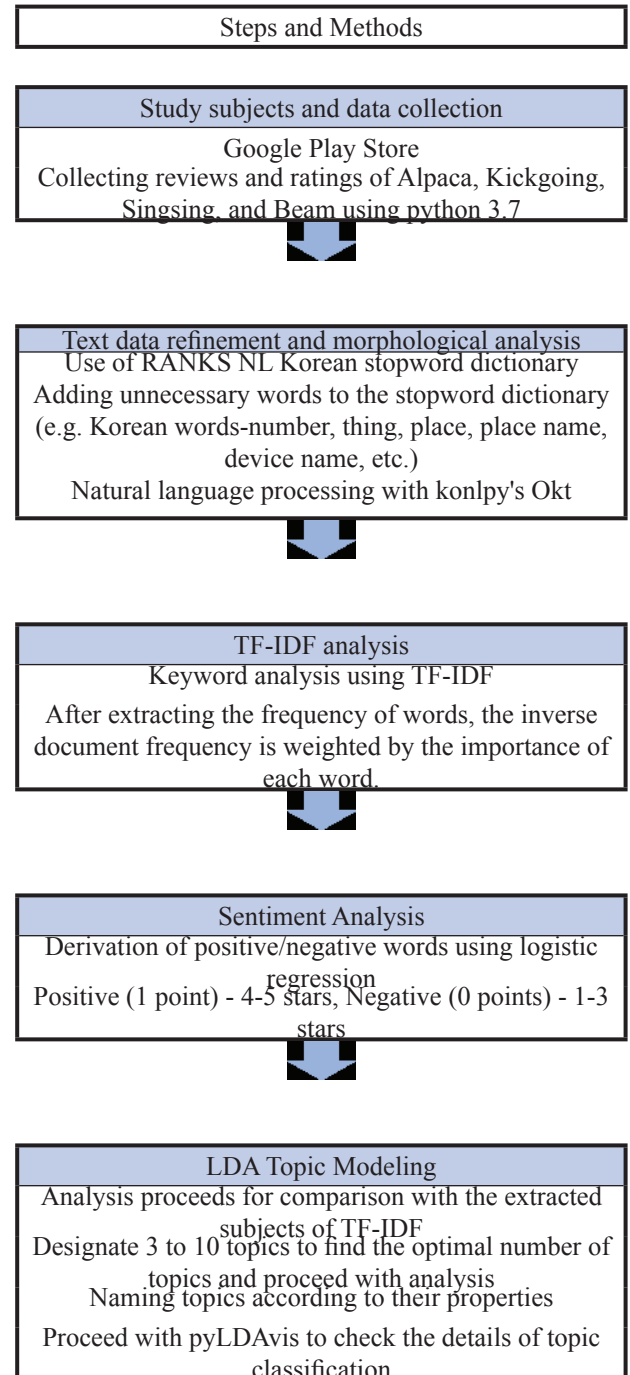
As the shared electric scooter service began to be activated, various studies were conducted academically. There is a study that the use of shared electric scooters reduces the number of additional COVID-19 confirmed cases, or when the temperature is over 20 degrees, the use of electric scooters increases and decreases otherwise [11]. In addition, there are studies proposing solutions for establishing return zones, introducing GPS systems, preventing privatization of bicycles, and using helmets to improve the citizenship of electric scooter users [12].

As such, research on electric scooter sharing services is being actively conducted, but mainly studies using news articles or public data have been conducted [13]. On the other hand, this study is to analyze the success factors of the shared electric scooter service by extracting extensive review data from the reviews voluntarily written by users of the shared electric scooter service and identifying the user's intention.

3. Research methodology

3.1 Data collection and preprocessing

Table 1



3-2. Analysis methods

TF-IDF

TF-IDF (Term frequency inverse document frequency) is a technique widely used in text analysis. It is simple and has excellent performance because it can quantify the importance of words that appear frequently in a specific document and select words [14].

It is calculated as the product of the word frequency count, TF, and the inverse document frequency count, IDF, and indicates the importance of a word contained in a specific document in the entire document by digitizing it [15].

$$TFIDF = TF \times \frac{1}{DF}$$

$$TFIDF = TF \times \frac{1}{DF^{(1)}}$$

TF = Frequency of a specific word in a document

DF = Frequency of a specific word in multiple documents

IDF = reciprocal of DF

TF-IDF was performed using the TF-IDFTransformer package provided by the Sklearn library for the BOW (Bag of Words) that had undergone data preprocessing.

In order to identify positive and negative emotions, which are subjective elements of user reviews, the X value of the model is the evaluation of user reviews in order to predict whether the review is positive or negative, and to understand the user's emotion. It was set as the content, and the Y value was designated as the positive/negative emotion of the user. In order to divide user reviews into positive and negative, 4 to 5 points of the 5-point rating were converted into 1 point for positive evaluation. In the case of 3 points, it is ambiguous to belong anywhere with a value between positive and negative, but in the case of review stars, 4 to 5 points account for a large proportion, so 1 to 3 points were converted to 0 points for negative evaluation [16].

The ratio of training data and test data was distributed 7:3. As a result of evaluating the performance of the regression model using logistic learning, the accuracy of the model was calculated as 71%. Accuracy is determined by whether the predicted results match, and there is no special standard for accuracy, but in previous studies, even a new technique of 60% or more was considered worthy of research [17].

Since the results of logistic regression analysis are output as numbers, it is difficult to understand their meaning, so morphemes were extracted using index_vectorizer as the coefficient of the regression model, and 20 positive and negative words were extracted respectively.

LDA Topic modeling

The LDA topic modeling technique is one of the probabilistic topic modeling techniques that indicates which topics exist in each document in a given document. Each document represents a probability distribution for words nested in a topic in order to infer which topics exist [18].

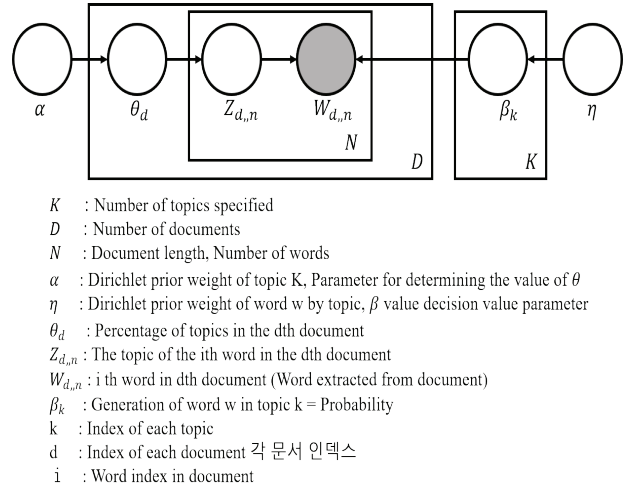


Figure 1 LDA Document creation process

<Figure 1> is a schematic diagram of the LDA document generation process. Gray circles represent observed variables, and white circles represent latent variables. Arrows represent relationships between nodes, and outer rectangles represent documents and represent the number of topics and words. Topic modeling using LDA is a process of finding potential topics by assuming a Dirichlet distribution, one of the probability distributions, if there are documents and words are included in them, and putting documents and words into numbered topics one by one.

Using corpora.Dictionary() from the copra package of the gensim library, integer encoding was performed on words, and the frequency counts of words were recorded. The number of topic classifications was carried out from 3 to 10, and as a result of the progress, classification was optimized when the number of topics was 3. Topics are named according to the classified characteristics, and the numerical value of the characteristic words represents the contribution to the topic. After topic classification, pyLDAvis was run for LDA visualization. The circle on the left is the number of topics, and the distance from each circle shows the difference between the topics. Depending on the topic, characteristics appear on the right.

4. Result

4-1. TF-IDF Analysis

A TF-IDF analysis was conducted to classify the positive and negative factors of electric scooter sharing service users. As a positive factor, it was found that commuting and short distances and public transportation were used mainly for ambiguous distances to move, and it was found that they were satisfied. It appeared that they were dissatisfied with safety issues.

Table 2 TF-IDF Positive

Alpaca	SSingSSing	Kickgoing	Beam
1.93	1.85	2.54	1.65
1.42	1.79	1.50	0.95
1.4	1.52	1.16	0.93
1.35	1.34	1.09	0.9
1.34	1.27	1.07	0.84
1.22	1.11	1.00	0.82
1.14	1.09	0.97	0.77
1.13	1.03	0.89	0.75
1.05	1.00	0.89	0.64
0.99	0.98	0.86	0.62
0.95	0.96	0.86	0.6
0.92	0.92	0.85	0.59
0.87	0.89	0.83	0.58
0.82	0.84	0.82	0.56
0.82	0.82	0.82	0.55
0.8	0.79	0.81	0.54
0.76	0.77	0.80	0.5
0.75	0.76	0.77	0.5
0.75	0.75	0.72	0.49
0.75	0.75	0.72	0.48

Table 3 TF-IDF Negative

Alpaca	SSingSSing	Kickgoing	Beam
-3.15	-3.33	-3.74	-2.76
-2.9	-2.51	-3.57	-2.46
-2.54	-2.31	-2.71	-2.35
-2.54	-2.15	-2.6	-2.31
-2.5	-2.07	-2.58	-2.24
-2.3	-2.03	-2.56	-2.18
-2.26	-2.02	-2.5	-2.17
-2.19	-2	-2.44	-2.13
-2.19	-1.98	-2.36	-2.12
-2.07	-1.96	-2.22	-2.05
-1.96	-1.92	-2.19	-2.03
-1.95	-1.91	-2.16	-2.02
-1.95	-1.87	-2.13	-2.02
-1.88	-1.81	-2.07	-1.97
-1.82	-1.75	-1.98	-1.89
-1.77	-1.66	-1.97	-1.84
-1.75	-1.62	-1.96	-1.84
-1.75	-1.59	-1.96	-1.83
-1.74	-1.56	-1.86	-1.81
-1.74	-1.56	-1.79	-1.76

4-2. LDA topic modeling

The LDA Topic Modeling analysis is a technique for extracting topics, suggesting keywords for each shared service provider. In the case of Alpaca, it was named as entertainment, safety, and service area. In the case of SSingSSing, it was named as application complaint, use complaint, and convenience. In the case of Kickgoing, it was named as application complaint, mobility, and service area. In the case of Beam, it was named as entertainment, dissatisfaction in use, and inconvenient parking.

Table 4 4 LDA Topic Modeling

App	Topic1	Topic2	Topic3
Alpaca	오락성	안전성	서비스지역
	편하다	헬멧	지역
	0.096	0.026	0.032
	이용	안전하다	서비스
	0.051	0.014	0.024
	재밌다	수단	싸다
	0.039	0.013	0.023
	빠르다	쓰다	반납
	0.035	0.013	0.02
	거리	급하다	속도
	0.032	0.011	0.015
	어플불만	사용불만	편리성
SSingSSing	안되다	이용	편하다
	0.028	0.025	0.036
	업데이트	요금	사용
	0.022	0.012	0.022
	뜨다	반납	비싸다
	0.009	0.01	0.02
	반납	위치	가격
	0.009	0.009	0.016
	주차	거리	이용
	0.008	0.008	0.012
Kickgoing	어플불만	이동성	서비스지역
	연결	편리하다	서비스
	0.015	0.035	0.02
	인증	최고	지역
	0.013	0.034	0.02
	어플	재밌다	사용
	0.012	0.026	0.017
	많다	빠르다	많다
	0.009	0.023	0.012
	오류	비싸다	위치
	0.008	0.015	0.012
	오락성	사용불만	주차불편
Beam	좋다	편하다	주차
	0.332	0.069	0.037
	비싸다	이용	구역
	0.039	0.025	0.022
	재밌다	종료	이용
	0.034	0.021	0.017
	최고	안되다	편리하다
	0.023	0.021	0.013
	인증	자다	지역
	0.008	0.013	0.012

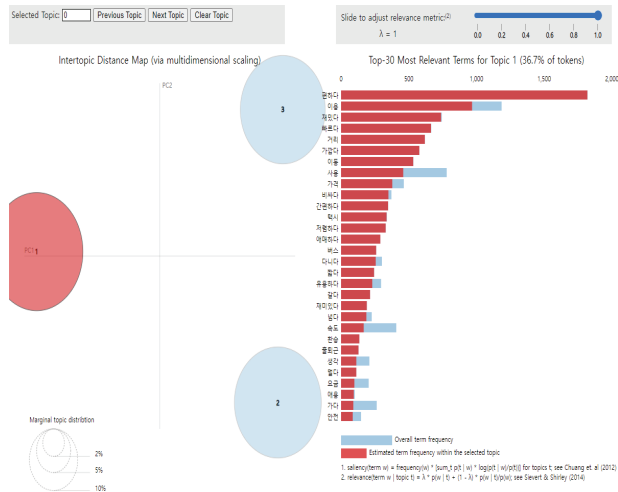


Figure 2 Alpaca pyLdavis

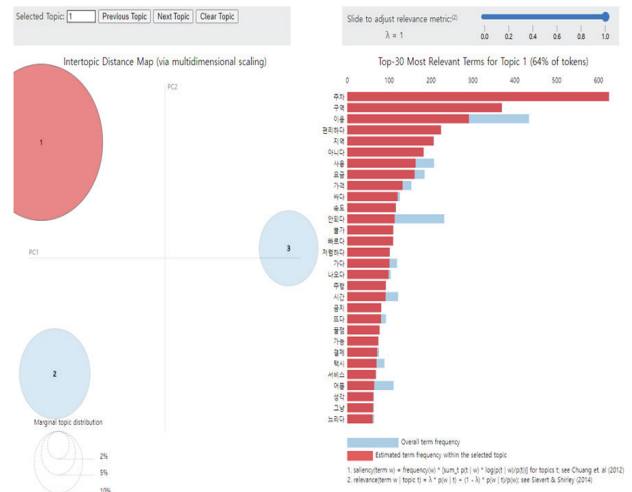


Figure 5 Beam pyLdavis

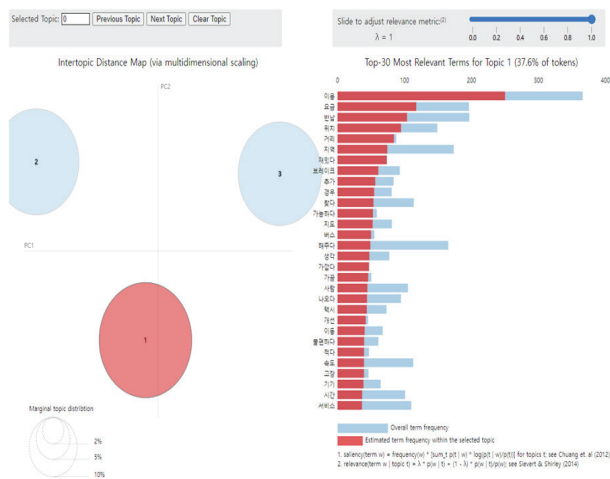


Figure 3 SSingSSing pyLdavis

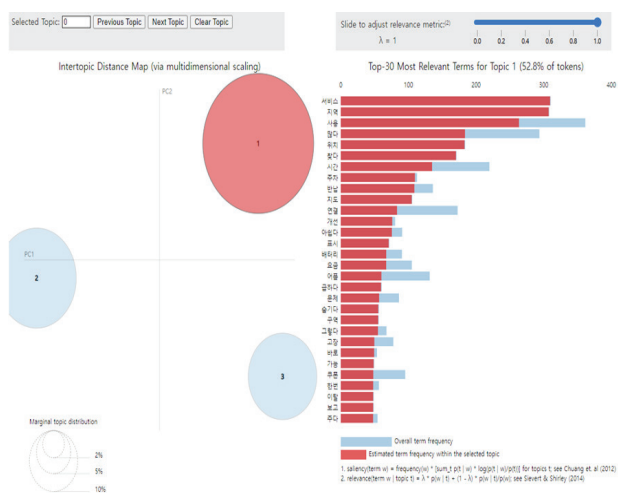


Figure 4 Kickgoing pyLdavis

5. Conclusion

5-2. Conclusion and business implications

This study analyzed reviews, grasped users' minds, and analyzed service improvements and success factors by limiting 4 domestic companies among electric scooter service companies.

First, words that commonly appear at the top of positive words using TF-IDF are commuting, short distance, short distance, taxi, public transportation, etc. It was revealed that it is mainly used in streets where it is ambiguous to move by public transportation or taxi. Words that commonly appear at the top of negative words are authentication, update, registration, etc., and license registration is not possible due to application errors, or errors that are not authenticated often occur, and update functions due to errors are repeatedly executed. It was revealed that there was difficulty in using the device because the application could not be used.

Second, as a result of subject analysis using LAD topic modeling, alpaca was selected as entertainment, safety, and service area. The theme was determined by expanding the use area. In the case of SingSing, the topics were set as application complaints, device use complaints, and convenience, and complaints due to application errors, GPS errors while using the device, making it difficult to find the device, and many brake errors. There is convenience in , so I decided on convenience.

As a result of each analysis with TF-IDF and LDA topic modeling, users of the electric scooter sharing service give positive evaluations that they are useful in commuting and short-distance movement and public transportation, and infinite repetition due to application errors. And rebooting, license registration error, GPS accuracy is low, it takes a long time to find the device, and device use is stopped due to battery level display error. In addition, when the length of the review is short, the accuracy of positive/negative

evaluation decreases, and it can be seen that negative evaluation appears together in positive evaluation.

The implications of this study are as follows.

First, it is significant that the voluntary reviews of customers who use the electric scooter sharing service were analyzed using TF-IDF and LDA topic modeling. Most of the existing studies are studies using questionnaires or text mining studies using public data, and text mining analysis on voluntary reviews of electric scooter sharing service users is still incomplete.

Second, it can be seen that users of the electric scooter sharing service mainly use it for quick movement during commute time, or use it as a means of transportation in a distance where it is difficult to move by public transportation or taxi. Therefore, if it is properly placed in an area where office workers commute a lot or in a section where they have to walk to use public transportation, it will be possible to secure more users.

Third, it is necessary to provide quick response and feedback to device errors and application errors. When users of the electric scooter sharing service use the application, errors in the procedure for license authentication, infinite repetition and rebooting of the application, errors in the area of use, and low accuracy of GPS take a long time to search the device, and errors in displaying the remaining battery. The phenomenon of stopping while moving appeared as a complaint. Therefore, if quick responses and feedback are provided for applications, satisfaction and reliability of service providers can be improved.

Lastly, to ensure safety, helmet introduction and safety devices should be added. In the case of alpaca, safety issues were secured because helmets were attached, but helmets were not yet introduced, so there were many requests for safety issues, and there were many reports that the impact of tires was felt by the body. Therefore, additional introduction to secure the safety of electric scooter sharing service companies will increase the reliability of service companies.

5-2. Limitations and future research directions

This study has the following limitations in interpreting the research method and research results, and intends to suggest future research directions to supplement them.

First, this study is a study using the reviews of users of the electric scooter sharing service provided on the Play Store. Among the companies using the service, 4 of the applications that were released in a similar period and had a large number of reviews were selected and reviews were collected. and analyzed. There is a limit to generality in that the analysis was limited to the top four companies. Therefore, in future research, it will be possible to make more accurate measurements by expanding the scope of companies and collecting and analyzing reviews of various sharing services.

Second, online reviews include terms related to a specific domain and various expression methods and terms used by consumers in the text. These terms appear in very diverse forms and change over time, so there is a realistic limit to reflecting all terms in the analysis. This study is also the same, and in future studies, it will be possible to build a word dictionary with domain experts through separate studies or consider artificial intelligence-based natural language processing.

Third, the topic analysis result of topic modeling may vary due to the analyst's subjective topic selection. If the analysis is performed by another analyst, the content of the topic may change due to the subjective subject selection of the analyst. Therefore, a more accurate analysis can be performed by injecting several analysts with a lot of experience and objectivity and comparing the analysis results.

As a future research project, it is expected that various studies on techniques for extracting meaningful words will be conducted, and follow-up analyzes using other analysis models will be conducted.

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Fostering Safe and Positive Messages with Social Listening Analytics

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Abstract

The objective of this study is to develop an underlying model for a web-based application that a social media user can check the validity and usefulness news and messages before he/she becomes one of the unsafe and negative viral messengers. The study employs the crawler from a social listening program called AION to gather social media data. Only text messages from Facebook were gathered during 15 November to 28 December 2022. Among 14,262 posts randomly assigned to 12 labelers, 7,150 posts were commonly read by three labelers. Each social media post is evaluated and modeled on four domains of interests, including Digital Culture, Soft Power, Health, and Make a Living. The posts are also assessed whether they be opinion or not as well as useful or not. WangchanBERTa, a Thai transformer-based language model with deep learning algorithms, was used to train and test these Thai social listening data. The model's accuracy has its weighted average precision of 58% for the Domains model, 87% the OpinionOrNot model, and 70% the UsefulOrNot model.

Keywords

Social listening, WangchanBERTa, Promotion of safe and useful social media data

Introduction

Social media users and their activities have increased their influences on Thai society in recent years. Social media is defined as digital media used for social interaction and communication through social network, website, and any application (The National Newspaper Council of Thailand, 2533). Naowarut Lungaon (2006) adds that social media allows users to share experiences and communicate via online blog, streaming platform, messaging application, and online social network. Ellison, Vitak, Gray, et al. (2014) suggests three elements required for social media: the users' ability to create online profiles, the online communication with other users, and the continuous access to others online.

Social media can both negatively and positively impact society. While allowing the users to access updated data and information, social media can expose teenagers to improper information. Hence, digital media literacy is important so that users can be capable of proper media selection, analysis, evaluation, responses, and commenting.

The study of Nattapon Muangtum (2022) reveals that in 2022 Thai Internet users stood at 77.8% and spent

approximately 9 hours and 6 minutes on the Internet. Thai Internet users consist of 5 main groups by generations: swing generation (age 63+), Baby Boomers (aged between 45-63), generation X (aged between 30-44), generation Y (aged between 16-29), and generation Z (aged between 1-15). Each group comes with differences in characteristics and the Internet use behaviors. Without doubt, social networks are greatly employed as the place for opinion exchange or social listening.

The rise of comments or opinion sharing on social media leads to an amount of data which can be utilized in analysis to evaluate the social needs and trends useful for businesses and policy makers. This implication then underscores "Social listening". At present, the private sector has developed the tools for social listening for the purpose of marketing, product promotion, and content creation. Institute for Innovative Learning, Mahidol University states that social media can be used for sentiment analysis, concept & ideation, trend forecast, and intention & behavior.

The objective of this study is to develop a social listening model of Thai language. Machine learning with deep learning algorithm is used for model development. Social

listening text data from Facebook will be used for training and testing the models. Different models will be identified, including day-to-day social topics such as digital media, soft power, health issues, and make a living. The social listening data will also be assessed whether they are useful or not and whether they are opinion or not.

Social media messages

viral of Positive and Negative Messages. Due to the Internet and digital media technology, people have the greater opportunity to select their media consumption than ever before while sharing news stories or their consumption via email and social media (Southwell, 2013). According to previous research, social-psychological factors such as confirmation bias and social contagion are key behind audience's selective exposure and social flow of media content.

Five main factors contributing to media selection and retransmission consist of informational utility, content valence, emotional evocativeness, novelty, and exemplification.

1. Informational utility: the messages with high informational utility enjoy retransmission advantages.
2. Content valence: People tend to be hardwired for negative information. That is, the negative bias plays a significant part in selective exposure. Meanwhile, positive bias plays a greater role in sharing decisions since sharing is a more social behavior which might involve more complex consideration.
3. Emotional evocativeness: emotionally arousing messages attract selective exposure and are likely to go viral. It is noteworthy that emotional evocativeness can enhance vitality.
4. Novelty: the new, surprising, and unusual media messages tend to be selected and shared.
5. exemplification: the messages with narrative form easier to understand are more engaging and have a retransmission advantage.

Message domain. Four domains of messages are of interested in this study: digital culture, soft power, healthcare, and make a living. These are general domains that exhibit the trendy social issues. Although each domain appears broad, corresponding keywords of each domain can be identified and used to differentiate one domain from another. Definitions and keywords of each domain are derived from various sources.

Digital culture contains behaviors and topics relating to the use of digital technology in multiple cultures. It also addresses attitudes, behaviors, work culture, biases, and gaps between people in different generations. Digital culture is inevitably agile and requires individuals to have empathetic and resilient skills as well as enjoy learning

new technologies. Thus, some keywords sharing in the social media of this domain include the following.

- Use of modern technology in every day's life
- Generation Gaps – 5 generations--Baby boomer, Gen X, GenY, Gen Z, and Gen C
- East – West culture
- 5G, 6G technology and working online
- Internet of Things, Biometrics, Artificial Intelligence, Cyber security, Blockchain, Metaverse
- Gig workers

Soft power is the ability to attract and indirectly influence behaviors and cooperation through cultural and ideological means. Soft power can be used to change preferences and social thoughts and interests of people in another country. Examples of soft power widespread in social media include:

- Korean influential music groups K-Pop, Gangnam Style
- Thai Artistry and Craftsmanship, Thai Fashion, Thai OTOP
- Thai Music (Black Pink) and Dramatic Arts
- Thai Traditions and Festivals (Songkran Festival)
- Thai Foods (Tom Yum Kung, Mango Sticky Rice), Thai Massages, Thai tourism destination
- Defense Art (Thai Boxing or Muay Thai)
- Spiritual values (Meditation)

Healthcare Health information is one of the highest uses of social media by public. However, there are widespread of misinformation embedded in the online health information, especially the Facebook. Thrust on social media news becomes a challenge and next to impossible to verified on a timely basis. For example, the COVID 19 and its vaccine-related stories are shared and as frequently inundated with opinions, positive and negative comments, and frequently poor-quality information.

Make a living is the domain that deals with day-today living subject matters. Social media messages are full of news about the rise in cost of living, such as gas, utilities, consumer goods, rentals, unemployment, minimum wages, state welfare benefits, poor people card, poverty, informal/ foreign workers, hawkers/ street foods, sustainable agriculture, ESG (Environment, Social, and Governance), effects of Greenhouse gas, global warming, natural disasters.

Opinion or not message. One of the most important aspects worth the media analysis is to identify fact or opinion from the given text. Lammer-Heindel (2016) states that the term 'fact' refers to a state or an aspect of reality, not to a class of beliefs. Meanwhile, opinions, by contrast, are types of beliefs. "Facts" can be defined as objective statements that can be verified or proven true or

false. They contain information but do not state what the writer thinks or believes. On the other hand, “Opinion” can be defined as subjective statements that can express a writer’s feelings, attitudes, or beliefs. They are neither true nor false since they are the view of a person about a topic or issue. Also, opinion can be identified by two types of opinion-identifying words: 1) biased words such as bad, worse, worst, good, better, best, worthwhile, worthless, etc.; 2) qualifiers such as all, usually, always, likely, unlikely, never, seem, might, probably, perhaps, should, had better, etc.

Useful Or Not Message. Good communication is conveying a useful message for receivers or the audience. Many online messages are safe and creative, others unsafe and perhaps destructive are useless. According to Kunthira Chayawong (2012), creative communication should align with Thai culture and society which can be characterized by creative language, empathetic and compassion, the social and cultural contribution, and morality and legality. Meanwhile, destructive communication is on the opposite side with the characteristics of destructive language, hate speech, harmful content against organizations, society, and culture, and illegality.

In the section 3 of Safe and Creative Media Development Fund Act 2015, “creative and destructive media” is defined as follows:

“Creative media” is media whose content promotes ethics, morality, culture, security, creativity, and life skills among citizens.

“Destructive media” is the media whose content is against good ethics, morality, and culture or negatively impacts mental or physical health of citizens, family, community and society; the media whose content provokes disharmony and hatred against individuals or groups of people with violent end results, whether physical or mental ones; the media whose content violates the human rights and degrades human dignity; the media with illegal content; and the media whose content is against the ethics or professional practice of journalists.

Thai language models

Text corpus is one of the most important sources in the development of a language model. The size of the corpus used in training and testing is important. There are quite a few large Thai text corpus using data from public domain available that can be used to develop a pretrained model. For example, available from GitHub are Thai Constitution Corpus, Thai Law, Thai-joke-corpus, and ThaiGov corpuses. Also available in Kaggle, is the HSE Thai Corpus of 35-million-word corpus of Thai. (<https://nlpforthai.com/tasks/language-model/>)

A handful of Thai pretrained models include well

established models owned by international corporations such as Multilingual Cased owned by Google and TwHIN-BERT by Twitter. Other locally develop models are Thai2Fit, BERT-th, BERT-Base-th-cased, WangchanBERTa, and mLUKE. Among these locally developed models, WangchanBERTa, developed by VISTEC-depa AI Research Institute of Thailand. The model employs the largest (78.48 GB), the most diverse (Twitter, Facebook, Pantip, Instagram, YouTube, etc.), and the cleanliest (eliminate blanks, parentheses, duplicate letters, words, and sentences) Thai text corpus to date. (Ibid.)

Model development framework

Different languages have different structure which create different levels of difficulties in the model development. Thai language can be quite difficult with different meanings and interpretation. Figure 1 shows the model frameworks

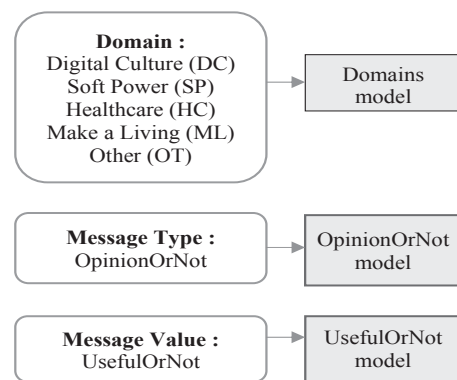


Figure 1. Model Framework

Method

Data and sample. Textual data were collected from 30,000 publicly posted in the Facebook platform during November 15 - December 28, 2022. The data were cleaned, and 14,262 messages were randomly read and labelled by 12 readers. Each reader read over 1,500-2,000 messages. To ensure the consistency of labelling, the same message must be read by at least three readers, thus, only 7,150 messages met this criterion.

Each message was classified according to the four domains of interest. If consensus or majority of the readers agree, for example, two out of three readers label the message with the same domain, the message is then put into that domain for further processing, if not it is classified as “Other.” As shown in Table 1, 4,056 messages were over half of the messages being read (57.8%) messages fall into “Other” category and the “Soft Power” domain has only 45 messages, not enough for model development.

Table 1. Numbers of Messages Collected for Model Construction

Domain	1 st round of data collection	2 nd round of data collection	Messages used for model training and testing
Digital Culture	298	330	200
Soft Power	45 (0.06%)	200	200
Health-care	331	361	200
Make a Living	278	287	200
Other	3,104	3,580	
Totals	4,056 (57.8%)	4,758	

An administrative decision was made to have at least 200 messages to train and test the domain model. Therefore, additional messages from the unused pool were randomly included and labelled by three readers. If the message was labelled by two out of three readers as in the “Soft power” domain, the message will be put into the model development procedure.

Preliminary Result: The Social Listening Models

Machine Learning (ML) using Deep Artificial Neural Networks (Deep Learning) technique in the model development. Three supervised learning models from the social listening datasets were derived, the Domains model, the OpinionOrNot model, and the UsefulOrNot model. As shown in Table 2, each model employs different numbers of support samples and the 80:20 percent rule of data was used for training and testing individual model. The Domain model shows the least predictive accuracy (58%), the OpinionOrNot model the highest (87%), and the UsefulOrNot model somewhere in between (70%). It is apparent that binary classification of whether a message is “opinion or not” and “useful or not” is easier than the “Domains” messages.

Table 2. Weighted Average of Model Accuracy

Model	Precision	Recall	F1-score	Support
Domains	0.58	0.60	0.59	200
OpinionOrNot	0.87	0.87	0.87	366
UsefulOrNot	0.70	0.69	0.68	400

With the precision of less than 60%, the Domain model that has multiple topics will be finetuned further. Future research includes the development of a separated model for individual sub-domains, such as Digital Life model, Soft Power model, Healthcare model, and Make a Living model. Also, traditional machine learning NLP

methodology may be used to compare with the current BERT model, including Random Forest, Naïve Bays, and Logistic Regression.

It should be noted that despite a small sample size, the result models can be attributed to the pre-training capability of WangchanBERTa. The transfer learning using the BERT model has limitations. The developed models can also be as good as the input data set which are subjected to the crafting of labelers. Although specific guidelines and domain definitions were given, the labelers in the present study are not language specialist and their differing upbringing and experiences may influence their labeling capabilities.

Acknowledgment

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Utilizing AI to Create Competitive Advantage in an Organization: Resource Orchestration Perspective

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Abstract

Artificial intelligence (AI) is a topic that has gained interest from both academics and business in recent years. The technological advancement allows AI technology to offer higher capabilities and utilization into business sectors. However, several organizations are facing challenges to successfully implement AI to create competitive advantage. Additionally, there is lack of studies on how to successfully implement AI into firms. Therefore, the aim of this study is to investigate how to acquire and utilize AI technology in organizations for achieving competitive advantage. A resource orchestration serves as a foundation for this theoretical investigation. Given the differences of the business contexts, all companies under this study show similar ways in acquiring essential resources including data, human, technology infrastructure and data – driven organization culture. Leveraging AI was found to be different among the cases given the nature of their business. This study concludes with the proposed guideline framework for AI utilization.

Keywords

Artificial Intelligence, Resource – Based theory (RBT), Dynamic capability, Resource orchestration, Data – driven organization, Competitive advantage.

Introduction

In the age of business environment has been radically changing and continuous, this is challenge for organization in which to achieve competitive advantage. In the past, resource – based theory suggested that essential of firm's resources affect to business performance and gain competitive advantage [1]. In addition to dynamic environment of competition, resource – based view was developed to be dynamic capability in order to build organizational change capacity for continuous competition under dynamic market. Recently, theory has been evolved as resource orchestration that describes processes involving firm's resource management in order to create value and achieve competitive advantage.

Artificial intelligence (AI) is a cutting – edge technology that has emerged over the past few years. Regarding advancing of technological infrastructures, big data and computing power, these factors make AI Capability more powerful in many facets such as improving operation performance, managing customer relationship, creating

new product, automating process, and enhancing decision – making process [2]. Consequently, AI technology has been gaining more attention from the business sector because of violent competition and rapid changing of market environment. Currently, several organizations begin to implement AI technologies into process and expect AI to help them to gain business competition advantage. Additionally, AI is expected to reduce costs, improve processes, and create competitive advantage from the firm. But various organizations are facing challenges to implement AI into organizations and fail to provide value from expectation. Because integration AI into a firm does not only concentrate on technology aspects, but also other aspects such as people, process, and collaboration. Moreover, manager lack of knowledge about AI technology and how to manage them in order to successfully integrate AI into existing processes.

Therefore, this study is purposed to investigate how to acquire, manage, and utilize AI technology and related resources so that organizations can achieve competitive

advantage. Additionally, AI – related resources that affect AI utilization such as people skill, process, technology infrastructure, and organizational culture were included in our scope. Thus, there is possibility to apply resource orchestration perspective that is developed from resource – based view and dynamic capability, in which describe managerial action to manipulate resources in order to generate the most value from them. Due to AI as a resource in organization, this theory is an appropriate concept to apply with the AI context to demonstrate how to manage AI application for creating value and competitive advantage for business. Moreover, this concept is useful for establishing guideline framework which is valuable to companies who need to adapt AI technology.

In order to reach the study's objective, we conducted a qualitative approach which is an in – dept interviews method to collect data because this approach allows us to gain insight information. Key questions are specified in order to obtain information effectively and comprehensively. Additionally, we selected a company which emphasizes AI utilization to improve process and position which is high management level. Then, the answers from the interview were analyzed to conclude the result for each topic and create guideline framework that is supported by theoretical foundation.

This study is structured as follows. In the next section, we explain content of relevant literature with our study that consist of resources – based theory, dynamic capability, resource orchestration perspective, artificial intelligence, including resource orchestration and AI. Next to section 3, the research method is described about process of data collection and data analysis. Then, the result of analysis is presented in section 4 and conclusion is in section 5.

Literature Reviews

Resource–based theory and dynamic capability

Resource – Based theory (RBT) described in resource perspective which is essential to build competitive advantage for organization. Resources are defined to include all the assets which are controlled and manipulated by an organization, including physical, human, and organizational resources. The characteristics of resources that create competitive advantage to organization are valuable, rare, inimitable, and non-substitutable. Additionally, it allows company to improve internal performance through strategic using them [3]. Moreover, these resources entail firm to achieve in competitive advantage by making differentiation from competitor [4]. Later studies, due to high competition of technology industries, RBT perspective is not enough to contribute company in business competition because There are several abilities that firm has to accomplish such as timely responsiveness, flexible product innovation and effective management capability if they

require competitive advantage. These abilities are known as dynamics capability [5]. The dynamic capability described the ability to integrate, build and reconfigure both of internal and external competencies to address rapidly changing environment and achieve new form of competitive advantage [5]. Additionally, the dynamic capability is defined as the identifiable and specific process to manipulate resource into value-creating strategies, including stay in long-term competitive advantage [6].

Resource orchestration perspective

Based on resource – based theory, which is developed to be a resource management framework that specifies process of managerial action to resource to contribute both of value creation for customer and gaining competitive advantage. The processes in resource management framework are structuring portfolio of resources, bundling resources to build capability, and leveraging capability. Each of these processes has subprocess as follow, structuring consists of acquiring, accumulating, and divesting resources, bundling consist of stabilizing, enriching, and pioneering to build capability, leveraging consist of mobilizing, coordinating, deploying to exploit capability. Furthermore, for achieving competitive advantage, synchronizing all of these processes is necessary [7] [8].

Parallel to the resource management framework, asset orchestration is developed from dynamic capability concept. There are two main processes involved in asset orchestration, that are search/selection and configuration/deployment. Each process has subprocess as follow, search/selection is the process of manager's action to identify and invest in asset, including governance them. While configuration/deployment involves providing vision, coordinating cospecialized assets and nurturing innovation of manager's action to support Bundling resource and leveraging capability [7].

As mentioned above, both of resource management and asset orchestration described detail in each point of view and are complemented to be resource orchestration framework to provide a comprehensive of manager's action to resource and capability to achieve organization's competitive advantage [7].

Artificial intelligence

Obviously, both of businesses and academics are extremely interested regarding topic of artificial intelligence (AI) [9]. Even though AI has been a popular topic for several decades, there is not yet a definition that is universally accepted definition, including in the literature. The definition of AI has been identified in several studies in various ways, but there is one study that integrate several definitions of AI and conclude the term of AI which provide clear understanding for researcher “AI is the ability of a system to identify, interpret, make inferences, and learn from data to achieve predetermined organizational and societal goals” [10]. Additionally, AI

also is a system which can extract insight from data and autonomously action from objective setting [10].

The AI themes consist of rule – based programming, machine learning, deep learning and representation learning techniques, that are used to perform task in different way toward user objective [11]. Each technique is categorized by the dependence of the human on establishing rules or identifying features in order to solve a problem. Rule – based programming is a basic AI technique which is programmed by domain expertise to process following the rule. Machine learning is a technique that enable machine to learn, extract pattern from historical data to acquire their own knowledge and perform without being programmed, in which require human to identify and hand – design features for algorithm [9] [11]. Representation learning is a type of algorithm in machine learning that has a capacity to learn and mapping feature in order to provide the useful information such as clustering algorithm, but still need human to put features into algorithm [11]. Deep learning is a type of representation learning, but they have powerful learning ability through multiple layer processing from input data and require identifying simple feature from human [11].

In the organization context, AI technologies are widely applied into a business to transform organization process [12]. Thus, the objectives of AI adoption in business are to create business value, enhance organization performance, build competitive advantage etc., in which are deployed through each business function [12]. In order to reach benefits from AI, there are two primary ways, one is substitution into the same functionality task which human are doing, another one is complementation between human and AI to perform task better [13]. Due to AI capability that able to handle with massive dataset accurately [14], AI can improve organization performance through process automation which is manual or routine job [10] and enhance decision – making process through revealing insight from data to support analytics function across various department in organization to achieve the best decision result [15]. Additionally, there is another view to gain benefits from AI technologies by utilize them across business function [16]. For example, regarding to sales or marketing aspects, AI – Based CRM allow organization to understand customer deeply and able to acquire, retain, engage, service, including manage them as effective [14]. Moreover, AI can be utilized to shift capability the others activity in organization such as operation, maintenance, production, planning, service, supply chain etc., by prediction, optimization, forecasting techniques which is a machine learning capability [12].

Artificial intelligence and resource orchestration

as the mention above, resource orchestration perspective was developed to explain about manager's action how

to manages resource across organization to achieve in creating value for customer and competitive advantage [7]. Apply to the AI context, to acquire and utilize AI in order to create competitive advantage for organization, several research identified the essential resources to build AI effectively into three categories as follow, tangible resources, human resources and intangible resources [10]. Tangible resources consist of data, technology, and basic resources, while human resources refer to business skill and technical skill, for intangible resources involve coordination between department, organizational change capacity and risk proclivity [10]. In addition to the key resources that affect potential of AI, how to orchestrate them is also significant. Consequently, the resource orchestration is appropriate topic to explain about the fit action to build AI potential [17]. Thus, this study applies resource orchestration perspective to identify the managerial action toward key resources related to acquire and utilize AI in order to allow organization to gain competitive advantage.

Research method

Research approach

This study is purposed to apply qualitative research approach to investigate and address research question. This method allows a researcher to gain deep insight data to analysis and conclude in this topic. Moreover, the result can be guidelines for business and entail firms to understand the process to create value from AI. Thus, given the qualitative method, interview person who works at the AI – related organization was appropriate method and adopt in this study. For interview method, semi – structured interview was selected to collect data, in which have main question to focus on using resource orchestration perspective toward AI, because there is possibility to obtain unexpected insight information from interviewee and can be valuable information to analysis and conclude data. Additionally, we took notes information from interviewees during the interview in order to accurately analyze and record audio to trace back if we have permission. Therefore, this study is expected to acknowledge how to successfully utilize AI in an organization and encourage the guideline framework for practitioner.

Data collection

In order to obtain useful information for building practical framework as we purposed, we collected data by interview employees at company which emphasize using AI technology to improve organization performance so that we can explore in resource orchestration perspective with AI. We interviewed three companies that take 60 to 90 minutes through employees who are position higher than manager because they can provide comprehensive and insight data for us. Three companies including sales and distribution, financial technology and manufacturing

industries, were selected because they already use AI to create value for their companies. Thus, the main questions which allow us to understand resource orchestration related to AI to create competitive advantage as following:

- In organizations, what AI technologies/techniques are used to improve business function and allow companies to gain competitive advantage?
- What are the essential resources for AI applications in an organization and how are they managed?
- What are strategies to identify and invest through those resources?
- What activities/capabilities are developed to support AI Utilization? and why?
- How is AI being utilized to improve an organization?
- What are benefits that companies gain from using AI technologies?

Data analysis

In order to enable to capture comprehensive objective, data analysis was conducted concurrently with data collection. Throughout the interview, we took notes to collect information as text in order to analysis, synthesize and conclude after. The analysis process which we use was text analysis from answers of interviewees. Meaning, words, or themes from document were analyzed by reading to identify issues that involve resource orchestration perspective and AI.

Result

Company A

Company A is a sales and distribution business unit which sales construction products. The company comprises of more than ten thousand employees and has operated for more than 30 years. The state of AI utilization in this company is growing state. They already use machine learning to improve business and decision – making process.

Structuring

The early time, they built platform to collect data because they had many dealers that created orders to their company. Consequently, they had a vast amount of data which is an asset in the organization and saw the opportunity to utilize data to drive business growth. Additionally, there was a trend about data analytics and AI that influenced them to pay attention to it.

They established a data team to manipulate data – related processes that consisted of data analyst and data engineer. In the early phase, they developed some IT people to be data engineers to handle technology infrastructure in order to prepare data and make it ready to use. For data analyst, they recruited people who had technical skills in coding and trained them about business knowledge. In addition, they hired a third party who was a specialist to

create complicated machine learning model.

In the part of technology infrastructure, their original technology solution was on – premise technology that they were moving to cloud solution. They invested gradually by starting with small and scale up when they could create value from utilizing data and resources were ready to use. Additionally, they also used IT to support good data quality.

To succeed in AI utilization, data – driven organization culture was needed to embed into work culture. They change culture by building awareness to business team through data visualization. They used dashboard from historical data to point out the benefits of data to business teams. They started with support team such as supply chain team who always used data to analyze.

Bundling

In part of human capabilities, they extended human skill by providing training course which consisted of data visualization and analytics cases to develop skills set with business team and data team. Additionally, they bundle data – driven culture with work of people in organization to use data to enhance work efficiency.

Since their business was sales and distribution business, the main operation processes that impact on competitiveness of organization and they selected to apply machine learning were inventory management, supply chain and sales. Hence, they utilized machine learning to support those operations to improve business performance after the resources had been built. To improve sales process, machine learning was used to support pricing simulation in order to create competitive pricing strategy and promotion by historical data. Moreover, they enhanced performance for this model through scraping external data. Additionally, Demand forecasting and product analysis was applied to support inventory management and supply chain to save cost. Consequently, the bundling machine learning and business processes allow enterprise increase capabilities.

Leveraging

When machine learning was created, they deployed it into operation processes to leverage it in order to generate value for organization. According to pricing simulation, they utilized this model to enhance competitive advantage through pricing strategy and promotion that allowed company approaches customer efficiently. For the demand forecasting model, they leveraged this model to manipulate stock effectively so that they increase fulfill rate for inventory. In addition, they deployed product analysis model which classified the state of product to build relationship strategy with supplier.

Company B

Company B is a financial technology business who provide services through applications and websites. This

company consists of more than ten thousand employees and has been in business for about 20 years. The AI utilization state is mature state because they have a lot of machine learning models and successfully utilize it to improve organization.

Structuring

They had a vast amount of data in their company but there was some challenge that this data was stored in many sources. So, they needed to consolidate them into center space to point out profit and loss in order to drive company growth through many metrics such as increase revenue, increase customer and reduce cost.

In the early state, they established small data team which consisted of role in field of data such data scientist who was responsible to build and manage machine learning model, data engineer who manipulated with technology infrastructure and business intelligent who created dashboard.

In part of technology infrastructure, they used leading technology such as big query. Our business context changed in daily, So they dared to invest because its capability is appropriate for us in utilization, speed and business needs. In addition, they used data lake to consolidate data and designed data mart to provide good quality data. They also had tools to do machine learning operations. The business team had tools for their operations such as marketing tools for launching the campaign.

They successfully built data driven – organization culture by using data team to approach the business teams. They started with visualization by historical data to build familiarity for business teams. They used dashboards to compare between target and actual in order to provide information for the management team. In addition to dashboard, they also used data to generate value from insight and business strategy. Consequently, the business team saw benefits which were provided by data, they succeeded in using data visualization to enhance business performance. Then, they were interested more in using data and visualization. The data team was also scaled up to better serve the needs of the business.

Bundling

According to the business industry, they used machine learning to improve marketing function in order to increase marketing performance because they focused on revenue and customer. They found a challenge that was how to connect machine learning with marketing system. The solution which they used was to create a whitelist for the marketing team. When result was proved by conversion growth or success in measurement, machine learning was deployed on production server to connect to marketing tool and run automate

They enhanced organizational capabilities through

allowing data team works collaborate with business team to increase decision – making from data usage. They extended human capabilities in the company by allowing data team teach SQL to business teams so that they could query data from database to monitor their performance and create dashboard on google cloud platform by themselves. Moreover, the data team had training courses by self – learning through an online platform.

Leveraging

Machine learning was leveraged to serve business needs, customer needs, reduce costs and solve complicated problems for business. Due to objective, they connected machine learning with marketing tools in order to increase customers, select customer target, campaign targeting, improve communication with customer, build customer awareness, cross selling, up selling and churn prevention. Additionally, they applied automation AI to reduce human workload that reduced costs in company.

Company C

Company C is a manufacturing business which produces automotive goods to sales through dealers and comprises of more than ten thousand employees. This company has been in the market for more than 30 years. The AI utilization state of company is on – growing state. There was AI application in some business processes and plans to extend its use across the entire enterprise. Most of the essential resources are available to support the use of AI.

Structuring

Since the business industry is manufacturing, that main process is production in the factory which consists of several machines, available data which is necessary for building AI is produced from production machine. They also had sales transaction data from dealers. Additionally, they had to set standards and rules of data collection for achieving single source of truth and aligning with business.

They did not have a data team who was responsible to manipulate data and machine learning, but they developed IT people to be data engineers who handle data and technology infrastructure. AI was built by business users or production engineers who were interested in AI applications to improve their process.

Technology infrastructure was hybrid between on cloud and on premise. They used data warehouse on cloud to prepare data for available application and apply tableau to visualize data. Additionally, they had many other technologies for business teams. There was on – premise sales force technology to manage CRM service. The production unit had on – premise ERP technology that manipulated the production system.

Although they did not have a data team who drove data – driven organization culture, they still achieved by making positive competition that allowed business users who

could do data visualization to show their visualization at all meetings. Consequently, other business users were interested in data utilization and study about data visualization and data analytics. In order to achieve this approach, they used the same tool throughout organization because it contributed self – learning within organization.

Bundling

They increased human capabilities through bundling data visualization and analytics skills with business teams in order to create better information and insight. Additionally, they allowed business users to explore data in data warehouse to see what data was stored in order to contribute data utilization.

They enrich business performance for several processes in the enterprise by bundling AI with other systems. In the initial state, object detection was utilized to solve complicated problems in production. Predictive maintenance was also used to support the maintenance team. RPA which was controlled by the IT team was applied to support manual tasks. In the next step, they planned to launch several machine learning models to support other teams that consisted of demand forecasting models for planning teams, customer prediction for sales and marketing teams.

Leveraging

Several problems in manufacturing generated enormous costs and inefficient production process. Hence, they leveraged AI such as object detection, RPA and predictive maintenance to achieve competitive advantage through improving their production in order to reduce costs, produce goods more efficiently and reduce errors caused by humans. In the next step, they planned to leverage machine learning models such as demand forecasting to support planning strategy, and customer prediction to support sales and service strategy.

Discussion and conclusion

Discussion

This research aims to study how the company utilizes and manages AI and related – resources to create competitive advantage based on resource orchestration perspective. According to our result, essential resources for AI adoption are identified, including human skill, data, technology infrastructure, data – driven organization culture, in the structuring phase. In the bundling phase, there is extending skill capabilities through bundling training courses from third party with people in company. Additionally, AI is built by bundling data, technology infrastructure and human skills, and connect to operation processes to enhance business performance. In the leveraging phase, they leveraged AI to achieve company objective through serving business needs, customer needs, increasing the number of customers, increasing revenues, reducing costs, replacing human for routine tasks, increasing production

efficiency, reducing error from human and supporting business strategy. However, there is a difference of manager's action about resources management at each stage due to readiness of organization, readiness of resources, business industry, organizational context, organizational culture and background of manager.

Structuring

For essential resources needed for AI application, readiness of data is different for three companies and preparation approach is also different at the initial state. Company C has the highest data availability because they have machines to generate data automatically, while companies A and B have to deal with their data to make it available because the foundation of organizational management is different. Company C is the only one who does not establish data team because executive team does not approve, but they still successfully build data – driven culture by positive competition method, while company A and B establish data team who drives data – driven culture by recruiting human. Additionally, Company B and C build AI by themselves, but company A acquires third party to deal with it which is complicated machine learning because they lack people who are specialist.

Bundling

The three companies have quite similar approach to bundle resources. Company A and C acquire third party for training course to extend human capabilities about data visualization and analytics skill, while company B use online platform for training skill through allowing data team study at anytime by themselves in order to create strength for their team. In addition, company A build complicated machine learning models by bundling third party who is specialist and their resources, company B allow data team manipulate machine learning and company C allow business user build AI. There is a different approach for creating AI of the three companies that depend on readiness of organization. For AI utilization, they bundle AI with core process of their business.

Leveraging

They leverage AI to improve core operation performance that differs depending on the industry of their business. For company A and B, AI is mostly applied to complement the work of humans in order to improve decision – making process of human for better result. Company A use AI to support sales and inventory function for increasing revenue and controlling stock because the company is a sales and distribution business. For company B, which is in the financial technology industry, they apply AI to mainly support marketing function in order to increase revenue and the number of customers. For company C, which is in the manufacturing industry, AI is mostly used to reduce human workloads who are routine workers. They utilize AI to improve production efficiency, reduce errors, and reduce costs, that is their core process.

Managerial implication

From our result, the three companies' approaches to using AI were quite similar although they were different in business sectors. Hence, we proposed a guideline framework that was easy to understand and apply for organization as figure 1. The guideline is a procedural process derived from interview analysis in which will help companies who will implement AI and do not know how to start.

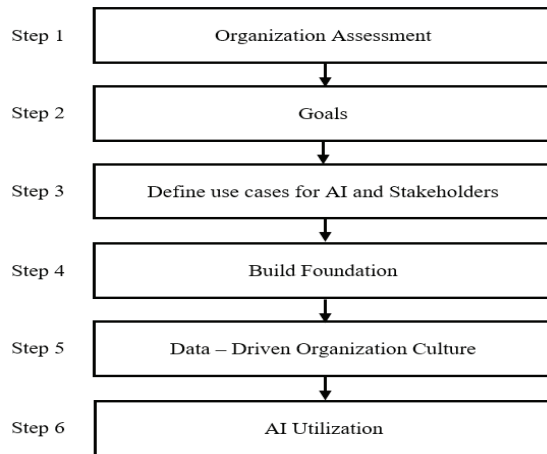


Figure 1. AI Utilization Guideline Framework

The first step is organization assessment to acknowledge what the core process of the business delivers enormous value for organization that is prioritized to implement AI, and readiness of resources for AI application in order to identify what resources are not available to use.

The second step is to define goals, objectives, problems, questions or business needs that relate to the organizational core process in order to create high business potential and competitive advantage by allowing AI to help company to achieve them. According to the interviews, most of goals from interviewees were a thing that would improve the company such as increase revenue, decrease cost, increase the amount of customer, solve production problem, improve decision – making process and increase business operation efficiency. For example, since our business is service application, the core process related to business competitiveness is the marketing process. To create organizational competitive advantage, the objective is to increase revenue by improving the marketing process.

The third step is to define use cases for AI that make company goals complete, stakeholders who involve in use case. For example, the goal is to increase revenues, use case related to goal that should be applied is cross sells, product recommendation, campaign targeting etc. Then, stakeholders in this use cases are data teams who manage data, building machine learning for the use cases and communicate with the other stakeholder, marketing teams who apply the use cases in operation process and

management team who approve project and support budgets.

The fourth step is building a foundation which contains essential resources involved in AI adoption such as data, human skill, data team and technologies infrastructure in order to support the use cases that are selected. For example, datasets which need to be used for the use cases are prepared and consolidated into available storage in order to build machine learning. Data teams are established to manage data and build machine learning. Additionally, data teams have to know business knowledge because they will build machine learning better and can communicate with business team. Technologies infrastructure need to support data team and marketing team such as data lake, data warehouse, data mart, marketing tool etc.

The fifth step is to create a data – driven organization culture that the business team acknowledges and apply data to support their activities for better business performance. Additionally, AI applications for the business team will be easy to integrate into their working. Change management is required in this step because many organizations have been in business for a long time that business teams work mainly based on experience and are not interested in using data. Hence, this step depends on the way to approach of manager who responsible for the project and other management team to support each other in order to achieve in data – driven organization culture. For example, to make the marketing team realize the benefits of data, we allow the data team to generate dashboard and insight from historical data for the marketing team that use to improve their decision – making process. Additionally, we provide training by teaching from data team such as SQL or visualization in order to allow them to manipulate data with themselves.

The sixth step is AI utilization that is built by data team or some the business team to drive organization to succeed in their goals. After data – driven organization culture has been successfully created in company, AI application is easily embraced by the business team because benefits of data are proved by better performance. For example, the use cases for machine learning which are defined at the second step are cross sells, product recommendation and campaign targeting that data scientist will train machine learning model for the use cases and connect to marketing tools in order to allow marketing teams use it to achieve goals. In addition, the use cases are also explained by data scientists to marketing teams about what the use cases are, how to use them and what its benefits are in order to utilize it effectively.

Conclusion

In this study, resource orchestration perspective was used as a theoretical foundation to research how AI and related – resources were managed from three companies. Semi – structure interviews method was applied in this study to gain comprehensive insight from three experts who apply AI in their organization to improve business and come from different of business area that consist of sales

and distribution, financial technology, and manufacturing. According to the result, the important factor that affects the differences in AI utilization and related – resource management of each company is organization readiness, organizational context and business industry. Although the three companies are from different industries, they bundle AI with their core process and leverage it to achieve organization competitive advantage.

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Modelling the Constructs of Municipal Solid Waste Management in Smart Cities in India: An Empirical Study

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Abstract

The budding concept of smart cities (SC) is gaining high attention from past few years. It has become a center of attraction through various job opportunities, exposure towards sustainable and eco-friendly lifestyle, planned settlement, and connectivity across the world. But with the passing years, the cities are witnessing an increase in the concentration of population, economic activities and demand for resources leading to increase in the quantity of Municipal Solid Waste (MSW). Therefore, the present study aims to explore various aspects of sustainable Municipal Solid Waste Management (MSWM) in smart cities.

Keywords

Smart cities; Waste segregation; Municipal Solid Waste Management (MSWM); Environmental awareness.

1. Introduction

Municipal Solid Waste Management (MSWM) is considered as the prominent global issues in terms of Smart Cities (SC). Generation of waste is the result of unsustainable lifestyle and increased population with high demands (Gusti,2016). Human activities and consumption are a part of the society lifestyle and therefore, it is difficult to separate it from waste management. SC culture influences the increased volume of wastes resulting in problems towards health and society (Soesanto et al.,2021). Over the time, Municipal Solid Waste (MSW) has grabbed attention regarding challenges faced due to the mismanagement of MSW in the SC. Keeping the current situation in mind, sorting of waste is an important factor in reducing the MSW generation (Nguyen et al.,2021). Based on this, segregation at source is of paramount importance which can improve the processing of waste. But due to lack of knowledge and concern about waste segregation people fail to participate in the management of waste which further remains untreated (Soesanto et al.,2021).

In India, MSWM is designed as multiple tiers comprising of each tier under different government bodies. The tiers are divided at every level under Urban Local Bodies (ULBs), State Government and Central Government

which designs the favorable legal regulatory framework and proposes the policy framework required for the particular SC respectively (Priti and Mandal,2019). The role of government in maintaining the efficient MSWM remains unrecognized. The main objective of the study is to model the constructs of MSWM in SC. Although, many programs have been implemented in SC worldwide, but their contributions using Structural Equation Model (SEM) needs to be further explored. SEM helps in finding relationships among variables of framework. This study helps in determining the factors to improve the quality of supply chain issues like source segregation, collection, transportation, processing, recycling for the systematic management of MSW.

Therefore, the present study has developed the following research questions:

1. What are the important constructs to model MSWM system in the proposed SC in India?
2. How are the important constructs to model the MSWM system are analyzed?
3. What are important practical managerial implications of the study?

Based on the above research questions, the following objectives of the study have been derived:

1. To identify the important constructs to model the MSWM system through literature survey and experts' opinions.
2. To validate the model proposed in the study, IBM SPSS AMOS 26 version has been implemented.
3. The practical managerial implications are highlighted to facilitate the implementation of the model at the policy and decision-making level.

The rest of the paper is as follows: Section 2 presents the constructs from the existing literature point of view and development of hypotheses. Section 3 and Section 4 covers research model and research methodology. The result and discussions are presented in the Section 5 and Section 6 considered managerial implications of the study. Finally, the conclusion of the study is presented Section 7.

2. Literature review and hypothesis development

The constructs to model the MSWM system with respect to the proposed SC in India are identified through extensive literature review and support from experts. The following constructs in the present study are discussed as follows:

2.1 Waste Segregation at source

Waste segregation helps in separating the waste before it is mixed and disposed in an untreated manner. Waste segregation helps in separating the recyclables and sending the remaining wastes for further processing. Lack of awareness and attitude of communities is playing a negative role in failure of waste segregation and the benefits of segregating. Waste segregation can decrease the pressure on landfills and disposal costs (Ngullie et al., 2021). Therefore, the following hypotheses is proposed:

H1: Waste segregation at source positively influences attitude of community participants

2.2 Environmental knowledge

The degradation of the environment occurs mainly due to the human activities. To fulfil the demands of the increasing population environment is facing various side effects. To protect the environment, public attitude plays a very crucial role because attitude can influence on certain decisions for protecting the environment and bringing about a change by the concept of Conservation. Similarly, waste management is another big factor that can be looked upon seriously but due to public attitude less involvement is witnessed (Samputri and Safitri, 2020). Therefore, the following hypotheses is proposed.

H2: Environmental knowledge positively influences attitude of community participants

2.3 Favorable legal and regulatory framework

MSW (Management and Handling) Rules, 2000 is the

most effective legislation regarding waste management which further replaced by SWM Rules, 2016. New rules added the management of waste around areas such as urban settlement, commercial zone, institutional zone, healthcare and public wellness centers. Community attitude towards joining hands with the government can provide successful results in management of waste thereby keeping the surrounding clean and green (Vivek, 2021). Therefore, the following hypotheses is proposed.

H3: Favorable legal and regulatory framework positively influences attitude of community participants

2.4 Project feasibility

Project Feasibility talks about the various factors that needs to be determined if it has a strong content. Project helps to determine the problems and challenges and come up with solutions for further implications. Project can help in spreading awareness regarding management of waste in SC. Community attitude can play a major role by understanding the concept of managing the waste and participating in clean drives for cleaner environment (Bernstein, 2004). Therefore, the following hypotheses is proposed.

H4: Project feasibility positively influences attitude of community participants.

2.5 Community attitude

From the perspective of environment behavior, several researchers stated that public involvement towards waste management is observed, if they have the willingness towards the betterment of the environment. The individual behavior highlights the positive attitude towards management of waste that invites other group of people to join (Ulhasanah and Goto, 2018). According to Zang et al., 2015, attitudes are subjective norms that are related to behavioral control, various situation-based factors and positive intention that can predict the waste management behaviours. Therefore, the following hypotheses is proposed.

H5: Community attitude influences behavior intention of the individual.

3. The research model

The proposed model in the study (shown in Fig. 1) highlights the effects of 'Favourable legal and regulatory framework', 'Environmental knowledge', 'Waste segregation' and 'Project feasibility' (independent variables) on 'Attitude' (mediator). The mediator (attitude) in turn affects the behavioural intentions of community participants. The constructs in the present study are considered after a careful identification from extensive survey of literature and support from experts.

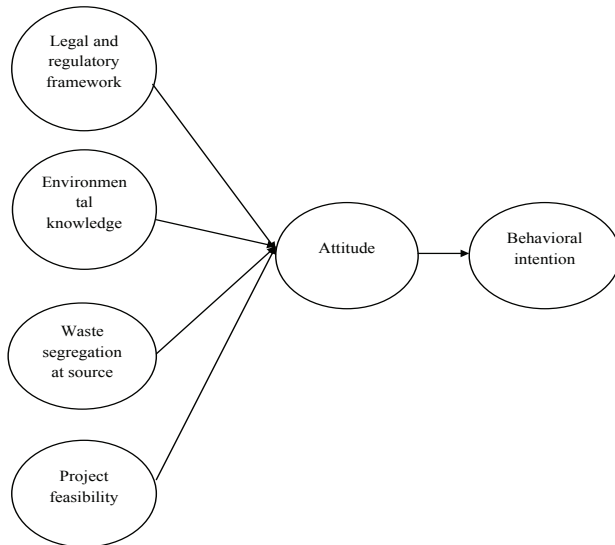


Fig 1. The proposed model in the study

4. Research methodology

The items of measurement of the constructs of MSWM are considered after careful survey of relevant literature. The items are measured on a Likert scale ranging from 1 to 5 (strongly agree to strongly disagree respectively). A total developed in the study are considered in the present study after conducting a pilot survey.

4.2. Data collection

To measure the constructs of MSWM, the data is collected from across the proposed smart cities across India. In order to ensure representative sample, the data is collected from residents residing in the proposed smart cities in India. In the present study a set of questionnaires are developed for the residents living in respective municipalities.

Table 1: The profile of the respondents

Respondents	Re-sponses	Respon-dents	Age (in yrs.)	Experi-ence
Community participants	174	44%	18-65	Nil
Nodal officers	98	36%	26-54	8 years

The community participants for the survey are contacted in person and the nodal officers are contacted both in person as well as through email. The email linked to the survey and google forms have been used while sharing questionnaire with the respondents. While collecting inputs from the respondents, they were assured of their confidentiality and in case difficulty in filling the questionnaire, they are asked for peer assistance and to contact project executives at their disposal. A total of 1350 respondents are contacted and out of which 456 agreed to participate in the survey process. The final data inputs for the survey are received from 272 participants and the response rate for the same is found to be 20.14 percent.

4.3. Exploratory factor analysis (EFA)

The measurement model of the study is validated using the exploratory factor analysis (EFA). The EFA considered the items of measurement whose factor loadings are found greater than 0.700 (Hair et al., 2017). In the process of EFA computation using the IBM SPSS AMOS 26, the Bartlett and Kaiser-Meyer-Olkin is taken into account for reliability and validity of the parameters. The results of the Bartlett and Kaiser-Meyer-Olkin found KMO = 0.892, $\chi^2 = 15962.637$ and $df = 861$ which is found to be satisfactory for a study having the sample size of 272.

4.4. Confirmatory factor analysis (CFA)

The IBM SPSS AMOS 26 version is used to compute the Confirmatory Factor Analysis (CFA). The CFA is implemented and the results found that that $\chi^2 = 1272.647$, $df = 476$, $p = 0.00$, $\chi^2/df = 2.779$, RMR = 0.055, GFI = 0.901, AGFI = 0.870, NFI = 0.900, TLI = 0.937, CFI = 0.915, RMSEA = 0.052. PCLOSE = 0.026. Hence, the CFA considered only those items to measure the constructs whose factor loadings whose values are found greater than 0.700. The CFA resulted in shorting and validating the development of scales. The findings of the CFA conform to the model fit indices and is found to lie above the threshold value (Bryne, 2013).

5. Results and discussions

The findings of the study suggest that waste segregation at source positively impacts the community attitude towards MSWM with path coefficient value of 0.32, t value of 4.532 and significance level at 0.001 (shown in Table 2). The study of Thakur (2021) also stressed on segregation of waste as an important criterion to sort and management municipal solid waste (MSW). Environmental knowledge positively impacts the community attitude towards MSWM with path coefficient value of 0.19, t value of 1.983 and significance level of 0.047. The study of Vivek (2021) also highlighted the importance and significance of environmental knowledge as a

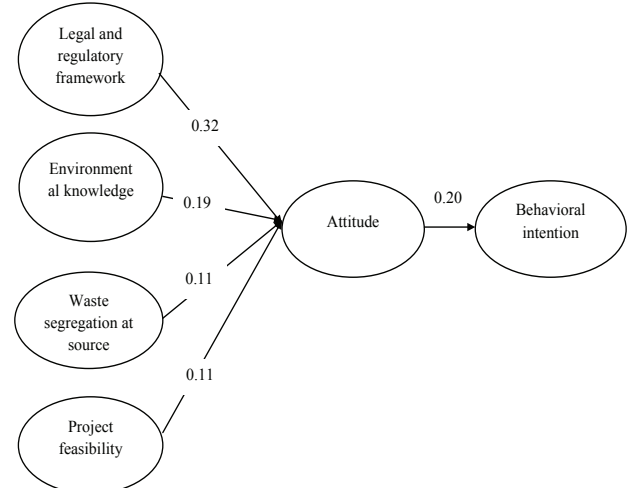


Fig 3: The validated model in the study

Critical driver to influence community attitude towards MSWM. Favorable legal and regulatory framework positively impacts the community attitude towards MSWM with path coefficient value of 0.11, t value of 5.762 and significance level at 0.001. Project feasibility positively impacts the community attitude towards MSWM with path coefficient value of 0.11, t value of 1.975 and significance level at 0.048. Community attitude positively impacts the behavioral intention towards MSWM with path coefficient value of 0.20, t value of 3.261 and significance level at 0.001. In a similar fashion, the study of Ulhasanah and Goto (2018) highlighted an important role of community in the enhancing behavioral intention of community members towards MSWM.

Table 2: The path co-efficient to validate the model proposed in the study

Path in the structural model	Path coefficient	-Value	Significance level	Outcome
Waste segregation at source Community attitude (H1)	0.32	4.532	0.001	Accepted
Environmental Knowledge Community attitude (H2)	0.19	1.983	0.047	Accepted
Favorable legal and regulatory framework Community attitude (H3)	0.11	5.762	0.001	Accepted
Project Feasibility Community attitude (H4)	0.11	1.975	0.048	Accepted
Community attitude Behavioral intention (H5)	0.20	3.261	0.001	Accepted

6. Managerial implications

The study has developed important practical implications for policy and decision makers as follows:

- The decision makers have to develop policy framework that emphasizes upon segregating the waste generated source at the community so that adequate MSWM is feasible.

- The administrators and policy makers have to rethink and generate rethink and generate mass awareness campaign to educate the community stakeholders to properly dispose waste and the subsequent management of MSW.
- Based on the MSW (Management and Handling) Rules, 2016m, the public administrators have to ensure that the policy of MSWM are adequately executed at the grass root level that binds together all the stakeholders of MSWM.

7. Conclusion

The present study is an effort to model the constructs of MSWM in the proposed smart cities in India. The study identified the modelling constructs from literature survey and experts' suggestions. The items to measure the constructs are validated using the measurement model by employing EFA and the structural model of the study is validated using the CFA through IBM SPSS AMOS 26. The findings of the study validated the developed hypothesis as well as the MSWM model in the study. Finally, the study presented the implications for administrators and policy makers for enhanced MSWM.

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Governance Implications of Platform Strategy¹

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Abstract

The platform strategy is considered to be important for organizations to enhance its value offerings to customers. Although the platform strategy could bring the opportunities to the organization, it could also bring challenges and risks. This research describes how a traditional manufacturing company seizes the platform opportunities while coping with challenges and risks. The purpose of this study is to provide specific guidelines and a framework for the incumbent's platform based digital transformation. Since this research aims to provide guidance for the governing body of organization who is accountable for its platform strategy, this research deals with governance issues rather than technologies themselves.

Keywords

Software Platform, Strategy, Capabilities, Governance

1. Introduction

In today's economy, many successful business models take the platform strategy [Higiui et al., 2017]. Defined as “the extensible codebase of a software-based system that provides core functionality shared by the applications that interoperate with it and the interfaces through which they interoperate [p. 675], the platform permits firms to deliver dramatically enhanced values to the customers through the software subsystems added on to the platform [Tiwana et al., 2010].

Realizing the global economy is dominated by a few platform companies, many incumbents have tried transforming itself into a platform-based company [Sebastian et al., 2017; Davenport, 2013]. Emphasizing the importance of platform strategy, Gurbaxani [2016] asserts that “executives must view their business as software companies” and “reimagine with software to create real opportunities [p.6].” Since such platform-based transformation requires dramatic changes in firm's capabilities, process, human resources, operational structure and culture, 63% of executives reply the importance of the board involvement [Rickards and Grossman, 2017].

Since the executives and board members do not have sufficient IT knowledge, IT governance guidelines is needed for them to direct the organization properly during its platform based digital transformation [Ransbotham et al., 2017; Rickards

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and Grossman, 2017]. As Nolan and McFarlan [2005] indicated “the lack of board oversight for IT activities is dangerous [p. 98].” In many cases, IT governance has been neglected by the board and considered to be the job of CIO.

The research questions put forth are:

- what are the opportunities, risks, challenges that the organization faces in relation with the platform-based strategy?
- what are the governance implications of the platform-based strategy?

This research intends to provide guidance and a framework for the executives and board of the organization (the governing body [ISO/IEC 38500, 2015] hereinafter) who is accountable for its strategic use of IT for its platform-based digital transformation.

2. Literature review

2.2. IT Governance

According to Sa Couto et al. [2015], governance means directing, monitoring and controlling through setting strategies and policies [13]. Being a part of corporate governance [Read, 2004; Trites, 2004], IT governance is responsibility of the governing body [ISO/IEC 38000: 2015]. For use of IT, the governing body not only needs to set rules and policies for the use of IT but also needs to direct the organization with the relevant strategies to dynamically changing environment to stay competitive in the market place.

While the formulation and execution of the corporate strategy can be delegated to the management, the ultimate accountability for the strategic use of IT remains with the governing body. Without the governing body establishing a proper oversight for the IT governance, the company could face competitive risk not using digital technology strategically and thereby not being able to pivot its old companies into the platform based one [Rickards and Grossman, 2017].

2.1 Platform-based business model

According to Iansiti and Lakhani [2014], a business model is composed with two components: “how the organization creates value for its customers and how it captures that value [p.5].” Platform based business model changes both.

In the case of GE’s platform business model [Davenport, 2013], the predictive maintenance that determines optimal schedule and type of the maintenance in advance creates opportunities to their customers by helping them avoid unexpected repair and revenue loss. The platform model captures the value not only through analytics agreement for each customer but also licensing platform and software to the customers.

3. Research methodology

Formulation and execution of the technology-driven platform strategy involves the appropriation of technology within socio-economic environments. Thus, the research exploring how a traditional manufacturing company seizes the platform opportunities can be best conducted with analyses of events and actions of agents over time in those environment [Kim, 2010].

This research employs constant comparative method of grounded theory [Glaser et al., 1999]. This method is useful for investigating complex phenomena with no previous research at present. Data were collected from interviews, web sites, publicly available articles. Interviews were held with key personnel involved in the change process.

4. Case description

Company A, a two-wheel automotive manufacturer, aims to be a smart mobility service company that delivers unique services to their customers by utilizing the sensor data generated from its connected products. In order to do so, the Company A formed a new business team led by the CIO and prepare for the transformation.

For the transformation, it was concluded that the company needed not only to build a digital service platform to collect the driver’s behavior and vehicle status data from its product, but also to find partners that can provide various services by utilizing the data.

However, the Company A did not have sufficient capability for the transformation: while the IT department lacked experiences in platform technologies such as IoT, the R&D department did not have knowledge about service planning. Thus, with the help from an external vendor, the Company A built the platform and found the service partner. With the platform development, the Company A was able to analyze the sensor data and develop various applications for the platform services.

The success of the platform business model depends on the size of the platform ecosystem. As the first collaborative service with an insurance company, the Company A introduced a special insurance contract service to the driver who meet certain safety levels. This service was also considered to induce safe driving from drivers, who otherwise did not care much about safe driving.

For delivering this service, the Company A did not share the raw customer data with the insurance company due to the privacy protection of the individual customer. Instead, Company A calculated and shared the safety score of the customer with the insurance company. In the future, the company plans to share the data with various private companies as well as regional and central government agents for the innovative services.

5. Research findings

Company A understood its competitive dynamics have shifted from the traditional business model to the platform model. In order to implement the platform strategy, the stakeholders in organization such as IT and R&D departments were identified, aligned and engaged with the platform strategy. Roles and responsibilities were defined and the decision-making structure was considered to be established.

The Company A required the technical capability to build the platform and analyse massive amount of data. With the external helps from vendors, the Company A built a digital service platform and technically ready for analysis, application development and ecosystem development.

As shown in the case, the implementation of the platform strategy requires not only technical capabilities but also business capabilities. The platform owner is required to have business capabilities to generate value propositions, revenue structures and alliance arrangement. To generate the network effects, the Company A looked for the organizations that regard the platform data as an opportunity to create and monetize services.

In providing online services, privacy and security conditions were observed. In the case of transfers of personal data to the third-party processors (i.e. the insurance company within the same country), personal data were also protected.

6. Governance framework

From the case findings, this section attempts to derive the guidance for the governing body of organization in pursuing the platform strategy.

6.1 Platform Accountability

In order to implement the platform strategy, the governing body should ensure that relevant stakeholders in organization are identified, aligned and engaged with the platform strategy. To guide platform-based transformation, the governing body ensure that roles and responsibilities need to be defined; and decision-making structures and reporting mechanism must be established [ISO/IEC 38500, 2015].

6.2 Generating network effects and identifying service road maps

Governing body is accountable for the effectiveness of the new business model. Thus, the governing body ensures that its platform offers values to customers and the size of the platform ecosystem is expanded for value offerings. For that, the governing body ensures that proper service road maps are developed; and potential ecosystem partners are identified and incentivized.

6.3 Data conformance and risk management

While there are advantages that customers receive through data-based services, various problems may occur. Since a large amount of personal data such as the driver's location or communication data is created, it may be possible to infer the identity of an individual driver. This in turn may lead to privacy infringement.

Therefore, The governing body needs to establish a committee and make guidelines for privacy and security risk management and protection in providing online services.

In addition, the governing body needs to ensure that personal data and fundamental rights of individuals are protected in the case of personal data transfer to the third-party processors.

6.4 Human resource development

In the case of the Company A, R&D and IT personnel lacked knowledge and experiences in IoT platform development as well as digital transformation. They could develop the platform and started the digital transformation with the help from the outside vendor. Most large companies in Korean manufacturing industry are no different from the Company A. The governing body needs to ensure that the human resource capabilities are developed in the areas of IoT, data analysis, application development and ecosystem development.

6. Conclusion and future research

Inadequate governance of the platform can expose an organization to risks encompassing the lack of human resources; exposure to data privacy and security risks; lost confidence in the platform among stakeholders; and fail to obtain increasing return to adoption [Boudreau, 2010, Wareham, 2014].

For use of IT, the governing body is accountable for the strategic alignment of IT (Strategy), conformance to laws and policies (Conformance), human resource consideration (Human Behavior) and effective performance (Performance) [ISO/IEC, 2015]. This research attempts to provide the governing body with a guidance in relation to the above areas for the successful execution of the platform strategy.

Currently, the effectiveness of the collaboration ecosystem has not been verified. According to studies on the collaboration among traditional companies rather than digital platform, whether the goals of the partners in the collaboration ecosystem are aligned and whether the trust relationship is formed among them, have an effect on collaboration effectiveness (Provan et al., 2008; Vangen et al., 2015). For the future research, effective governance mechanism in a collaborative ecosystem needs to be studied.

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Presentation Tool for Online Meeting Platform: Design the Optimization Online Meeting and Presentation for Business

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Abstract

This research focused on pain of the online presentation for work from the presenters' point of view to design the UI that will support their presentation. This study is based on the design thinking process, the lean product process and the product market fit pyramid [9] principles as the design guidelines. The UI was designed based on the user's pain point and then iterated for three loops of the usability test. The prototype was redesigned upon users' feedback in every iteration. Many presenters appreciate the ability to see their audiences' interaction directly from the screen presenting. The button to manage their hardware status is also required on the presenting screen for quick access. Some features are requested to improve their presentation experiences. It's recommended that all features should bundle into the same location for quick access.

Keywords

Online Meeting Platform, Lean Product Process, Design Thinking, Usability Testing, UI Design

1. Introduction

VDO Conference is a technology created for online meetings where delegates can be accessed over the Internet with devices such as desktops, Laptops, and mobile devices, which supports voice communication, video calls, text messages and share screen [3]. Due to the COVID-19 pandemic since November 2019 [12], there are global treatment measures. Social distance to reduce the spread of disease. People gathering activities have been canceled, including many agencies, step work from home, meetings, presentations, and progress reports. Business training is increasingly being done online. This forces employees to use the online meeting system, especially on the presenter side, which requires a variety of functions, including sharing screens, telling content that requires presentation skills, answering questions, and listening to listeners' opinions. Control the time spent in meetings with clear time frames. And other specific solutions to make presentations go smoothly and produce good results. A good user interface design that supports online meeting presentations can facilitate presenters to deliver efficient presentations [6].

This research aims to design a suitable user interface for online meetings and presentation tools by optimizing the workplace video conferencing and presentation platforms to make them more user-friendly and identify the features that employees find useful/not useful in a meeting setting.

2. Literature review

2.1 Product and service design

2.1.1 Design thinking process

Design Thinking has gained much attention in business, IT, education and medical industries [2] It is heralded as a new users' problem-solving methodology that encourages creativity and achieves innovation and growth. [7] The five-stage design thinking process are:

(1) **Empathize:** research your users' needs.

Empathy is an essential aspect of the human-centered design process. Understanding users through various methods, including observation and in-depth interviews, will make it possible to understand why the user has behaved differently and understand their needs.

(2) **Define:** state your users' needs and problems.

The Define of the design process brings clarity and focus to the design space. Based on what has been learned about the user and the context after going through the user empathy phase, this step is about understanding the pervasive information the designer collects to craft a meaningful and actionable problem statement.

(3) **Ideate:** challenge assumptions and create ideas.

Ideate is a mode of the design process where you focus on creating multiple ideas. To solve the problem that the designer defines from the previous stage. This step is about researching and brainstorming to develop a prototype that will solve the problem for the user.

(4) **Prototype:** start to create solutions.

The prototype stage is to create iterative artifacts to answer questions that bring designers closer to a final solution for users. Initial prototyping designers should be able to develop low-resolution prototypes that are quick and cheap to make but can be used for testing to extract useful feedback from users.

(5) **Test:** try your solutions out.

The test stage is to get user feedback on the prototype created by the designer. It's an opportunity to understand users. Testing focuses on user interaction. When the user doesn't like the prototype, designers should continue to ask "why" and focus on learning about the person and their problem, including possible solutions. This increased understanding helps designers examine usage conditions and how people think, behave, and feel about products. And it also makes a loop back to previous steps in the design thinking process. The designer can perform further iterations and make edits and tweaks to rule out other options. The ultimate goal is to understand the product and its users as deeply as possible.[10]

2.1.2 the lean product process

The Lean Product Process helps to build a product that creates significant user value and meets needs better than every alternative by systematically working through each layer of the product-market fit pyramid from bottom and moves upward through the layers as shown in Figure 1.

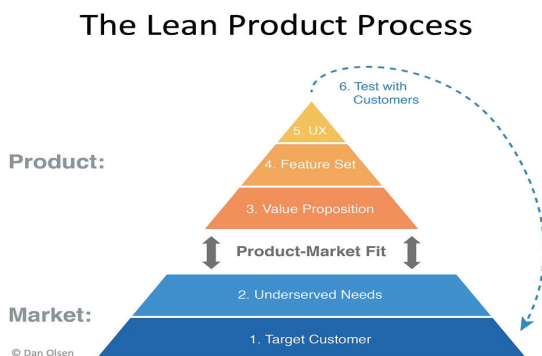


Figure 1- The Lean Product Process

The product-market fit pyramid is a stack of five testable hypotheses divided between the product (solution space) and the market (problem space). The bottom layer represents the target market and the layer above contains their unmet needs. The lower two layers represent your market: the set of people who share a similar set of needs. The product consists of the upper three layers: value proposition, feature set, and user experience (UX).

This step-by-step process minimizes rework and creates rigor in product thinking. The lean product process consists of six steps:

- (1) determine your target customers
- (2) identify underserved customer needs
- (3) define your value proposition
- (4) specify your minimum viable product (MVP) feature set
- (5) create your MVP prototype
- (6) test your MVP with customers

Validate each of these layers with user interviews, surveys, and prototypes. It can guide designers to revise and refine each layer. Product-market fit results from matching unmet or underserved needs with the right product (benefits, features, and user experience).[9]

2.2 relate work

2.2.1 Video conferencing and presentation

Thielsch, M. T. & Perabo, I. (2012) Most of today's presentations are based on PowerPoint (96%, Excel 33%, PDF 29%). Computer-based presentations are used for teaching, discussing, meeting, and meeting needs from different students and working areas. The work side has various requirements, usability compatibility, loading speed. The problem with presentation Software is that it takes a long time to design and prepare Slides and usability is not good enough, especially when speaker presentation functions are often exported to PDF [11].

Arjule John Berena (2013) create a virtual presentation system (Virtual Presentation) and online meetings in a single platform to use in online teaching. Before teaching, a virtual classroom is created in advance. Students or teachers can upload documents for presentations into the classroom. When teaching starts Students can open documents through the system. There is also a feature annotation that can use the pen function for writing or drawing in the system together. In addition, the system also adds other features such as Zoom in, Zoom out, slide controlling or even VDO control on slide online [1].

Hacker, J., Brocker J. V., Handali, J., Otto, M. & Schneider, J. (2020). Use data from Twitter about web conferencing systems during COVID-19 (23-03-2020 to 14-06-2020) Topic-Modeling 3M tweets Web Conferencing System used to create virtual meetings over the Internet. accessible from computer Portable communication devices and many platforms support audio. Video calling, text messaging,

content sharing, screen sharing, and meeting record. The limitations of the web conferencing system are: There are not enough features to use. People with low skills had a hard time setting up the basics of the system, but it was only in the early stages. They are also afraid of opening the camera and feel uncomfortable, because they don't know how to set the camera properly [4].

Karl, K.A., Peluchette, J.V. & Aghakhani, A. (2021) said Function Chat in online meetings is useful, but it might add too much information to participants, especially chat content that distracts from the topic. It will make participants lose focus of information; however, it can increase engagement in meetings as well as polls. Other insights that researchers face is: During an online meeting participants tend to multitask. If they turn off the camera and turn off the mic or when meetings are long time and the content is irrelevant, so they suggest that the camera should be turned on to allow for non-verbal communication, but it might face the problem of internet instability. Inconsistency and privacy. In addition, there are problems with camera angles, distance between camera and face, poor lighting, people not looking at the camera all the time, and inappropriate backgrounds [5].

2.2 Optimizing the video conferencing platform

Nayak, Ronit (2021). Study on how to optimize video conferencing platforms in education. The goal of this research is to understand as-is platform then to identify the various pain points for user in academic setting then get the insight and recommend the better solution for each pain point based on finding. The final goal is about UI designing which is suitable for academic area. This research uses both quantitative and qualitative methods. For quantitative method. There are 313 participants were surveyed. The details are about asking top video conference tools and define on which features are working well and which features are not. Then comparing the top video conference platform from the survey Cisco WebEx, Google meet, Microsoft Team and Zoom are top range of video conferencing platform. For the part of feature definition, the result is

Primary Dock design (control panel) 50.4% requests are always visible. 23.7% requests collapse to a single icon when closed, and another 25% requests a hidden dock that appears on hover/mouseover.

Icon and text Label 50.4% request Icons with visible text labels, 47.5% request Icons with hidden text labels, where text labels appear only on hover/mouse-over and only 1.9% request the Icons without text labels.

Using Accidental muting/unmuting of microphone the questionnaire asks about the how often of using this feature. The Never and only little are the most answers.

Using Accidental switching ON/OFF web cameras the most answers are never. **Privacy concerns** when sharing the computer screen are little and sometimes

The participants also somewhat agree with ease of use, easy to understand and easy to navigate. The researcher also asked about sharing multiple windows there are must have, would probably use, might have and not important. The most of participants said the sharing multiple windows would probably be used in academics. The other significant feature that participant thought it is probably use and must-have are Instructor/Speaker Spotlight and Fixed seating and attendance [8].

3. Methodology

The presentation tool is designed and developed based on the six steps of the Lean Product Process concerning the Product-Market Fit Pyramid [9]. Therefore, the approach used to create the tool in this research described below.

3.1 Target user

The design process begins with market segmentation, where the online meeting platform users are groups of people working in the government and private sectors who use the online meeting platform to present reports, products, and services to customers.

3.1.1 Market segmentation

Our team interviewed and surveyed employees from the private and government sectors on the use of online meeting platforms for presentations. We found that the target user who used the online meeting platform present at least once a week over the past six months and encountered many problems with the presentation during the online meeting is Generation X and Generation Y. Therefore, we focused on **“Employees/Corporate Employees aged between 20 to 60 who use the online meeting platform to present themselves at least once a month.”**

3.1.2 Persona(s)

After the segmentation stage, we defined the sub-target market by generation, presentation experience/skill, and comfort with technological characteristics. We determined two groups of personas by working style, fear, need, technology skill, frustrations, and personality characteristics. Below are our target user personas:

(1) Vienna persona

Personality: Freedom of life, a dream to build their own business, and have money freedom.

Working style: working as a team, turning on the camera to talk and work with customers.

Pain: Not good at oral presentation, must have a script, tense when opening the camera.

Need: Want to present fluently without much practice and relax without being seen by customers.

Constraint: Time limit. The gist of the content cannot be wrong. Technology Skill: Can use technology but can't use the function entirely.

(2) Niwat persona

Personality: Extrovert, Judging, Sensing person. Requires

achievements and achievements to be recognized by others, especially senior management.

Working style: Daily meetings with customers, executives, contractors, and junior team members. He is only fussy with his subordinates.

Pain: Mid-off new tech knowledge.

Need: An easy-to-use, all-in-one tool is essential for meetings or presentations.

Constraint: Tech-Knowledge Sometimes it interferes with presentations.

Technology Skill: Do not familiar with the technology.

3.2 Underserve needs

This step involved identifying users' problems and analyzing product benefits by interviewing two personas focused on identifying the problems and functions necessary for presentation on an online meeting platform.

From the market segmentation stage, the hypothesis or benefits to solve both two personas' problems are discussed and defined by brainstorming below:

3.2.1 Hypothesize

Hypothesis or benefits are separated into presentation side benefits and online meeting side benefits. 5 Viennas and 3 Niwats' scores in the importance and level of satisfaction of all benefits are analyzed to a customer value delivery and opportunity to add value score. The details of the presentation and online meeting.

3.3 Value proposition

The value propositions grid is presented our product benefit to an existing product in the market. The value proposition provides a declaration of intent or a statement that introduces a product to consumers by telling them what the company stands for, how it operates, and why it deserves value to the business.

3.3.1 Prioritize

Referred from Table 1 from the problem state. There are 7 important benefits that decide to be the main benefits of the feature set development. The main benefits are rated below:

- (1) Warns whether the camera is turning on or off
- (2) Know who is asking the question by do not switch platform.
- (3) Quickly and precisely control the microphone on or off
- (4) Present the work in a timely manner
- (5) Know what the next slide show looks like
- (6) Help to define who is key audience (customers)
- (7) Know which audience are the speaker, General participants, and Important people

3.3.2 Kano Model

The benefits are selected and categorized into 3 groups;

(1) "Must have" benefit (2) "Performance" benefit and (3) "Delighter" benefit. An existing production comparison is illustrated in a value propositions grid (Kano Model).

From the kano model, the 16 benefits, identified as a competitive advantage value-added compare with existing product in the market, is selected to develop a prototype feature set in the next step.

3.4 Feature set

In this step, we brainstormed features that could provide each of 16 benefits as possible. Then rate the ROI on the feature and select the feature according to the MPV principle. Use the ROI score to select the feature to develop in the first version and make an MVP roadmap.

3.5 UX Design and MVP Prototype Developing

This step was based on the feature set selection of the previous step. It involved the design of a user interface based on an analysis of the user's interviewing and review of literature to create a MVP prototype by Figma that would perform well on personal computers and notebook computers. After analyzing the user interface design, a wireframe design was created for a summary of the screen elements of the online meeting platform, such as the meeting room screen, on/off camera cam, on/off the microphone, presentation sharing elements. The initial prototype call version 1.0 which involved to the personas both of **Vienna** and **Niwat**. The main feature was selected based on prioritize benefit.

A screen sharing layout was selected first to develop in UX design concept in this step. **The Script View layout** for **Vienna persona** and **The Present View layout** for **Niwat persona** which includes presentation screen and slide, camera and microphone notification, on/off camera and microphone during share screen, mute all participants function and time countdown and notification function as shown in Figure 2.



Figure 2 - The Present View Design (version 1.0)

3.6 Useability test

After the MVP prototype had been developed, its usability

was tested to evaluate users' attitude toward its practical use, easy to use and ability to perform¹ of three main benefits, including (1) Must have benefit (2) Performance benefit and (3) Delighter benefit. It was tested three rounds for this research.

In each round, we tested and interviewed more than five participants [9] from three organizations in Bangkok. We chose a new participant who had never seen or given feedback on a particular version of the prototype before. The user feedbacks are collected and categorized into three areas, **Feature Set, UX design and Massaging**, for analysis and prototype improvement.

The percentage of feedback acceptance was used to analyze which features should be added to the next MVP Prototype and what areas should be improved in terms of UX design and Messaging first, with negative feedback having the highest score and greater than 50 % will be updated first. Like the Must-have benefits, standard features on online meeting platforms must be improved first.

4. Result

4.1 First usability test

There are 6 interviewees in the first round. The user can test from the beginning until the end. After completed testing. There are positive and negative feedbacks. In this case researcher will focus on the negative feedback to develop the next prototype version for the next round.

There were negative feedbacks on missing features, causing a gap between market side and product side in product-market fit pyramid. Therefore, new benefits and features are added. Three new benefits are

- (1) on/off microphone notification
- (2) highlight or focus content on the shared screen and
- (3) help user adjust their appearance to look good while opening camera cam.

Although a pointer, a highlight pen, a zooming tool and face filter will be required by interviewer, in order to the technical limitations of the prototype creation, we were not able to create that feature to be tested.

4.2 Second usability test

The main action of this round is to improved prototype version 1.0 to version 2.0 by adjusting the original icon

share screen the letter “Share Screen”, added the End Slide Show command button to be placed in a prominent position, added the slide page change with keyboard. And by clicking on the slide, the presentation timeout notification is set to 3 minutes before the timer expires and 10 seconds before the timer expires. Then do the testing by using 7 participants in this round.

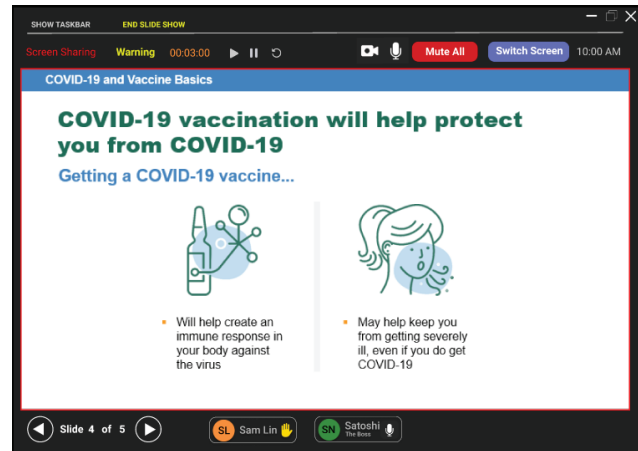


Figure 3 - The Present View Design (version 2.0)

In this round, the results have shown that the negative comments about UX design and Massaging which more, mostly negative comments about the end slide show, sharing status, timed reminders, and mute all function.

4.3 Third usability test

The main action of this round is Prototype version 2.0 has been modified to version 2.1 by adding chat and participant visibility features during presentations, add reminders for remaining time in presentations, adjust Mute All warning and switch screen during presentations to Excel as show in Figure 4 and 5.

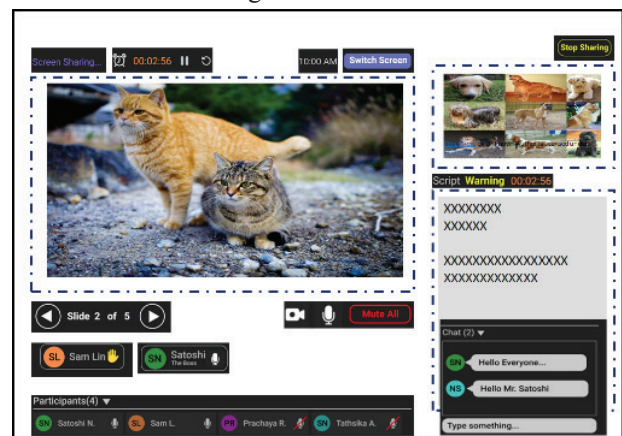


Figure 4 – The Script View Design (version 2.1)

¹ Usability test's link for MVP Prototype 1.0 : https://www.figma.com/proto/baignBvSPBZd5dXaifyKgL/OnlineMeet_Present?node-id=416%3A3&starting-point-node-id=416%3A3&scaling=scale-down

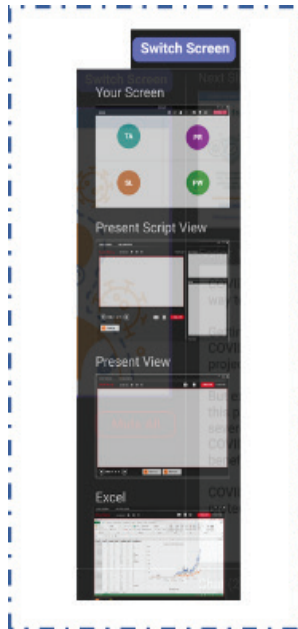


Figure 5 – The Switch Screen Design with four difference screen sharing. (version 2.1)

The different 7 participants in this round were tested and feedback as same as round two. The summary of user feedbacks from three round useability test as shown in Table 1.

Table 1 - Summary of User Feedbacks

Feedbacks	% No. of acceptance	User portion
Feature		
+ Usage of “Script View”	90%	18 of 20
+ Know who is raising hand during the presentation	80%	16 of 20
+ The Ability to chat during the presentation	71%	5 of 7
+ Countdown to presentation time-up	70%	14 of 20
+ The ability to access participant list	57%	4 of 7
+ The ability to switch screen sharing to other programs	57%	4 of 7
+ Know who is asking during the presentation	55%	11 of 20
+ Ability to mute all participants during presenting	45%	9 of 20
+ Fast Screen Sharing and mode switching	45%	9 of 20
+ Gather all essential commands to control the meeting and presenting	35%	7 of 20
+ Next slide preview	35%	7 of 20

Feedbacks	% No. of acceptance	User portion
Feature		
+ Description of participant	30%	6 of 20
- Request the slide pointer	45%	9 of 20
- Request the slide marker	25%	5 of 20
- Request ability to adjust script font	25%	5 of 20
- Request buttons' hovering description	20%	4 of 20
- Request user's small VDO frame of themselves when open the camera	20%	4 of 20
UX Design		
+ The ability to control the meeting and presenting from 1 screen.	70%	14 of 20
- Request all command buttons to align at the same area	30%	6 of 20
- Access/Close chat and participant by toggle mode	28%	2 of 7
- The participant area on the presentation view too small	28%	2 of 7
Messaging		
- Not understand the aim of the “Play/Pause/Reset” button	45%	9 of 20

+ Positive Feedback

- Negative Feedback

5. Discussion

From all 3 Usability testing, it was found that most users liked the design of **Script View** where presentations can see shared slides, next slides, prepared scripts. presentation There are interfaces to observe and command frequently used meeting controls such as Microphone, Camera on/off, Show Chat/Participant, clearly show participants who raise their hands and open the microphone for asking the questions. Some Persona, Niwat users don't normally rely on Scripts to present. Some of them favor the design of the script view presentation, arguing that they're like a backup solution for solving problems if they're so distracted that they forget what to present.

The new interesting features are about audiences' interaction such as people raising their hands and asking clearly. Direct access to chat and meeting attendee lists from the presentation page. They don't need to switch windows from the presenting program to the VDO Conference program to access this information. Also, Countdown timer which helps presenters manage

presentation time better, switching shared programs during presentations without Stop sharing, and new start sharing, and Mute All Participant that solves the problem of noise from forgetting to turn off the mic quickly even if you are not a meeting host.

However, there are also important features that are missing that are Hovering description for describing buttons, Pointer, Marker on presentation slides. In terms of user experience, many users have to switch their windows while presenting in order to check their participants' feedback or manage their configuration such as unmute their microphone (if they had forgotten before continued their presentation). Some users used the second screen to deal with this problem. The design that helps them directly access the buttons frequently use to control meetings on the presentation screen is appreciated due to quick access and reduce their unnecessary task. Moreover, all of the meeting and presentation control buttons should align or bundle into the same area for quick access and reduce time to look for the button by the new user.

6. Conclusion

This research presented the UI design that supports the presenter when presenting their slide or the other content via the online meeting platform. Based on the product development process, the pain points were gathered and analyzed to create the MVP prototype. After three loops of MVP prototype usability testing, many presenters (participants) are interested in the design and features that could show the audience interactions on the presentation page such as the ability that identify the audience who's raising a hand or asking the questions, ability to directly access the chat and participant list. The features that could support their presentation such as the countdown timer and switch screen sharing without the process of stop sharing then start sharing again. The features that could help them manage the meeting such as the ability to mute all to reduce unintentional power-on microphone noise from the attendants. Moreover, the base presentation or meeting features are still important: the hovering description of the command buttons, the slide pointer, and marker.

In terms of design, users appreciate the ability to control presentations and access basic meeting features without having to switch windows. It is further suggested that meeting and presentation controls should be combined into one for quick search.

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Text Analyses of the Ambassador Role of K-Pop Celebrities in Corporate Marketing

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Abstract

The K-pop trend, led by BTS, has been highlighted worldwide. The popularity of K-pop has made many companies recognize that K-pop is one of the crucial resource for promoting their products and services. Although it has become common to select K-pop singers as models to enhance the brand image and sales, businesses have recently given K-pop singers the role of an ambassador instead of a model. This study analyzes the viewpoints and emotional responses of consumers when K-pop entertainers act as ambassadors and. In addition, by analyzing the differences between the two roles, we will propose an efficient and effective strategic plan from the marketing perspective for companies. In this research, we will perform Textom to collect data and conduct refinement. After that, the weights of keywords will be derived by applying the Term Frequency – Inverse Document Frequency. Next, we analyze N-gram and emotional analysis with the Word2Vec model

Keywords

K-pop, Ambassador, Marketing Strategy, Sensitivity Analysis, Big data

Introduction

After Wonder Girls became the first K-pop singer to top the Billboard chart 100 in 2009 (Oh and Lee, 2013), K-pop started to become a representative culture of Korea. The influence of K-pop, led by BTS, is leading new trends and trends worldwide (Ko and Ahn, 2022) even passing the popularity of the previously formed idol groups such as the Big Bang and Girls' Generation. Some researchers have evaluated the popularity of K-pop as a temporary phenomenon (Samsung Economic Research Institute, 2005), but the popularity has grown dramatically by favoring the systematic production process of entertainment companies and the entry strategies for foreign markets (Lee and Heo, 2013).

In the case of the K-Con festival held in LA in 2022, 90,000 fans participated on-site, and more than 7 million fans from 176 countries enjoyed the concert through online streaming services (Korea Creative Content Agency, 2022). Considering that the festival was a face-to-face event for the first time in three years due to COVID-19, the popularity of K-pop among foreign fans is still significant. It is evaluated that the popularity

of K-pop as a whole has surpassed the popularity of a specific group or entertainment company and formed a new culture or content industry group called 'Korean Wave'. Prior studies have identified the reasons why K-pop succeeds are because of the entrepreneurship of the CEOs (Lee and Hoe, 2013), the idol production system (Kim, 2020), and online platforms including Facebook, Twitter, and YouTube that open the space for the idol to communicate with fans (Lee, 2018). In particular, the most successful and popular K-pop boyband, BTS maximizes communication with their fandom (called A.R.M.Y.) through social media (Kim, 2020), and derive influence not limited to the fandom.

K-pop singers significantly impact their fans, therefore companies must consider establishing strategic marketing plans to reflect the impact. Previous research investigated when foreigners interested in K-pop evaluate Korean products, rather than analyzing or judging the attributes of the product itself, they form a purchase attitude based on the image of the country that has been shaped by K-pop (Lee, Kim, and Woo, 2014). Additionally, in a separate study, it was statistically verified that online content

related to K-pop affected national exports. Besides, when the interest in K-pop increased, K-pop was found to have a positive effect not only on product purchase attitudes but also on intentions to visit Korea and advertising attitudes (Ryoo, and Yoo 2020). In other words, K-pop greatly influences corporate brands and products that consume by domestic and also foreign fans.

This study underlines a focus on analyzing consumers' sensitivity when K-pop singers are used in corporate marketing strategies, especially communication strategies. Previous researches on K-pop have focused on specific groups, including success factors (Choi, and Lim, 2019; Lee, 2019), fandom analysis (Yeo, and Jeong, 2019; Lie, 2021), policy studies for strengthening competitiveness related to K-pop (Moon, 2021), and case analysis from the corporate perspective (Kim, 2020; Lee and Hoe, 2013). Unlike those prior studies, in this study, we focus on the consumers' perspective, that resulted by the corporate activities and evaluate the consumer's sensitivity using text mining. Based on consumer sensitivity analysis using social media, including Twitter and YouTube, we strive to figure out the principal features to consider when using K-pop singers in marketing communication strategies. In particular, we classified the action of K-pop singers act as ambassadors to enhance the brand image of a company and when they perform as models to provide product and service information with keywords (Ambassador and Model, respectively). Then, using the collected data, we analyze the similarities and differences in consumer sensitivity for each role.

The purposes of this study are as follows. First, through the theory of meaning transfer and the halo effect that are adopted as the background theory, this research explores the meaning conveyed by the ambassador and the model and analyzes the depth of the halo effect it has. Second, this paper identifies the similarities and differences that are derived by comparing and analyzing consumer sensitivity according to the roles of ambassadors and models. The research questions to achieve the purpose are as follows.

- 1) *What are the meanings and halo effects transferred when K-pop singers act as ambassadors or models?*
- 2) *What are the differences and similarities in consumers' emotions when companies or organizations use K-pop entertainers as ambassadors and models?*

Theoretical background

Korean Wave (Hallyu) and K-pop Fandom

In the late 1990s, Korean culture began to gain popularity in Asia under the name of "Hallyu" (Lee, Kim, and Woo, 2014). The etymology of Hallyu has been speculated in various ways. Some argue that the word is a homophone with the cold wind in Siberia as a sociocultural phenomenon that prefers Korean culture (Korea Tourism Organization, 2002). Another assertion is that the government used it to promote K-pop (Yoon, and Kang,

2019). The last argument is that the term Korean wave was started and widely use in Taiwan as the public enjoys consuming Korean music and dramas (Korea Creative Content Agency, 2019). Taken together, the Hallyu is interpreted as a cultural mainstream rather than being discussed at a sub-culture level.

The flow of the Hallyu has changed since the end of the 1990s. From the late 1990s to the early 2000s, corresponding to the first period of the Hallyu, dramas and music was popular in China, Taiwan, and Vietnam. In the mid-2000s, the second period when the Hallyu deepened and spread, movies and games were added and spread around Southeast Asia. In addition, the third period can be defined as the diversification of the Hallyu after the middle of 2000, when its influence spread beyond Asia to the United States, Europe, and Africa, including cartoons, Korean food, and even Hangeul (Cho and Shim, 2013).

In images reminiscent of Korea, K-pop has been shown to significantly impact all regions and industries around the world, exceeding Korean food, dramas, and the IT industry (Korea International Cultural Exchange Agency, 2021). Based on this popularity and influence, K-pop has gradually diversified away from the interest biased toward a specific age or race (KCONUSA, 2022). During the spreading of the influence, fandoms play a significant role. Fandom is a compound word of 'fan' in 'fanatic' and the suffix 'dom' meaning territory or country (Li, 2019; Yeo and Jung, 2019) and has additional meaning of an early adaptor in culture (Lie, 2021). In this fandom, a unique culture is formed through interactions between fans, and the culture's core is sharing various information (Jeon and Kim, 2019).

Sharing various information in fandom is important from the perspective of the corporate marketing operation. Especially when the size of the fandom formed online has expanded, and the diversity and internationalization of its members have been achieved (Lim, and Kim, 2016). Therefore, it could affect corporate performance depending on the fandom's attitude toward the corporate brand and products. Besides, the development of social media constructs the environment in which K-pop stars and fandoms can directly communicate and exchange information without time and space restrictions (Kim and Park, 2004), which boosts a significant influence on corporate marketing communication activities. Furthermore, K-pop stars influence various industries, from national brands, content and records, food and beverage, beauty, and tourism (Jeong, 2020). As an illustration, the bus station of Hyangho Beach in Gangwon-do, where BTS filmed a music video, and Busan's Dadaejeo Beach, which Jimin of BTS visited on vacation, were selected as places foreign tourists want to go (Busan Jeil Economy, 2021). Therefore, in this study, we identify the influence of K-pop stars on the fandom and the general from the perspective of marketing communication to analyze consumer responses.

The theory of meaning transfer

The theory of meaning transfer refers to a three-step stage in which specific meanings from culture and society are transferred to consumer products or brands (McCracken, 1986). According to the theory, consumer behavior is shaped by culture and meanings, such as fashion, advertising, and lifestyle. The meanings are transferred from the first-level cultural system to the second-level consumer goods and the third-level consumer. The meaning used in theory includes tangible meanings substantiated by culture and consumer goods such as time, space, personality, age, and occupation (McCracken, 1988).

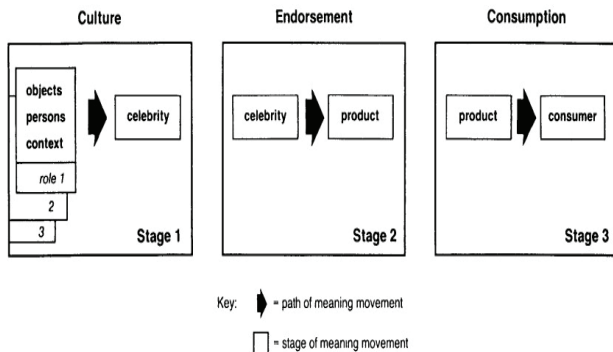


Figure 1. The Process of Meaning Transfer

In marketing research, the theory is used to transfer meaning companies want to convey to customers through celebrities. The meaning of the movement is formed differently depending on the consumer's perception of the celebrities and does not rule out the possibility to be transmitted into different meanings than what companies expect. In particular, celebrities can be used as a promoter to transfer meaning in the field of marketing communication (McCracken, 1986; Subhadip, 2016), and prior researches have proven that specific qualities of celebrities transfer to product quality (Langmeyer and Walker, 1991; Byrne, Whitehead, and Breen, 2003).

Although the strategy to enhance the company's image using celebrities is an old marketing communication strategy, this strategy is still essential and widely applied (Subhadip, 2016). In Western countries, about 30% of advertisements use celebrities (Choi, Lee, and Kim, 2005), and in the case of East Asia, celebrities are active in more than 60% of advertisements (Hoon and Gill, 2013). However, despite the increase and influence of advertisements using these celebrities, some questions remain about their effect and the standard of determining suitable figures for corporate strategy (Subhadip, 2016).

In this study, the celebrities are defined as K-pop stars. In addition, K-pop stars are segmented into ambassadors and models, and the effect of each role is analyzed from the consumer's perspective. Recently, various brands have appointed and promoted K-pop singers as ambassadors and advertising models. However, previous studies

mainly focused on the success or case analysis of a specific group, such as analyzing girl groups and content cases (Shin and Kim, 2018), K-pop idol success strategy (Choi, and Lim, 2019), and analysis of the meaning of a member of a specific country within a K-pop idol group (Hayama, 2019). In this study, we analyze the meaning transfer and the effect of K-pop singers' marketing activities from consumer's perspective by applying the theory of meaning transfer.

The halo effect

The halo effect is a perceptual phenomenon that evaluates related things or attributes based on the overall view of a specific object (Ghiselli and Brown, 1995). In other words, the effect is a cognitive process in which the evaluation or impression of a brand affects the impression or response to other independent products or attributes (Zha et al., 2013). For example, the effect can occur when consumers need more information or knowledge about the product, then the image of a country or company can affect product selection.

In the research field, the effect has been developed mainly through research and utilization from a marketing perspective (Gilbride, Yang and Allenby, 2005) or applied to consumer behavior (Till and Priluck, 2006). Companies try to increase advertisements' effectiveness by utilizing celebrities' various attributes to maximize marketing effects. The halo effect of a celebrity makes consumers' decision-making faster and lowers the risk of products perceived by consumers (Boatwright et al., 2008).

Numerous studies have been conducted on the halo effect of Korean entertainers, including K-pop singers. The popularity formed through Hallyu promotes the purchase of products by foreigners and their visits to Korea. Furthermore, it has been demonstrated to positively enhance the national image (Korean Wave Cultural Industry Exchange Foundation, 2009). As the effect is vital in marketing communication strategy, the strategies aiming for a halo effect by appointing K-pop singers are actively being implemented (Cheon and Jeon, 2011).

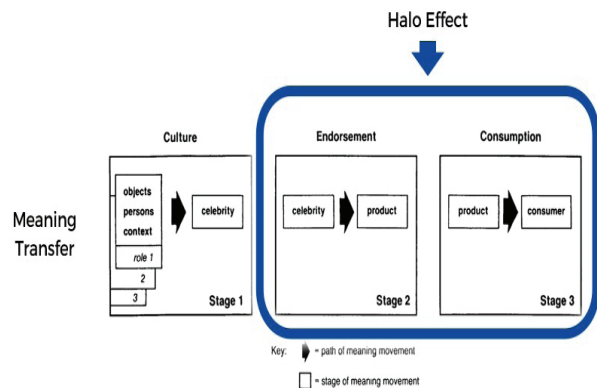


Figure 2. The Halo Effect and Convergence with the Theory of Meaning Transfer

In this study, the halo effect of K-pop singers is analyzed by convergence with the theory of meaning transfer (Feature 2). The effect is applied to the second and third stages of the theory of meaning transfer. Additionally, the roles of the ambassador and the model are distinguished by analyzing whether there are differences in results. Based on this, the hypothesis established is as follows.

H1: When a K-pop star acts as an ambassador or model, consumers' sensitivity will be different.

Ambassador and K-pop star

An ambassador is a figure that acts as an information source used by an organization to increase the persuasion effect in the communication process with the public (Lee, 2009). With the advent of the era of Marketing Public Relations (MPR), which was an effective method of corporate marketing in the past, the role of the ambassador is expanding (Moffitt, 1994). The primary role of an ambassador is to express the unique value and image of a brand, promote it by wearing the brand's items, and communicate it to the public by acting as a campaign model.

The ambassador role was first popularized by Danny Kaye, a pop singer who had been a UNICEF Goodwill Ambassador since 1954 (Wheeler, 2011). Danny Kay had been active in North America to raise interest and improve awareness of UNICEF (UNICEF International Headquarters, 2012). Consequently, more than 100 million people knew about UNICEF through his activities. In the case of K-pop stars, since Big Bang's GD was appointed Chanel's global ambassador in 2016, many other international brands were starting to appoint other K-pop stars to be their ambassador. For example, BLACKPINK's Jenny was nominated as Chanel's global ambassador in 2018, EXO's Kai was selected as Gucci's global ambassador in 2019, and BTS was also assigned as Louis Vuitton's global ambassador in 2021 (Kim, 2022). The ambassador activities of K-pop stars are mainly focused on luxury fashion brands.

The activities of an ambassador are not only limited to one product or category but also play a role in transferring the brand's image and corporate value, as well as conveying symbolic and connotative meanings when they communicate with the public. When using an ambassador in this role, implicit and metaphorical expressions for the corporate value appear more than clear descriptions of products or services. Furthermore, the metaphorical expression is expected to leave a feeling of positive emotions associated with the corporate brand and image to the customer. Based on this, the second hypothesis established is as follows.

H2: When a K-pop star acts as a brand ambassador, consumers will feel implicit keywords and positive emotions related to the corporate brand.

Model and K-pop star

A model is a person who promotes a company's product on behalf of a company and communicates with the public by reflecting the image or characteristics of the model onto the company's product (McCracke, 1989). The model maximizes the value of advertisements within the limited time, space, and audio-visual scope. In addition, the model plays a role in clearly transferring the advertisement theme to the public (Kim, 2008). In other words, a model is described as a medium that informs and provides product information that companies want to transfer directly to the public.

Models are generally classified into celebrities, experts, CEOs, or consumers (Freiden, 1984). Celebrities refer to actors, singers, or sports stars who are famous or known through achievements in their fields (Jin and Yoo, 2012), and an advertising effect called the celebrity endorsement effect can be expected by using celebrity models. (Ohanian, 1990). On the other hand, expert models imply doctors, pharmacists, or researchers who have professional knowledge about products advertised by companies (Kim and Park, 2011). The CEO model is sometimes used to overcome the limitations of reliability when using celebrity models (Rubin and Mager, 1982).

Among these types, K-pop stars are seen as belonging mainly to celebrity models. Representative advertising models include Winner's OREO advertising model, Ive member Eugene's tuna advertising model, and Nam Tae-hyun, who was selected as an advertising model for an Italian fashion item producer (Korea Economic Daily, 2019). Unlike ambassadors, K-pop stars' advertising model activities are in various product fields.

The model mainly plays the role of clearly and directly conveying product information to consumers. In other words, the role and activities of the model exist to transfer the information of one limited category of a product so the hypothesis established based on this background is as follows.

H3: When a K-pop star acts as a brand model, consumers will feel precise keywords and positive emotions related to the corporate products.

Research methodology

3-1 Collecting Data

We collected the data based on the ambassador and model activity of K-pop stars with the following criteria to understand the sensitivity of consumers. Social media such as Facebook, Twitter, and YouTube, and blogs were set as the target sites for search. The keywords to verify Hypothesis 1 are "kpop + model" and "kpop + ambassador". The words were set to be included in the document without fail. In order to collect the data, the search period was set based from 2016, the year that Big Bang's GD became the first K-pop singer as Chanel's ambassador until the present.

For verifying Hypotheses 2 and 3, Jennie of BLACKPINK and BTS were selected among K-pop singers as the keyword for ambassadors and models. BTS is the most influential boy group of K-pop in the world, the band topped the Billboard charts and is currently acting as an ambassador for Louis Vuitton and a model for McDonald's around the world. In the case of BLACKPINK, each member acts as an ambassador for different brands. Among them, Jenny ranked first in personal brand reputation based on big data as of December 2022 (Maeil Economy, 2022). Therefore, we selected her because she was judged to have the most substantial influence and popularity. At present, Jennie is acting as Chanel's ambassador and Hera's model.

"BTS+Louisvuitton" and "Jenny+Chanel" were set as keywords for hypothesis 2 verification. Then, to test Hypothesis 3, the keywords "BTS+Mcdonald" and "Jenny+Hera" were used. The keywords were set to be included in the document. The search period was set from 2021 to the present, when both targets were active as ambassadors and models. Espresso K was used to remove stopwords and extract functional morphemes from the collected data. Nouns, verbs, adjectives, adverbs, and interjections were extracted for the analysis. From this step, 7,495 data were generated, with 4,154 from "kpop + models" and 3,341 from "kpop + ambassadors". On top of that, 6,895 and 6,870 data were also collected for hypotheses 2 and 3, respectively. In addition, the data for verifying hypotheses 2 and 3 was used for conducting sensitivity analysis and running the N-gram analysis to understand the contents of derived sentiment in depth.

Table 1. Keywords and Collected Date

	Keyword 1	Data	Keyword 2	Data	Total
H1	kpop + Model	4,154	kpop + ambassador	3,341	7,495
H2	BTS+ Louis-vuitton	3,242	Jennie+Chanel	3,743	6,985
H3	BTS+Mcdonald	3,446	Jennie+Hera	3,424	6,870

Analysis of the data

At first, frequency analysis was conducted with the gathered data. After that, we used the result to run the wordcloud analysis. Next, N-gram analysis was performed to analyze the similarity between two words. N-gram examines two different vocabularies and displays data regarding the type and frequency of words appearing in a sentence, and provide a visualization of proximity between words. After N-gram analysis, Term Frequency-Inverse Document Frequency (TF-IDF) analysis was

executed. TF-IDF analysis is a method that weights the occurrence degree of each word using the word frequency and the inverse document frequency. Through this, if a word frequently appears in a document, the importance of the word is judged low, and if a word frequently appearing in a specific document is judged highly important.

Prior to sensitivity analysis, UCINET 6 was used to analyze centrality and cluster between words to understand the connection structure of the words. Centrality analysis is divided into four detailed analyses. First, degree centrality analysis, analyzes a set of node that directly connected to other nodes. The higher the number of connected nodes, the higher degree centrality of the word. Second, closeness centrality analysis examines the sum of the minimum steps required to reach another node from one node. If the node is located in the center of the network, the higher centrality it has. Next, betweenness centrality analysis, refers to an analysis that investigate the degree to which a node acts as an intermediary or mediator in a network. If the node is located on the most connected path between other nodes in a network, the higher centrality it has. Last, eigenvector centrality analysis that we excluded from this study because the result did not show other differences. After conducting the centrality analysis, we performed the sensitivity analysis which studies the emotional intensity score of the keyword was calculated using Textom's emotional vocabulary dictionary to derive the result.

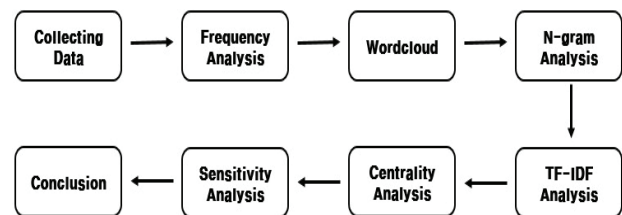


Figure 3. The Process of Analysis

Results of analysis

Result of analyzing model data

The frequency analysis data result, of "K-pop + Model", is as follows. The frequency analysis was summarized into the top 30 and reflected in the result table (Table 2). As a result of the analysis, Seoul was mentioned 659 times, the highest, then followed by Kang Daniel (584 times), and Brand (570 times). Overall, keywords related to K-pop singers were the main ones. In addition, words such as 'hotel' and 'Novotel' imply a relationship between K-pop and the tourism industry. The word cloud based on the frequency analysis displayed in figure 3.

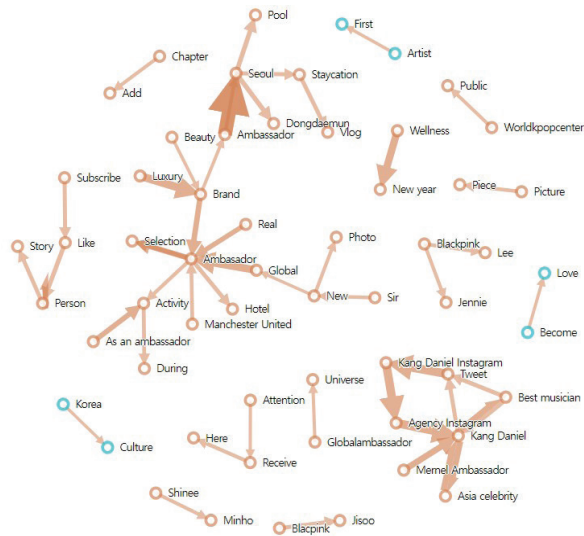


Figure 4. Result of Visualizing the N-gram of Model

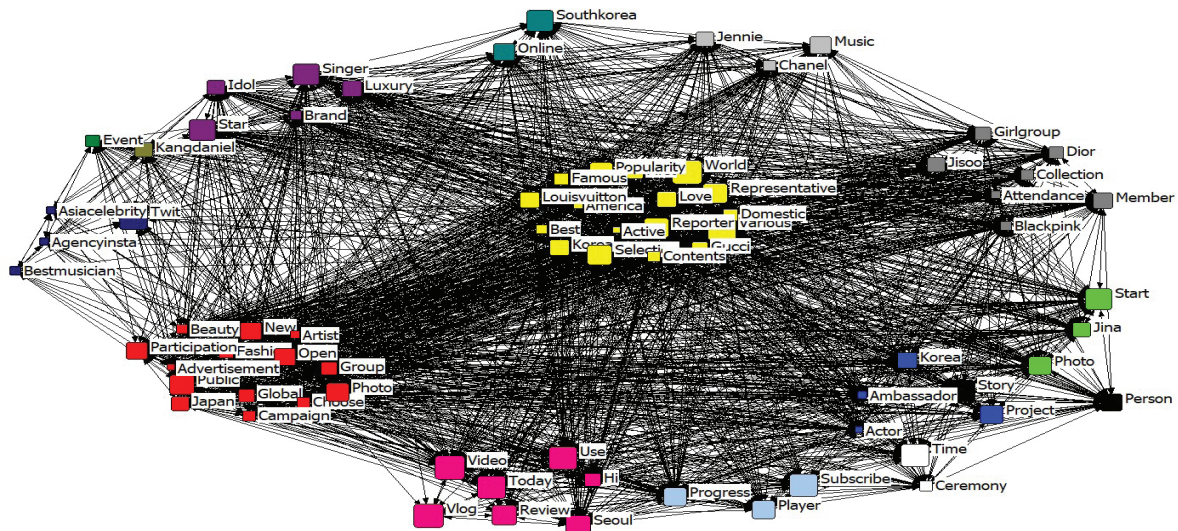
Next, is the analysis result of TF-IDF. The top 20 are presented in table 4. Kang Daniel, Seoul, and brand were found to be highly important in order, and words such as fashion, luxury, world, and representative were also found to be an essential in the document. The centrality analysis was performed after the TF-IDF analysis (table 5). In addition, as a result of CONCOR analysis and network visualization (Figure 5), three clusters with strong relationships around one core cluster and peripheral clusters were formed.

Table 4. Result of TF-IDF

Rank	Word	TF-IDF	Rank	Word	TF-IDF
1	Kangdaniel	1855.85	11	Fashion	714.849
2	Seoul	1516.951	12	Luxury	654.3185
3	Brand	1387.264	13	World	652.1996
4	Global	1270.262	14	Choice	648.0225
5	Video	956.4641	15	Representative	642.4795
6	Hocance	904.1184	16	Photo	632.6038
7	Korea	889.3335	17	Player	617.1676
8	Activity	824.9876	18	Artist	595.1984
9	Blackpink	804.2614	19	Star	595.0316
10	Select	785.7654	20	Jennie	589.1592

Table 5. Result of Centrality

	Degree Centrality	Closeness Centrality	Betweenness Centrality		Degree Centrality	Closeness Centrality	Betweenness Centrality
Seoul	23.5	0.592	0.016	Representative	12.932	0.622	0.011
Kangdaniel	53.135	0.49	0.004	Luxury	20.473	0.612	0.011
Brand	54.257	0.679	0.018	Choice	16.77	0.612	0.01
Global	41.865	0.679	0.018	Artist	12.554	0.632	0.014
Video	13.959	0.667	0.017	Hi	3.203	0.556	0.007
Korea	19.162	0.632	0.012	Player	5.351	0.517	0.005
Select	20.108	0.679	0.018	Photo	9.419	0.602	0.017
Blackpink	23.054	0.612	0.01	Official	8.784	0.632	0.015
Fashion	15.108	0.612	0.01	Star	16.73	0.667	0.018
World	16.041	0.622	0.011				



Result of analyzing ambassador data

Table 6. Result of Frequency Analysis



Rank	Word	TF-IDF	Rank	Word	TF-IDF
1	Brand	509.2524	11	Luxury	236.4311
2	Global	438.7066	12	Representative	230.0552
3	Video	341.4791	13	Artist	228.5586
4	Korea	341.4791	14	Idol	179.9531
5	Blackpink	270.2095	15	Official	177.6925
6	Fashion	262.0806	16	Progress	177.5836
7	World	260.1196	17	Vietnam	162.379
8	Activity	256.7638	18	Content	152.8255
9	Star	250.3689	19	Love	150.8553
10	New	242.5745	20	First	145.2878

Table 9. Result of Centrality

	Degree Centrality	Closeness Centrality	Betweenness Centrality		Degree Centrality	Closeness Centrality	Betweenness Centrality
Brand	2.848	0.554	0.02	Luxury	1.04	0.467	0.004
Global	2.274	0.548	0.018	Representative	0.773	0.501	0.011
Video	0.926	0.51	0.017	Artist	0.888	0.485	0.007
Korea	1.237	0.519	0.012	Idol	0.54	0.474	0.005
Blackpink	0.987	0.484	0.007	Official	0.399	0.457	0.004
Fashion	1.231	0.496	0.01	Progress	0.493	0.484	0.009
World	1.151	0.512	0.011	Vietnam	0.302	0.424	0.001
Activity	0.858	0.508	0.012	Content	0.462	0.46	0.004
Star	1.067	0.488	0.007	Love	0.493	0.477	0.007
New	0.737	0.496	0.01				

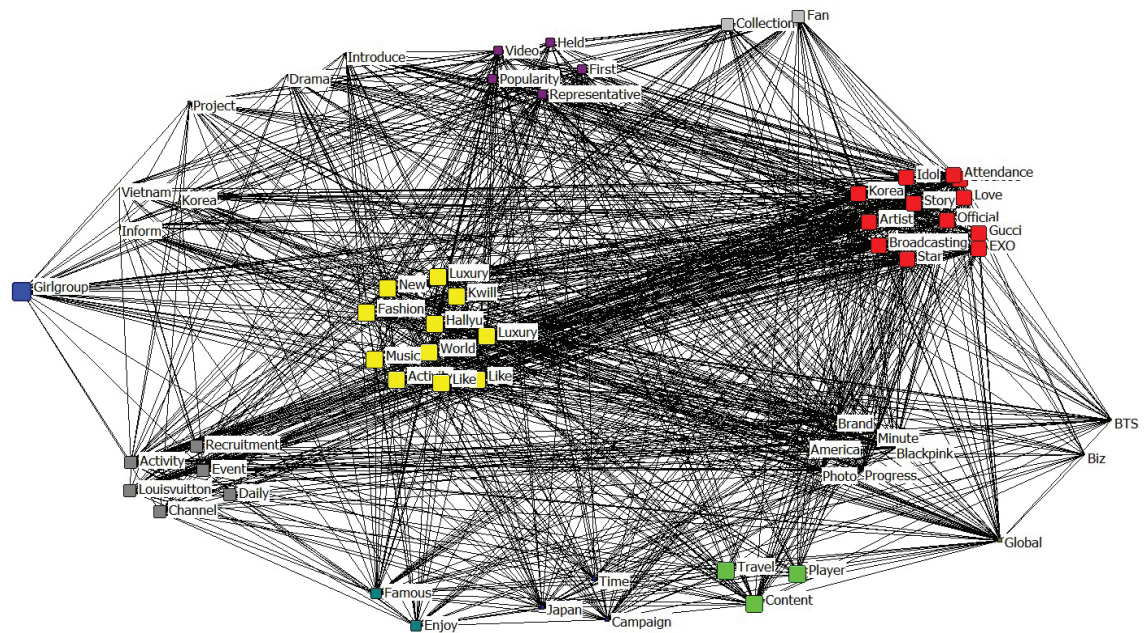


Figure 8. Result of CONCOR of Ambassador

Result of sensitivity analysis

Verification Result of Hypothesis 1

The results of analyzing the sensitivity from consumers' perspectives for hypothesis verification are as follows. The sensitivity intensity ratio of the model was 84.76%, indicating that consumers felt positive. In the case of the ambassador, the result was higher than the model at 88.94%. It explains that consumers are more likely to evaluate with a favorable impression when conveying a company's image than when conveying product information.

Table 10. The Result of Model

	Frequency	Ratio of Intensity (%)	Ratio of Frequency(%)
Positive	365	84.76	84.1
Negative	69	15.24	15.9

Table 11. The Result of Ambassador

	Frequency	Ratio of Intensity (%)	Ratio of Frequency(%)
Positive	766	88.94	88.76
Negative	97	11.06	11.24

The details of positive keywords are as follows. The top 5 positive keywords for the model and the ambassador were similar, and only the rankings fluctuated. However, based on the previous analysis, in the case of the model, the top three appeared as precise keywords as recommend, modern, and good, indicating that they were related to the product. In the ambassador's case, keywords related to the company's image appeared notionally, such as good, new, and lovely.

Table 12. The positive Keywords

Positive Keyword of Model					Positive Keyword of Ambassador				
Rank	Keyword	Frequency	Intensity	Frequency* Intensity	Rank	Keyword	Frequency	Intensity	Frequency* Intensity
1	Recommend	34	4.7778	162.4452	1	Good	73	4.3333	316.3309
2	Modern	28	5.7778	161.7784	2	New	80	2.7778	222.224
3	Good	24	4.3333	103.9992	3	Lovely	50	4.0	200
4	Lovely	27	4.0	108	4	Best	50	4.0	200
5	New	35	2.7778	97.223	5	Recommend	36	4.7778	172.0008
6	Cool	10	5.1111	51.111	6	Modern	30	5.7778	173.334
7	Best	10	4.3333	43.333	7	Special	29	3.77778	109.55562
8	Special	10	3.77778	37.7778	8	Cool	20	5.1111	102.222
9	Happy	8	2.5556	20.4448	9	Luxury	30	2.5556	76.668
10	Luxury	7	2.5556	17.8892	10	Charm	24	2.8889	69.3336

4.3.2 Verification Result of Hypothesis 2

Table 13. BTS + Louisvuitton

	Frequency	Ratio of Intensity (%)	Ratio of Frequency(%)
Positive	720	60.76%	67.67%
Negative	344	39.24%	32.33%

Table 14. Jennie + Chanel

	Frequency	Ratio of Intensity (%)	Ratio of Frequency(%)
Positive	1,748	84.37%	85.81%
Negative	289	15.63%	14.19%

Table 14. Positive Keywords of BTS+Louisvuitton and Jennie+Chanel

Positive (BTS+Louisvuitton)					Positive (Jennie+Chanel)				
Rank	Keyword	Frequ -ency	Intensity	Frequency* Intensity	Rank	Keyword	Frequ -ency	Intensity	Frequency* Intensity
1	Good	59	4.3333	255.6647	1	Beautiful	150	4.2222	633.33
2	Modern	34	5.778	196.4452	2	Good	109	4.3333	472.3297
3	New	65	2.7778	180.557	3	Recommend	93	4.7778	444.3354
4	Cool	31	5.1111	158.4441	4	Lovely	106	4.0	424
5	Expect	29	4.66667	135.33343	5	Cute	74	4.3333	320.6642
6	Lovely	29	4.0	116	6	Luxury	56	5.6667	317.3352
7	Best	28	4.0	112	7	Charm	102	2.8889	294.6678
8	Recommend	22	4.7778	105.1116	8	Harmonize	62	2.8889	179.1118
9	Special	17	3.77778	64.22226	9	Perfect	47	2.8889	135.7783
10	Impressive	13	3.4444	44.7772	10	New	47	2.7778	130.5566

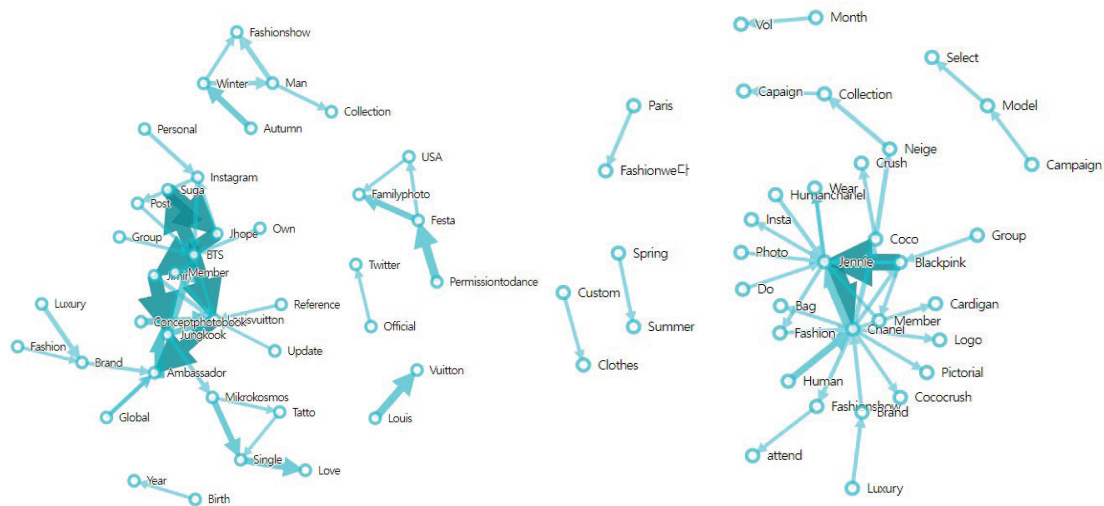


Figure 9. N-gram of ‘BTS+Louisvuitton’ and ‘Jennie+Chanel’

Verification Result of Hypothesis 3

Table 15. BTS+Mcdonald

	Frequency	Ratio of Intensity (%)	Ratio of Frequency(%)
Positive	995	78.88	78.66
Negative	270	21.12	21.34

Table 16. Jennie+Hera

	Frequency	Ratio of Intensity (%)	Ratio of Frequency(%)
Positive	1,482	87.19	88.53
Negative	192	12.81	11.47

Table 17. Positive Keywords of BTS+Mcdonald and Jennie+Hera

Positive (BTS+Mcdonald)					Positive (Jennie+Hera)				
Rank	Keyword	Frequency	Intensity	Frequency* Intensity	Rank	Keyword	Frequency	Intensity	Frequency* Intensity
1	Good	213	4.3333	922.9929	1	Recommend	260	4.7778	1242.228
2	Like	101	2.7778	280.5578	2	Good	147	4.3333	636.9951
3	Special	57	3.77778	215.33346	3	Beautiful	139	4.2222	586.8858
4	Recommend	34	4.7778	162.4452	4	Upright	75	3.8889	291.6675
5	Expect	29	4.66667	135.33343	5	Luxury	27	5.6667	153.0009
6	Marvelous	24	5.3333	127.9992	6	New	49	2.7778	136.1122
7	Lovely	26	4.0	104	7	Smooth	37	3.6667	135.6679
8	Beautiful	24	4.2222	101.3328	8	Harmonize	46	2.8889	132.8894
9	New	34	2.7778	94.4452	9	Naturally	26	4.5556	118.4456
10	Best	21	4.0	84	10	Charm	37	2.8889	106.8893

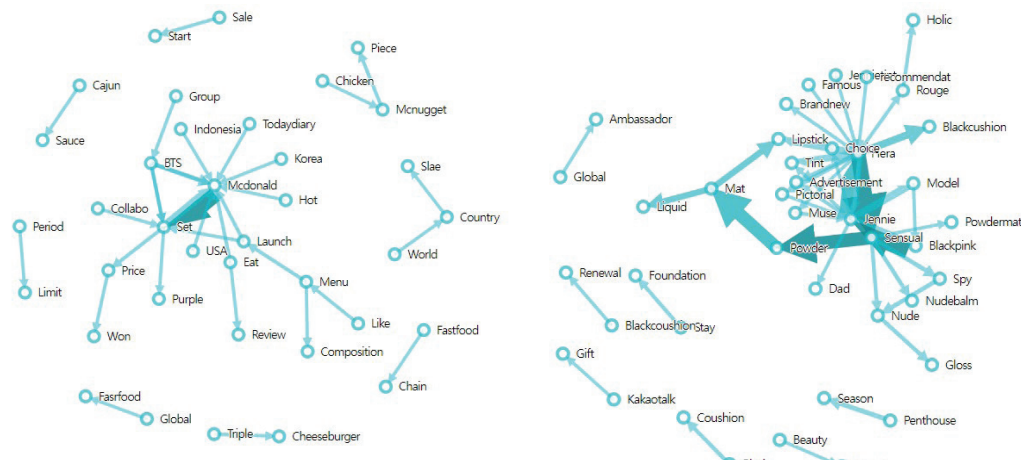


Figure 10. N-gram of 'BTS+Mcdonald' and 'Jennie+Hera'

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An Exploratory Study on SNS Use and Loneliness in Middle-aged and Older Ages

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Abstract

The purpose of this study was to identify the effect of SNS use (usage pattern, usage) on users' loneliness, and to find out the moderating effects of introversion/extroversion and emotion/thinking factors among the mbti factors, which are user personality characteristics. Through this, it is an exploratory study to prepare a social network service support plan that can contribute to the relief of middle-aged users' loneliness.

Keywords

Loneliness, social relationship, sns use and loneliness, personality traits, esli, mbti

1. Introduction

Loneliness may motivate individuals to seek out connections and make intentional efforts to bond with others (Wang et al., 2018). When difficulties in socialization arise, an individual may start to feel lonely. (Russell et al., 1984; Weiss, 1973). Loneliness is felt when there is a lack of certain relationships in a social network, it is said to be felt when the need for intimacy or companionship is not met or is not sufficient (Rokach et al., 2007). Loneliness is an unpleasant emotion felt when an individual's social network is less qualitatively or quantitatively than expected (Peplau & Perlman, 1982).

ICT is considered an important factor contributing to expanding and maintaining social contacts to alleviate loneliness and social isolation among seniors, and improving emotional well-being (Cotten, Ford, Ford, & Hale, 2012; Wilson et al. 2007; Winstead et al., 2013). Modern-day technology and access to social media platforms allow people to interact with others in various ways (Shorter et al., 2022).

The purpose of this study is to research the effect of social network services on loneliness in middle-aged and older people, and to prepare exploratory measures for social network service support measures that contribute to alleviating loneliness in middle-aged and older people.

2. Theoretical background

Loneliness/ isolation and social relationship

Isolation is divided into emotional isolation and social isolation. Emotional isolation refers to a state in which there is no close object that can express intimacy and attachment in the current social relationship, and social isolation refers to a state in which a person is not accepted or recognized within a group in the current social relationship (Vincenzi & Grabosky, 1989).

Isolation is a concept that includes both depression and anxiety, which are negative emotions caused by defects in social relationships, and loneliness, which is a subjective experience, and isolation, which is a current behavioral state realistically manifested by the emotion of loneliness (Vincenzi & Grabosky, 1987). 'Being alone', which has the meaning of isolation, is isolation in a positive sense that includes free will, and while it can be experienced as creative solitude, it can also be a factor that causes negative emotions such as loneliness. Individuals who are socially and environmentally isolated are more likely to feel loneliness, but loneliness is an internal emotion that can be experienced in a wide range of interpersonal relationships (Peplau & Perlman, 1982).

Weiss (1973) stated that there are different forms of loneliness, grouping these forms into two separate categories: emotional and social isolation. Emotional loneliness is derived from wanting intimate, quality relationships and connections with others that make a person feel secure (Russell et al., 1984 Weiss, 1973).

On the other hand, a person experiences social loneliness when they perceive that they do not belong to a social network or a community that shares their values (Russell et al., 1984, Weiss, 1973). Loneliness may motivate individuals to seek out connections and make intentional efforts to bond with others. Researchers have speculated that adolescents are motivated to use Facebook if they are experiencing social loneliness and emotional loneliness (Wang et al., 2018). Cacioppo and colleagues (Cacioppo et al., 2014; Cacioppo and Hawkley, 2009) suggested that in social species, loneliness has adaptive value and serves as an early warning system that motivates people to reconnect with others and restore possibly broken or disrupted social relationships, which are vital for one's survival (Inagaki et al., 2016). This perspective implies that

social connectedness, reflected commonly in the number and frequency of social contacts one has, can alleviate the negative effects of loneliness on mental health and also reduce the levels of loneliness one experiences (Masi et al., 2011). Since loneliness is an internal subjective state, it is affected by the quantitative aspects of social relationships, but it is more influenced by the qualitative aspects such as an individual's satisfaction with relationships and perceived social acceptance (Cutrona, 1982; Jones & Hockenbury, 1982). Also, Loneliness is an unpleasant emotion felt when the social network is lacking in quality or quantity than an individual expects (Peplau & Perlman, 1982). Loneliness can be defined as an intense, distressing feeling that stems from a lack of interaction and emotional attachment to other people; it is a "response to relational deficit" (Weiss & Wobst, 1973).

Loneliness is an emotion experienced primarily by people who lack personal relationships, when certain relationships within a person's social network are lacking, or when the need for intimacy or companionship is not being met or is sufficient (Rokach et al., 2007). People who experience loneliness have a negative view of actively participating in social interactions (Jones, Freeman, & Goswick, 1981), resulting in social anxiety (Leary, 1983), poor social skills (Jones, Hobbs, & Hockenbury, 1981) and difficulties in social relationships (Peplau, Miceli, & Morasch, 1982). Loneliness has various negative effects on an individual's physical and mental health and psychosocial adaptation (Asher & Paquette, 2003). Loneliness is defined as an individual's subjective negative emotion about the discrepancy between the individual's current social network and social relationships and the individual's desires (Havens & Hall, 2001). Social isolation is defined as reflecting objective aspects such as a decrease in the number of contacts with others and the size of the network (Havens & Hall, 2001).

Sns characteristics related to loneliness

As new technology and trends emerge, communication styles and socialization patterns change as well. Social media platforms, such as Facebook, Twitter, Instagram, and Snapchat, have been incorporated into daily routines and serve as an ongoing means of socialization. Specifically, these social networking sites present new ways to connect with others, whether that be through instant messages or commenting on a posted picture. SNS impact well-being and feelings of connection depending on attachment styles (Lin, 2015, 2016).

Real-world interactions differ greatly from online, and SNS is primarily used to meet social needs (Özad & Uygurer, 2014). Securely attached individuals use social media, particularly Facebook, in a way that will benefit their social capabilities (Lin, 2015). People with secure attachments perceive that they are provided with more emotional support and bond more with others; however, those who are more avoidant do not notice those same

benefits and are predicted to use SNS considerably less (Lin, 2015). Sheldon (2008) found that individuals who felt high levels of anxiety in regards to socialization felt less lonely when they passively used Facebook. Those who have experienced increased feelings of social loneliness use SNS more to reduce loneliness and improve their social skills (Teppers et al., 2013). While using Facebook to expand an individual's social circle has led to decreased peer and social loneliness, using Facebook to increase social skills was related to increased feelings of peer-related loneliness (Teppers et al., 2013). Furthermore, it has been found that those who are experiencing a low to moderate level of loneliness use Facebook as a tool to decrease their feelings of loneliness; however, those who use Facebook excessively and have chronic levels of loneliness felt increasingly more lonely the more they used SNS, indicating that there is a curvilinear relationship between loneliness and SNS usage (Wang et al., 2018). This excessive use of SNS can also lead an individual to believe that they are receiving less emotional support from others (Shensa et al., 2015), which can contribute to feelings of loneliness. Yang and Brown (2012) additionally concluded that being motivated to create new bonds via SNS increases feelings of loneliness in young adults. These studies indicate that the reason for using SNS can vastly impact an individual's severity of loneliness. While social media is a main method of connection for those who are experiencing emotional loneliness, some elements of SNS increase those feelings.

Personality traits and MBTI

Attempts to classify and measure people's personalities by traits and types were initiated by Freud, Horney, and Jung, and expanded by Allport, Cattell, Eysenck, and McCrae (Yongsuk Lee, 2001). Currently, personality such as Myers-Briggs MBTI, which classifies human personality into 16 types, Enneagram, which classifies human personality into 9 personality types, and Big5 personality theory (classified into five personality factors based on personality trait theory) Type research is active (Mina Song, 2021).

According to Jung's Psychological Types (1921; 1971), human behavior and personality traits seem to be accidental and difficult to predict due to their diversity, but in reality they show consistent tendencies. Therefore, human personality can be classified into several types according to characteristics and tendencies (Mina Song, 2021). Jung (1921; 1971), in the case of personality types that represent people's preferences and tendencies, form opposite types on each scale, and classify the attitude types into extraversion and introversion according to the direction in which mental energy flows. In addition, the personality type was classified into a sensing type, an intuition type, a thinking type, and a feeling type as a mental functional type.

The primary feature of the theory behind the MBTI is that each person's personality fits into only one of 16 types (Myers, 1962; Briggs, 1976). These categories are based on four features of personality, each consisting of two opposite preferences (Pittenger, 1993). According to the theory, all people have an innate preference that determines how they will behave in all situations. The four dimensions are: 1. Extroversion (E) vs Introversion (I). This dimension reflects the perceptual orientation of the individual. Extroverts are said to react to immediate and objective conditions in the environment. Introverts, however, look inward to their internal and subjective reactions to their environment. 2. Sensing (S) vs Intuition (N). People with a sensing preference rely on that which can be perceived and are considered to be oriented toward that which is real. People with an intuitive preference rely more on their nonobjective and unconscious perceptual processes. 3. Thinking (T) vs Feeling (F). A preference for thinking indicates the use of logic and rational processes to make deductions and decide upon action. Feeling represents a preference to make decisions that are based on subjective processes that include emotional reactions to events. 4. Judgment (J) vs Perception (P). The judgement-perception preferences were invented by Briggs and Myers to indicate if rational or irrational judgments are dominant when a person is interacting with the environment. The judgmental person uses a combination of thinking and feelings when making decision, whereas the perception person uses the sensing and intuition processes (Pittenger, 1993).

Because the MBTI is a theory of types, a person can have only one preference. For example, it is possible for people to develop a sociable style, just as an introvert can learn to be more extroverted when speaking in a group, but basic preferences will always govern that person's personality (Pittenger, 1993).

3. Research method

The method of this study is a survey conducted on people in their 20s to 70s who continuously use SNS (Facebook, Instagram, Naver Band, Kakao Talk). As a research model to understand the relationship between SNS use and loneliness in middle-aged or older age, SNS use patterns and SNS usage were set as independent variables, and loneliness in middle-aged or older were set as dependent variables. The user's MBTI characteristics were set as mediating variables, and among the MBTI characteristics, E(Extroversion)/ I(Introversion), T(Thinking)/ F(Feeling) areas were measured. The user's psychological loneliness was measured using the ESLI scale.

Operational definition of variables

·DV : Loneliness

We defined loneliness as an emotion felt when an individual's social network is less qualitatively or quantitatively than expected (Peplau, 1982), an internal

emotion that can be experienced in a wide range of interpersonal relationships (Peplau & Perlman, 1982), and a response to lack of relationships (Russell et al., 1984; Weiss, 1973). In addition, it was defined as being more influenced by qualitative aspects such as relationship satisfaction felt by an individual and perceived social acceptance (Cutrona, 1982; Jones, 1982).

·IV : SNS Use Pattern, SNS Usage

We defined that people use SNS more to reduce loneliness (Teppers et al., 2013; Sheldon, 2008). In addition, we defined that social media offers new ways to connect with others, whether through instant messages or through comments on posted photos (Lin, 2015, 2016).

·MV : Personality Traits (MBTI_E/I, T/F)

We defined that human behavior and personality traits show consistent tendencies and can be classified into several personality types according to the traits and tendencies (Jung, 1921; 1971), and since MBTI is a type theory, it is defined that people can have only one preference (Pittenger, 1993). In addition, this study measured the emotional aspect of loneliness that humans feel in social relationships. For this purpose, only scales for extroversion and introversion, thinking and feeling were used, and Pittenger's (1993) conceptual definitions of E/I and T/F were used as operational definitions of variables in this study.

Research model

[Figure 1] is the research model. Independent variables for SNS usage patterns are posting, comments, conversations, and other activities. Independent variables for SNS usage are average usage per day. The dependent variable is the individual's loneliness.

·H1: The use of SNS postings has a negative (-) effect on users' loneliness.

·H2: The use of SNS comments has a negative (-) effect on users' loneliness.

·H3: SNS conversations and other activities have a negative (-) effect on users' loneliness.

·H4: SNS usage has a negative (-) effect on users' loneliness.

Personality traits, which are moderating variables, are E/I, T/F among MBTI factors.

·H5-1: Individual E personality traits have a negative (-) moderating effect on SNS posting use and users' loneliness.

·H5-2: Individual E personality traits have a negative (-) moderating effect on the use of SNS comments and the user's loneliness.

·H5-3: Individual E personality traits have a negative (-) moderating effect on SNS conversations and other activities and the user's loneliness.

·H5-4: Individual E personality traits have a negative (-)

moderating effect on SNS usage and user's loneliness.

·H6-1: Individual I personality trait has a negative (-) moderating effect on SNS posting use and user's loneliness.

·H6-2: Individual I personality trait has a negative (-) moderating effect on the use of SNS comments and the user's loneliness.

·H6-3: Individual I personality traits have a negative (-) moderating effect on SNS conversations and other

·H6-4: Individual I personality characteristics have a negative (-) moderating effect on SNS usage and user's loneliness.

·H7-1: An individual's T personality trait has a negative (-) moderating effect on SNS posting use and user's loneliness.

·H7-2: An individual's T personality trait has a negative (-) moderating effect on the use of SNS comments and the user's loneliness.

·H7-3: An individual's T personality trait has a negative (-) moderating effect on SNS conversations and other activities and the user's loneliness.

·H7-4: An individual's T personality trait has a negative (-) moderating effect on SNS usage and user's loneliness.

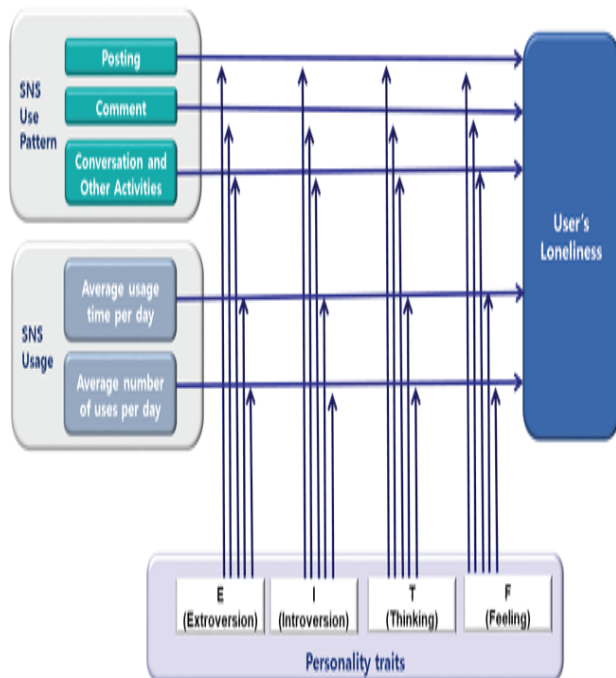


Figure 1 - Research Model

1. Structure of the Questionnaire and Data Collection

We conducted a survey study. Questionnaire included 72 items classified into 5 categories as shown in [Table 1]. The 5 categories are SNS Use Pattern, SNS Usage, Psychological Loneliness(ESLI Scale), Short Form

MBTI,

Respondent Characteristics. SNS Usage patterns and SNS Usage were measured using a Likert-type 5-point scale.

Structure of Questionnaire Items

Table 1_Structure of Questionnaire Items

category	contents	Item No.	No. items
SNS Use Pattern	Facebook/Instagram/ Naver band/ Kakao story	Posting 1~8	8
	Facebook/Instagram/ Naver band/ Kakao story	Comment 1~8	8
SNS Use Pattern	Facebook/Instagram/ Naver band/ Kakao story	SNS Type 1	1
SNS Use Pattern	Facebook/Instagram/ Naver band/ Kakao story		
SNS Use Pattern	Facebook/Instagram/ Naver band/ Kakao story	Conversation & Other Activity 1~10	10
SNS Use Pattern	kakaotalk		
SNS Usage	Facebook/Instagram/ Naver band/ Kakao story	1~2	2
SNS Usage	kakaotalk	1~2	2
Psychological Loneliness	the ESLI scale	1~15	15
Short Form MBTI	E(Extroversion)/ I(Introversion),	1~10	10
Short Form MBTI	T(Thinking)/ F(Feeling)	1~10	10
Respondent Characteristics	Gender, age, marital status etc.	1~6	6
Total number of items			72

4. Result

■ Characteristics of respondents

Significant questionnaires used in this study were collected in 376 copies (195 questions for those in their 20s and 30s, 115 questions for those in their 40s and 50s, and 66 for those in their 60s and 70s). Among the total questionnaires, 181 meaningful questionnaires for the age group of 40 or older were collected.

The age, gender, job, spouse, children of the respondents of this research is summarized in [Table 2]. Those in their 20s and 30s accounted for 51.9% of the total respondents, and those in their 40s and older accounted for 40.1%. In the age group of 40 or older, males accounted for 46.9% and females 53.1%. In the same group, those with a job accounted for 78.4%, those without a job accounted for 21.6%, those with children accounted for 89.5%, and those without children accounted for 10.5%.

We collected a total of 376 valid responses (respondents aged from 20s to 60s or older) through direct and internet surveys, and 181 responses from those in their 40s or older.

The degree of loneliness felt by the user was measured on a 5-point Likert scale, and the questionnaire values for loneliness were reverse-coded.

Table 2_ Characteristics of respondents

Category			No.	%
Age	Age	20s - 30s	195/376	51.9%
	Age	40s - 50s	115/376	30.6%
	Age	60s - Over 70s	66/376	17.5%
	Age	Total	376	100%
Gender	Male	40s and Older	85/181	46.9%
	Female	40s and Older	96/181	53.1%
Job	Have a Job	40s and Older	142/181	78.4%
	No Job	40s and Older	39/181	21.6%
Spouse	Have a Spouse	40s and Older	164/181	90.6%
	No Spouse	40s and Older	17/181	9.4%
Children	Have a Children	40s and Older	162/181	89.5%
	No Children	40s and Older	19/181	10.5%

The moderating variable in this study is the MBTI factor. To measure the moderating variables, a total of 20 questions were surveyed based on two scales (E/I, T/F) related to psycho-social factors among the MBTI short scales. Respondents proceeded with 10 responses to either E or I and 10 responses to either T or F. For example, out of 10 E/I questions, if there are more than 6 E's and less than 4 I's in the response of a specific respondent, the respondent is classified as type E. In addition, the response of all respondents was converted into a dummy variable to measure the moderating variable.

■ Factor Analysis

For multiple covariance and factor extraction, in this study, a factor analysis of independent, moderating and dependent variables was performed using Varimax rotation.

[Table 3] shows the result of factor analysis for 376 significant questionnaires. Total Explained Variance is 59.842. In the factor analysis of 376 questionnaires[Table 3], comments No. 1, 2 and 3, Conversation and Other Activity No. 8, 9, and 10, and loneliness No. 6 and 11 were excluded because the component values were not properly grouped. In the case of Conversation and Other Activity (factor 3), 0.581 is a small number compared to 0.6, so it was not excluded and included in factor 3.

[Table 4] shows the result of factor analysis for 181(40s and older) significant questionnaires. Total Explained Variance is 60.568. In the factor analysis of 181 questionnaires[Table 4], comments No. 1 and 2, Conversation and Other Activity No. 8, 9, and 10, and loneliness No. 6 and 11 were excluded because the component values were not properly grouped. In the case of KakaoTalk usage frequency(factor 5), 0.597 is a small number compared to 0.6, so it was not excluded and included in factor 5.

Table 3_ Exploratory Factor Analysis of 376 questionnaires

	Factor					Cronbach's alpha	Total Explained Variance (%)
	1	2	3	4	5		
Posting1		.812				.929	59.842
Posting2		.856				.929	59.842
Posting3		.746				.929	59.842
Posting4		.736				.929	59.842
Posting5		.790				.929	59.842
Posting6		.740				.929	59.842
Posting7		.802				.929	59.842
Posting8		.763				.929	59.842
Comment4				.653		.804	59.842
Comment5				.697		.804	59.842

Comment6				.781		.804	59.842
Comment7				.695		.804	59.842
Comment8				.769		.804	59.842
Conversation & Other Activity1			.692			.851	59.842
Conversation & Other Activity2			.730			.851	59.842
Conversation & Other Activity3			.581			.851	59.842
Conversation & Other Activity4			.806			.851	59.842
Conversation & Other Activity5			.829			.851	59.842
Conversation & Other Activity6			.757			.851	59.842
Conversation & Other Activity7			.654			.851	59.842
SNS Usage time					.707	.807	59.842
SNS Number of uses					.699	.807	59.842
Kakaotalk Usage time					.631	.807	59.842
Kakaotalk number of times used					.607	.807	59.842
Loneliness1	.714					.919	59.842
Loneliness2	.655					.919	59.842
Loneliness3	.766					.919	59.842
Loneliness4	.682					.919	59.842
Loneliness5	.732					.919	59.842
Loneliness7	.795					.919	59.842
Loneliness8	.676					.919	59.842
Loneliness9	.611					.919	59.842
Loneliness10	.750					.919	59.842
Loneliness12	.720					.919	59.842
Loneliness13	.808					.919	59.842
Loneliness14	.672					.919	59.842
Loneliness15	.738					.919	59.842

Kaiser-Mayer-Olkin : .877

Battlett's chi-squared : 8691.102, The Degree of Freedom : 741, Sig : .000

Table 4_ Exploratory Factor Analysis of 181 questionnaires

	Factor					Cronbach's alpha	Total Explained Variance (%)
	1	2	3	4	5		
Posting1		.857				.940	60.568
Posting2		.843				.940	60.568
Posting3		.808				.940	60.568
Posting4		.809				.940	60.568
Posting5		.793				.940	60.568
Posting6		.782				.940	60.568
Posting7		.844				.940	60.568
Posting8		.706				.940	60.568
Comment3				.674		.879	60.568
Comment4				.756		.879	60.568
Comment5				.706		.879	60.568
Comment6				.699		.879	60.568
Comment7				.741		.879	60.568
Comment8				.733		.879	60.568

Conversation & Other Activity1			.730			.890	60.568
Conversation & Other Activity2			.761			.890	60.568
Conversation & Other Activity3			.706			.890	60.568
Conversation & Other Activity4			.797			.890	60.568
Conversation & Other Activity5			.831			.890	60.568
Conversation & Other Activity6			.803			.890	60.568
Conversation & Other Activity7			.704			.890	60.568
SNS Usage time					.724	.671	60.568
SNS Number of uses					.675	.671	60.568
Kakaotalk Usage time					.688	.671	60.568
Kakaotalk number of times useds					.597	.671	60.568
loneliness1	.730					.917	60.568
loneliness2	.622					.917	60.568
loneliness3	.755					.917	60.568
loneliness4	.652					.917	60.568
loneliness5	.669					.917	60.568
loneliness7	.800					.917	60.568
loneliness8	.676					.917	60.568
loneliness9	.649					.917	60.568
loneliness10	.731					.917	60.568
loneliness12	.752					.917	60.568
loneliness13	.796					.917	60.568
loneliness14	.705					.917	60.568
loneliness15	.694					.917	60.568

Kaiser-Mayer-Olkin : .857

Battlett's chi-squared : 4057.737, The Degree of Freedom : 703, Sig : .000

[Table 4] shows the result of factor analysis for 181(40s and older) significant questionnaires. Total Explained Variance is 60.568. In the factor analysis of 181 questionnaires [Table 4], comments No. 1 and 2, Conversation and Other Activity No. 8, 9, and 10, and loneliness No. 6 and 11 were excluded because the component values were not properly grouped.

In the case of KakaoTalk usage frequency (factor 5), 0.597 is a small number compared to 0.6, so it was not excluded and included in factor 5.

■ Multiple regression

In this study, it was hypothesized that SNS use patterns and SNS use would have a negative (-) effect on loneliness (reduction of loneliness), so the retrieved data was reverse coded to prove the matter.

Model 1 is a multiple regression analysis model for independent and dependent variables, and Model 2 is multiple regression analysis for independent variables, dependent variables, and parameters. The parameter is the MBTI factor (E/I, T/F), which is a personal personality trait.

In the total significant sample analysis (Table 5), SNS posting use in model 1 showed positive (+) significance ($p < 0.01$) on loneliness. This can be interpreted as alleviating loneliness when using social media postings and social media comments. However, there was no correlation between SNS posting usage and loneliness in the sample over 40 years of age. The use of SNS comments showed positive (+) significance ($p < 0.01$) on loneliness. This can be interpreted as alleviating

loneliness when using comments. Model 2 is a multivariate analysis in which parameters are measured together. In the case of model 2, only the correlation between conversation and other activities and parameters was significant ($p < 0.01$), but the explanatory power of the model was poor because $VIF = 13.094$.

In the case of 181 samples (over 40 years of age), significant results were obtained in the use of comments and conversation and other activities in Model 1 (Table 6). The use of SNS comments showed positive (+) significance ($p < 0.05$) on loneliness. Conversation and other activities showed positive (+) significance ($p < 0.01$) on loneliness. This can be interpreted as alleviating loneliness when users use SNS to comment, chat, and other activities. However, there was no correlation between SNS posting usage and loneliness in the sample over 40 years of age.

Model 2 is a model that measures individual personality traits (MBTI factors) as moderating variables. In the analysis of respondents aged 40 or older (181 subjects), the individual personality trait (MBTI) between the independent variable (SNS postings, SNS comments, SNS conversations and other activities, SNS usage) and the dependent variable (user's loneliness) did not act as a moderating variable.

Table 5_Result of Multiple Regression of 376 questionnaires

Model		Coefficient		Standard Coefficient	t	p-value	Multicollinearity	
		B	S.E.	B	t	p-value	Tolerance	VIF
1	(Constant)	3.635	.190		19.092	.000		
	Posting	.094	.035	.167	2.703	.007**	.655	1.526
	Comment	-.114	.040	-.153	-2.835	.005**	.857	1.167
	Conversation & Other Activity	.066	.048	.073	1.387	.166	.904	1.106
	Usage	.067	.038	.107	1.797	.073	.707	1.415
2	(Constant)	3.613	.191		18.907	.000		
	Posting	.116	.045	.208	2.568	.011	.377	2.651
	Comment	-.095	.056	-.128	-1.705	.089	.443	2.260
	Kakaotalk	-.014	.056	-.016	-.257	.797	.652	1.533
	Usage	.131	.049	.208	2.660	.008	.405	2.466
	Posting +MBTI	-.046	.070	-.100	-.655	.513	.106	9.426
	Comment+MBTI	-.037	.078	-.076	-.467	.640	.094	10.656
	Conversation & Other Activity+MBTI	.164	.060	.495	2.749	.006**	.076	13.094
	Usage+MBTI	-.129	.077	-.268	-1.674	.095	.096	10.380

Model 1.

R: .0264a, R^2 : .070, adjusted R^2 : .060, Durbin-Watson: 2.138 * $p < 0.05$, ** $p < 0.01$

Dependent Variable : Personal Loneliness, Moderating Variable : MBT

Model 2.

R: .0302b R^2 : .091, adjusted R^2 : .071, Durbin-Watson: 2.138 * $p < 0.05$, ** $p < 0.01$

Dependent Variable : Personal Loneliness, Moderating Variable : MBTI

Table 6_Result of Multiple Regression of 181 questionnaires

Model		Coefficient		Standard Coefficient	t	p-value	Multicollinearity	
		B	S.E.	B	t	p-value	Tolerance	VIF
2	(Constant)	3.434	.244		14.044	.000		
	Posting	.094	.053	.161	1.780	.077	.644	1.553
	Comment	-.155	.061	-.231	-2.555	.011*	.647	1.545
	Conversation & Other Activity	.184	.064	.222	2.880	.004**	.888	1.127
	Usage	.003	.061	.004	.051	.960	.804	1.244

2	(Constant)	3.580	.248		14.446	.000		
	Posting	.108	.069	.184	1.558	.121	.155	6.471
	Comment	-.214	.081	-.319	-2.647	.009**	.117	8.517
	Conversation & Other Activity	.164	.076	.197	2.144	.033*	.275	3.637
	Usage	.090	.094	.120	.961	.338	.174	5.762
	Posting +MBTI	-.015	.107	-.033	-.144	.885	.076	13.147
	Comment+MBTI	.053	.118	.120	.450	.653	.046	21.956
	Conversation & OtherActivity+MBTI	-.046	.081	-.142	-.572	.568	.056	17.839
	Usage+MBTI	-.098	.124	-.203	-.790	.431	.067	14.984

Model 1.

R: .279a, R²: .078, adjusted R²: .057, Durbin-Watson: 2.216 *p<0.05, **p<0.01

Dependent Variable : Personal Loneliness, Moderating Variable : MBTI

Model 2.

R: .365b R²: .133, adjusted R²: .093, Durbin-Watson: 2.216 *p<0.05, **p<0.01

Dependent Variable : Personal Loneliness, Moderating Variable : MBTI

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I-Ching's Approach to Contemporary Leadership

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Abstract

This paper proposes an I-Ching framework to enrich contemporary leadership theories, especially addressing the transformational leadership model under cross-cultural leadership literature. This paper compares the leadership construct between I-Ching's chosen sixteen hexagrams (paradigms) and transformational leadership's four dimensions: Idealized Influence, Inspirational Motivation, Intellectual Stimulation, and Individual Consideration(s). This study provides a different perspective on understanding the transformational process based on the I-Ching approach for leadership development. This research framework is based on the multi-paradigms approach to national cultural study (Lewis & Kelemen, 2002). The methodology is a qualitative analysis to use the chosen sixteen (16) chosen paradigms of I-Ching, namely according to alphabetical orders: Chieh (節), Chien (謙), Ching (井), Chung Fu (中孚), Fu (復), Hsien (咸), Kin (乾), Ko (革), Kuan (觀), Kun (坤), Sun (損), Ta Yu (大有), Ting (鼎), Tung Jen (同人), Wei Chi (未濟), & Yu (豫) for evaluating the transformational leadership behaviors. We conclude that effective and genuine transformational leadership is not an add-on behavior process but a lifestyle of being transformed based on the I-Ching perspective. The managerial implication is to propose the education directions for transformation learning. This paper's limitation is not providing quantitative analysis that encourages further investigation.

Keywords

Cross-culture leadership, Transformational leadership, I-Ching, the Chinese leadership, Change Management

1. Introduction

Cross-cultural leadership research has focused on reviewing contextual issues that impact the usage of transformational and transactional leadership (Walumbwa, Lawler & Avolio, 2007). Hofstede (1980) pointed out that culture plays a vital moderator in the leadership literature. Later, Jung and Avolio (1999) confirmed that individualism and collectivism effects are the critical moderators of cultures influencing the performance of transformational/transactional leadership. They concluded that collectivists work better with transformational leaders, while individualists do better with transactional leaders in generating ideas for better performance. Yukl (1999) also pointed out that moderation

analysis, particularly for understanding followers' characters and desires, can enhance understanding of the transformational and transactional leadership model. However, without considering the diversity of modern institutions in different cultural settings, it will likely fall short of understanding the leadership process on performance (Lee, Tsui & Yau, 2019; Walumbwa & Lawler, 2003).

Extending Bass' (1985) original works of transformational leadership theory, he suggests that rule-based, independent, high-social status, and well-informed individuals may be less likely to respond positively to transformational versus transactional leadership style. In other words, the followers' perceptions interpret their leaders' behavior.

Furthermore, Triandis et al. (1998;1995) also confirm that the followers' receptiveness toward a leader's performance is influenced by their cultural value orientation. Therefore, the cultural value orientation factors have been widely researched as a mediator or a moderator in perceiving a leader's effectiveness. Simply put, a leader's style/behavior must be compatible with the cultures that he or she engages in (Lord et al., 1984). In Tan's (2002) study, he found that the outcome of acculturation on the personal value system among Chinese managers of the People's Republic of China (PRC), the United States of America (USA), and Singapore in consideration of cultural heritage and national environment are different. However, his finding supported the cultural convergence theory that cultural values affect personal value development. Mackie (2018) further pointed out that the business success of the Southeast Asian Chinese is often attributed to legendary qualities of enterprise, hard work, frugality, family solidarity, education, and neo-Confucian virtues. Therefore, we have five observations. First, good leadership, particularly transformational leadership, has different meanings and implications in various cultural settings. Second, the psychological mindset of a follower, such as allocentric (i.e., in-group goals have priority over individual goals) and egocentric (i.e., personal goals have precedence over in-group goals), influence leadership styles/approaches. Third, a culture's value system adds meaning to a leader's effectiveness and success. Fourth, leadership behavior development is a mediation process focusing on leadership and followership. Fifth, the values, morals, virtues, and practices of Asian have become a trend in management standards owing to the rising economic powers of Asian countries in the last few decades.

Although much research has concerned the effectiveness of a transformational leader in cross-cultural settings, a few studies focused on transformational leadership from a Neo-Confucian Chinese leadership perspective (Zhang & Tan, 2021; Song & Ma, 2021; Mackie, 2018). However, to the best of our knowledge, no research has explored a direct comparison between transformational leadership's dimensions and the paradigms of I-Ching (Yuduo et al., 2011; Chen, 2009; Sadler, 1995). This paper attempts to bridge this map using the multi-paradigmatic cross-cultural study approach (Lewis & Grimes, 1999; Lewis & Kelemen, 2002). The multi-paradigmatic approach suggests three ways to understand the impact of national culture upon management that we also adopt in our study: First, the parallel approach by placing unique paradigmatic analyses next to each other to shed a different light on the same phenomenon (transformational leadership's four dimensions versus I-Ching's 16 chosen paradigms); second, the sequential approach uses the outcome of one analysis (transformational leadership) to perform a new one in a distinct paradigm (I-Ching governance perspective); finally, we propose an I-Ching-

transformational leadership framework for further reliability and validation.

The remainder of this paper is organized as follows: Section 2 presents Literature Review; Section 3 discusses Framework Development and Methodology; Section 4 presents the Comparison and Findings; Section 5 shows Conclusions with the theoretical, managerial, and educational implications; and finally, Limitations and Future Research Opportunities are also discussed.

2. Literature review

2.1 Cross-cultural leadership

Leadership is about achievement and advancement. Therefore, modern leadership requires skills in navigating cultures in maintaining a reciprocal relationship between leadership and followership (Kliewer & Ndirangu, 2019; Tsai et al., 2019). Moreover, recent confrontations between the USA, China, and Russia have created many new challenges for international trade and geopolitics. Therefore, it is urgent to advocate cross-cultural management studies to avoid misunderstanding and miscalculations among nuclear power countries (Garfield et al., 2019). One meaningful cross-cultural study uses the multi-paradigm approach at the national, organizational, interpersonal, and individual levels (Romani et al., 2018; Jack & Westwood, 2009). These studies include positivists for self-containment (Yeganeh et al., 2004), interpretive followers for shared values, meaning, and typical socialization (D'Iribarne, 2009; Gertsen et al., 2012), and postmodernists for local understanding (context-specific rich materials) (Fougere & Moulettes, 2007), and critical followers (hidden power structure, i.e., social, economic, military, and political) (Jack et al., 2009; 2008). Therefore, our research analysis adopts the multi-paradigmatic approach by providing a parallel comparison between I-Ching's chosen 16 hexagrams or paradigms, namely Da You (大有), Ting (鼎), Fu (復), Ko (革), Chieh (節), Ching (井), Chien (乾), Kun (坤), Chien (謙), Quan (觀), Sun (損), Tung Jen (同人), Wei Chi (未濟), Hsien (咸), Yu (豫), & Chung Fu (中孚), and transformational leadership's four dimensions of Idealized Influence, Inspirational Motivation, Intellectual Stimulation, and Individual Consideration(s). (Hexagrams and paradigms will be used interchangeably throughout this paper). Therefore, we expect to find similarities and differences between transformational leadership and the I-Ching governance perspective.

2.2 Ideologies shaping chinese leadership

Leadership is not recent; it existed when men started living together in groups. During China's 5,000 years of history, thousands of wars have had fought, and dozens of dynasties have risen and fallen, thus creating abundant models of governance approaches and leadership styles for us to study. While Chinese leadership studies have not been fully published systematically and presented

as those in Western management journals, the Chinese classics and philosophies have had voluminous works on leadership. In addition, other two paradigms shape Chinese leadership behaviors: traditional Chinese wisdom of literature and modern Western leadership theories, including Autocratic (authoritative) leadership, Delegative (laissez-faire) leadership, Transformational-Transactional leadership, Bureaucratic-nonhierarchical leadership, Participative (democratic) leadership, Servant leadership and cross-cultural leadership (Bonsu & Twum-Danso, 2018). Therefore, the leading Western scholars in management need to study the ancient Chinese classics and philosophies systemically for a comprehensive understanding of the leadership realm.

2.3 I-Ching: Chinese classics and philosophy

Based on the ancient literature on leadership and management in China, the Chinese leadership appears to be guided by Chinese pearls of wisdom and philosophies, namely I-Ching, Confucianism, Taoism, and Sun Tsu. Chinese leaders apply these thoughts and principles to handle present political and business issues and challenges (Lee, Tsui & Yau, 2019; Lee & Tsui, 2017; Kwock, James & Tsui, 2014; Kwock et al., 2013; 2014).

China is the world's second-largest economy. The prospect of China becoming the No. 1 economic power in the world in a relatively short time has kindled much curiosity from world leaders on such an unthinkable rebound and phenomenal financial success. Besides the political reform in China after 1949, another reason for China's awakening is the vast body of knowledge and wisdom literature in China that has turned China around from weak to strong. The Book of Changes (I-Ching) has been claimed as core guidance in shaping the minds of contemporary China leadership and practices (Yuduo et al., 2011; Zhang & Chua, 2009; Sadler, 1995). I-Ching makes known to the world in the twentieth century after more than four thousand years as a vibrant and essential body of knowledge and wisdom in China.

Furthermore, the hexagram prediction practice in I-Ching reflects the unconscious mind being consulted. Others believe the hexagram possesses the supernatural power of the universe to discover future events (Zhan & Shen, 2021; Sullivan, 2019). Whichever views we have on the predictability of I-Ching, it points to the truth that changing is the unbroken natural law. As such, I-Ching is initially used for divination. However, it can also be used for self-cultivation and corporate governance. I-Ching forms the theoretical base of Confucianism, leading to our understanding of change and the cardinal relationships (五倫: Wu Lun), including father and son relationship, order of elders and children, the difference between husband and wife, righteousness between ruler and minister, and trust among friends. These five interrelationships are in common with four levels at the national, organizational, interpersonal, and individual levels of the multi-paradigm cross-study approach in the West (Romani et al., 2018).

2.4 Transformational leadership at the Cross Roads

Despite many leadership studies published in management literature, researchers have warned about the predominantly American-centric nature of leadership theories (Santoso, 2019; Adler, 2002; Dorfman et al., 1997), which may have culture- and context-bound limitations, thus its effective application systems as compared with those in America, is doubtful (King & Zhang 2014). Moreover, the prevailing leadership theory – charismatic-transformational theory, which has been dominating the leadership field for over two decades, has recently been severely challenged (Graen, 2014; Van Knippenberg and Sitkin, 2013; Bass & Riggio, 2006). Lin et al. (2019) found that transformational leader behaviors were associated with high emotional dissonance and high turnover in the workplace. Cohen (2018) pointed out that negative leadership style or management behaviors show favoritism toward specific individuals or groups and intentionally deliberate marginalization of certain groups (often minority groups), and repressing the views of those deemed to be a potential threat to the status quo (Ewell, 2018; Schyns & Schilling, 2013). Transformational leadership's productivity and sustainable performance have been called into question because of the relative negligence of its negative aspects. The "Too-Much-of-a-Good-Thing (TMGT)" of transformational leaders creates a counterbalance to offset the performance of followers (Chen et al., 2018). Therefore, exploring a new perspective in leadership research to advance leadership theory and practice appears timely (Hui, 2022; Fox & Bourgeois, 2022; Arun & Kahraman, 2022).

3. Framework Development and Methodology

3.1 I-Ching's 64 Hexagram Formation

Ching, aka the Book of Changes, is an ancient Chinese book of divination that serves the purpose of oracles or seeking knowledge of the future with the help of line images. Originating from the Western Zhou period (1000–750 BC), three traditional Chinese philosophies strongly inform I-Ching divination: Taoism, Confucianism, and Buddhism. For instance, in the Analects, Confucius explained the change phenomenon by saying, "Everything flows on and on like this river, without pause, day and night." A trigram consists of three lines on top of each other. Broken lines represent yin, while solid lines represent yang. A combination of broke lines and solid lines forms a trigram. As there are three lines, we have eight trigrams describing eight natural phenomena, as shown in Figure 1: Heaven, wind, water, mountain, earth, thunder, fire, and river. In addition, in Chinese wisdom, all the images collectively depict the knowledge of the universe. Eight trigrams are put on one another to produce

more meaningful and relevant oracles to obtain sixty-four hexagrams (8x8) (Baynes & Wilhelm, 2011; Huang, 2010). The I-Ching's central feature provides an essential change management principle based on the Yin and Yang interconnected cycle. Yang represents the heaven, open, active, masculine side of nature, while Yin associates with the earth, close, passive, yielding, feminine side of nature. All things contain varying degrees of Yin and Yang elements. The changing movement of Yin and Yang is a never-ending interaction of themselves in a cyclical pattern. Eventually, Yin and Yang merge into one to create Tao, the ultimate universal situation (Liu & An, 2021).



Figure 1: Eight Trigrams (Gua)

Source: The Image is taken from the internet

3.2 Comparison

We must devise criteria to compare an I-Ching hexagram to the transformational leadership's dimension. In this regard, we adopted some of the measures suggested by Damian-Knight (1986) as follows:

1. **Related Paradigms** This refers to the four hexagrams closely associated with the corresponding dimension of transformational leadership.
2. **Meaning** This refers to the meaning of the hexagram according to the Image of each hexagram.
3. **Modality** This generally refers to what the leaders are required in practice, for example, what they need to do, consider, or watch.
4. **Ambiance** This pertains to the environment or climate that the hexagram indicates. Examples are quietness, tenseness, amiability, etc.
5. **Leadership behaviors/styles** This relates to the leader's specific characteristics influencing the follower.

6. **Management functions** These refer to the functions of planning, organizing, staffing, directing, and controlling, as suggested by Koontz (1972).
7. **Followership** This refers to five styles of followers: Exemplary, conformist, passive, alienated, and pragmatic survivor suggested by Kelly (1992).
8. **Communications and feedback** This measurement includes six choices: Effective, ineffective, proactive, active, passive, and indifferent.
9. **Growth and performance** This measurement includes four choices: High, moderate, average, and low.
10. **Creativity or innovation** This measurement includes four choices: High, moderate, average, and low.
11. **Risks** This measurement includes four choices: High, moderate, average, and low.

3.3 Methodology

The methodology is based on a multi-paradigm approach for the national cross-cultural study. Figure 1 depicts how the comparison is made. On the left-hand side of the figure, we have transformational leadership and its dimensions. In contrast, the four groups of hexagrams, each linked to the corresponding dimension of transformational leadership, are located on the right-hand side of the figure.

Selection of transformational leadership items

The literature review indicated four dimensions of transformational leadership. These are Idealized Influence, Inspirational Motivation, Intellectual Stimulation, and Individual Consideration (Bass & Avolio, 1997). According to the second revised version of MLQ (F) (Multifactor Leadership Questionnaire) (Bass & Riggio, 2006), three items are used to measure each dimension. As this is a continuation of the research conducted by Tsui, Lee, and Yau, 2020, they confirm that the four dimensions of transformational leadership are reliable and valid. Therefore, we have the confidence to proceed to adopt it for comparison in this article. The following items were used in previous research (Northouse, 1997) to describe or explain the meanings of each dimension.

Idealized Influence

- I make others feel good to be around me.
- Others have complete faith in me.
- Others are proud to be associated with me.

Inspiring Motivation

- I express with a few simple words what we could and should do.
- I provide appealing images about what we can do.
- I help others find meaning in their work.

Intellectual Stimulation

- I enable others to think about old problems in new ways.
- I provide others with a new way of looking for puzzling things.
- I get others to rethink ideas that they had never questioned before.

Individual Consideration

- I tell others what to do if they want to be rewarded.
- I let others know how I think they are doing.
- I give personal attention to others who seem rejected.

Bass & Riggio (2006)

The authors discussed the 64 paradigms for each transformational leadership item corresponding to the four dimensions. In the first stage, a hexagram was selected for inclusion to explain the transformational leadership dimension if at least three authors agreed. We use the hexagram image in the I-Ching for selection as a criterion. Confucius suggests the Image of each hexagram to explain the overall meaning of a particular hexagram. We also set four hexagrams for each transformational leadership dimension. That means four paradigms represent each transformational leadership dimension.

In the second stage, we invited an I-Ching expert to read the selected hexagram results to see if they match the transformational leadership dimensions and the above statements. If not, the expert would suggest a replacement for the hexagram, which he thought was unsuitable. In the third stage, the four authors discussed the suggested hexagrams. The selection process stopped if they agreed with the expert's suggestions. If not, they replaced the disagreed hexagrams with new ones and submitted them to the expert for further screening. The process restarted from stage 2 again until all hexagrams were accepted.

3.4 The Model of Comparing Transformational Leadership and I-Ching

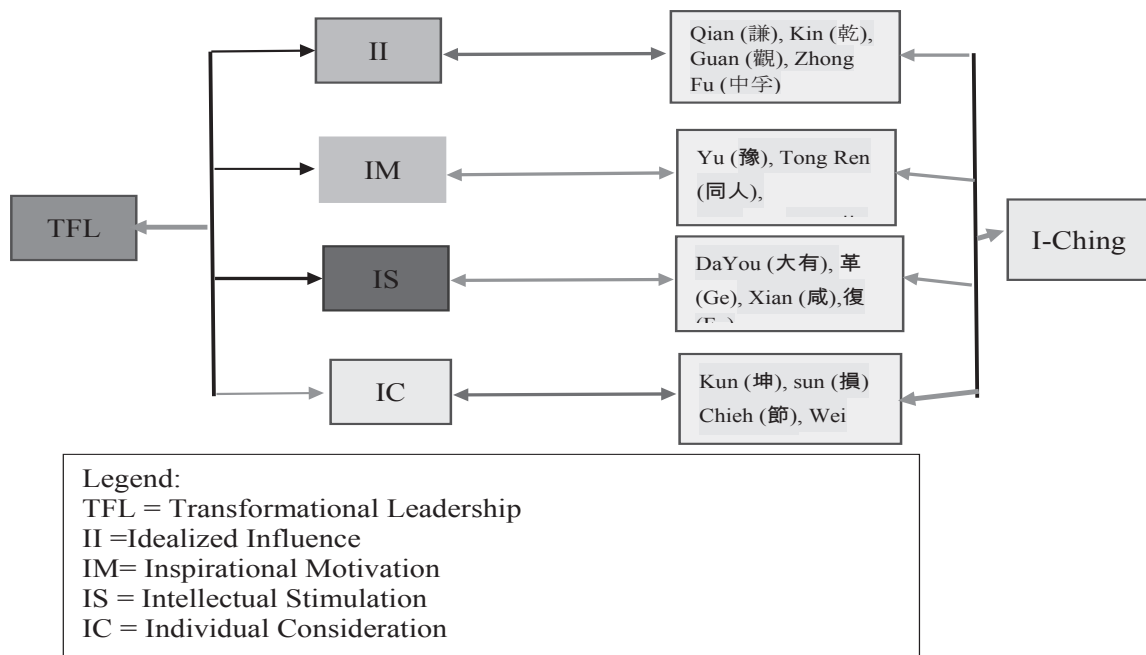


Figure 1. Comparing Transformational Leadership Dimensions with I-Ching Hexagrams

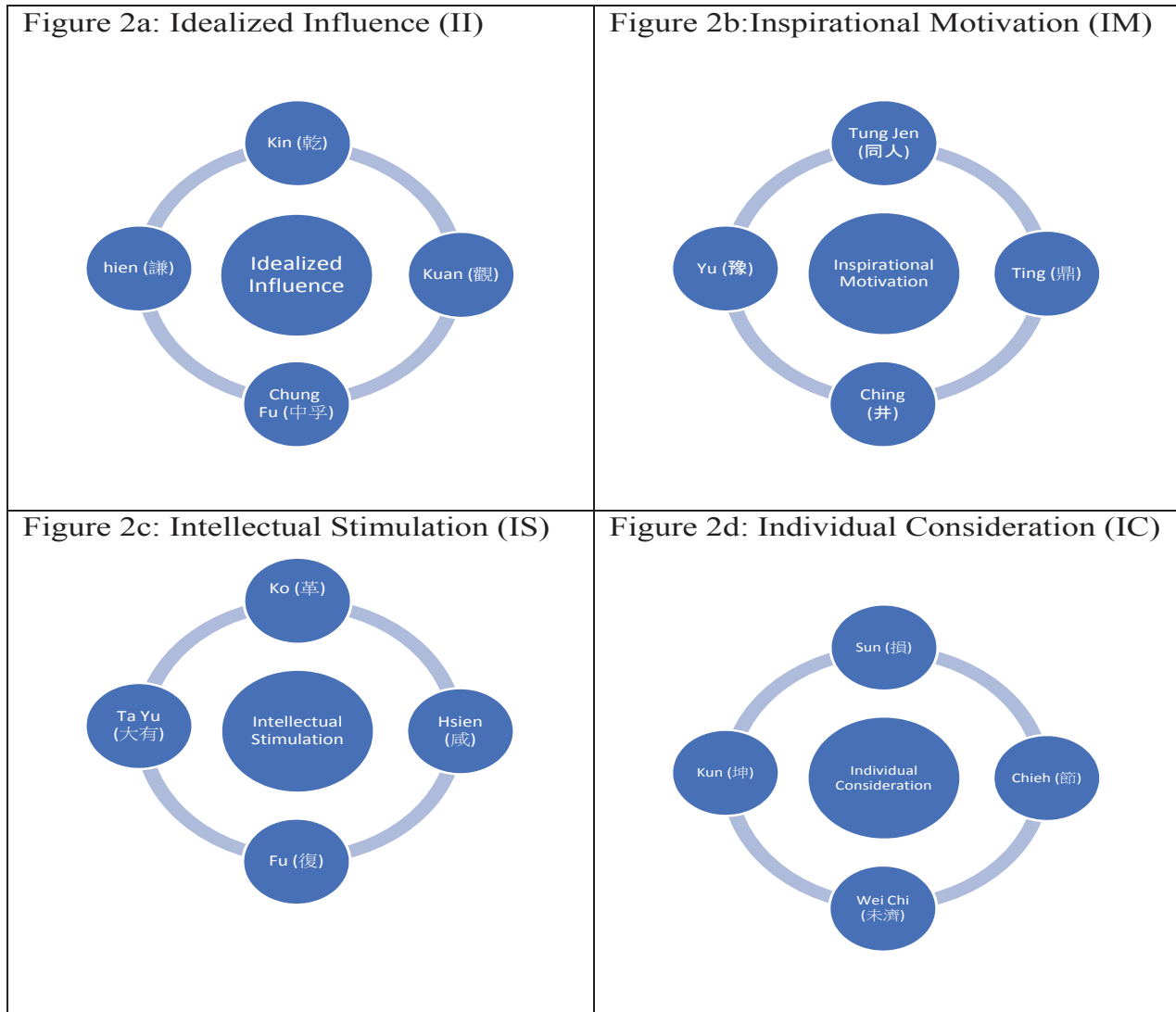


Figure 2: Comparing Transformational Leadership Dimensions with I-Ching Hexagrams

Figure 1 shows the model of comparing transformational leadership with I-Ching. On the left-hand side is transformational leadership which consists of four dimensions, II, IM, IS, and IC, whereas on the right-hand side are the corresponding I-Ching paradigms. The transformational leadership dimensions are linked with four I-Ching paradigms on the right-hand side. For example, II is related to Chien (謙), Chien (乾), Kuan (觀), and Chung Fu (中孚), meaning that II is equivalent to the four paradigms. Similarly, the four paradigms of Kun (坤), Sun (損), Chieh (節), and Wei Chi (未濟) serve to explain IC, the four hexagrams of Yu (豫), Tung Jen (同人), Ting (鼎), and Ching (井) represent IM, and finally, the four hexagrams of Da You (大有), Ko (革), Hsien (咸), and Fu (復) tend to explain IS.

The Four Dimensions of Transformational Leadership

1. The first dimension is *Idealized Influence*, and some

authors label it *charisma* as shown in Figure 2a. Followers regard these leaders as strong role models, and they appreciate these leaders to emulate them to follow because these leaders tend to have very high moral or ethical standards. These leaders provide their followers with a vision and a sense of mission so that they are deeply respected by their followers, who usually have a great deal of trust in them. These leaders are unique individuals who can lead people to follow the vision and mission they put forward. Northhouse (1997) identifies Nelson Mandela, the first President of South Africa, as someone who exemplifies this factor (Bass & Riggio, 2006).

2. The second dimension is labeled Inspirational Motivation as shown in Figure 2b. Followers regard leaders as their role models with the capability of communicating high expectations, inspiring them

through motivation to become committed to, and sharing the vision and mission of the organization. As a result, this dimension of transformational leadership also enhances team spirit. An excellent example of this factor may come from sales force management. A sales manager would motivate his team members to excel in their work by encouraging words and pep talks that communicate the importance of their integral role in the company's growth (Bass & Riggio, 2006).

3. Intellectual Stimulation is the third factor that affects transformational leadership as shown in Figure 2c. It describes Leadership that stimulates followers to achieve three objectives: first, to be innovative and creative; second, to challenge the beliefs and values of followers; and third, to challenge the beliefs and values of leaders and the organization. As such, this form of leadership may support followers in adopting new approaches and developing innovative ways of solving issues. An example of this leadership is an operation manager who encourages workers to adapt their efforts to create unique ways of solving production delays (Bass & Riggio, 2006).
4. The fourth dimension of transformational leadership is called individualized consideration as shown in Figure 2d. In this category, leaders are considered to stimulate their followers by creating a supportive climate that leaders listen to the individualized needs of followers. Leaders serve the dual role of coaches and advisors to help followers actualize their individual goals and grow through personal challenges. An example is that a manager spends time advising each employee in a caring and individualized manner. Some may be provided with solid affiliations, while some are treated with specific directives of a high level of structure (Bass & Riggio, 2006).

The authors discussed the 64 paradigms for each transformational leadership item corresponding to the four transformational leadership measures. A hexagram was selected for inclusion if at least three authors agreed. We also set 4 for each transformational leadership dimension, and that means four paradigms represent each transformational leadership dimension.

4. Comparison and Findings

4.1 The Selected Hexagrams of Idealized Influence

Corresponding to the first dimension of transformational leadership, we have selected four paradigms, Chien, Chien, Kuan, and Chung Fu. Table 1 describes the characteristics of these virtues.

Chien

Chien carries the meaning of modesty or being humble and is the fifth of the sixty-four paradigms of I-ching, the

middle hexagram of the upper book of I-Ching. As such, it pertains to the vital principle of being middle. Hence, China has been called "the middle kingdom" for more than two thousand years.

Chien requires an Ambiance where arrogance falls and modesty assumes prevailing. Therefore, a modest leader may have worked independently, but he/she will persevere.

However, there are several things that a modest leader should observe when making decisions. First, do not overstate or exaggerate when presenting. Second, this characteristic would only be good at leading to lateral changes and growth and earning trust from followers, particularly in the preparatory stage. Finally, leaders should not let success make them complacent; Otherwise, their future decision may become expensive.

Chien

Chien is the first and the most crucial hexagram in the book of I-Ching. This hexagram uses a metaphor telling how a hidden dragon in the den transforms into a flying dragon in the sky. According to Damian-Knight (1986), it carries the meaning of the creative, who stands in the auspicious position, leading to a gradual flowering. In adopting this hexagram, we should note two crucial features. Two hexagrams have the seventh line, Chien and Kun, as they are the doors of I-Ching. The seventh line of Chien is "All dragons (leaders) gather together, but no one is the head," an add-on to mean that a leader should be humble. According to Ching and Lui (2017), a true leader should be selected by his followers and not claimed by himself. We explain it as follows. All lines of Chien are yang, denoted by the number nine. When the seventh line is called "use nine," that means changing the six yang lines into six yin lines (Jing & Lui, 2017). Therefore, we get the Kun hexagram, representing followers who select their leaders before them.

Chung Fu

Chung Fu, which means honesty and trust-worthy, is the essential virtue among all paradigms in the book of I-Ching. Confucius says, "A man cannot be without honesty." Therefore, leaders who work according to this hexagram will create an atmosphere of cooperation because their followers trust them. With an open mind, he will listen and let the followers talk, making communication between themselves and his followers benefit miraculously.

To business partners, this charisma can change the tone and tenor of negotiations and develop ideas in fertilizing the ground for both parties for future business growth. However, we have to bear in mind that trust takes a long-time to establish, and honest people always suffer from the risk of being tricked and cheated before trust is well established.

4.1.1 Comparison Analysis

After clearly defining the four dimensions of transformational leadership and their corresponding four paradigms of I-Ching, we compare the four pairs as follows.

Idealized Influence and Chien, Kin, Kuan, and Chung Fu

The first dimension of transformational leadership focuses on Charismas or Idealized Influence, such as admired, respected, and trusted worthy. It does not mention what charisma is, looking for idealized influence leading to making others feel good, creating complete faith in people, and letting others be proud of him, as indicated by the three statements above. Therefore, charisma is more valuable as some personal characteristics lead to these three effects. The I-Ching approach is very different as we include only the four most important and specific charisma among the 64 paradigms. Of course, in I-Ching, more than four virtues are included in the analysis. If necessary, we can extend to more than four, depending very much on what influence we mean in the dimension of transformational leadership.

Comparing the two approaches, we consider that trust-worthy is similar to Chung Fu. However, leaders like Chien, Chien, and Kuan could be admired and respected. Therefore, we consider the I-Ching approach more specific but extensible than the transformational leadership approach, which tends to be general.

Now, we employ the comparison criteria to compare the two approaches.

The I-Ching approach looks for several functions, such as opportunities for creativity, recognition, training, learning, alignment with organizational vision, and predisposition to others, consistent with Western transformational leadership.

Both approaches emphasize an ambiance of quietness for contemplation. This is when arrogance falls, and modesty assumes prominence so that the organization adopts an open-door policy leading to a friendly working environment. Willing to take risks and are consistent

Having extraordinary capabilities is to try new things and overcome obstacles.

As such, we have to reassure others that obstacles will be overcome.

The leaders with the four I-Ching virtues may have worked conscientiously and automatically because these virtues let people admire them and have opportunities to be trained and learned, particularly for the young and inexperienced. On the other hand, the Idealized Influence of transformational leadership requires the capability of contemplating in quietness at all levels, doing the right thing, and demonstrating high ethical and moral standards.

Management decisions involve stakeholders. The I-Ching approach reveals that top management has to gain trust,

teach and train, observe actively, and win followers' respect. In contrast, it is time for followers to do things consciously, work faithfully, trust honestly, and give feedback immediately. The Chien Hexagram reminds leaders to influence their followers to follow their virtues, which is consistent with the interactional approach of transformational leadership in Idealized Influence.

This I-Ching approach is suitable for organizational growth, preparatory stage, lateral growth, vertical growth from top to bottom, and bottom-up vertical growth with strength.

Regarding internal communications and feedback, the management should be prudent and not overstate while the followers are proactive and positively receptive. These four virtues have the characteristics of lubricating communications quickly among leaders, followers, and business partners. As such, sound and new ideas are favorably received and eventually supported.

Concerning taking risks, both approaches consider risks pretty low. In particular, transformational leaders with Idealized Influence differ in having extraordinary capabilities of trying new things and overcoming obstacles. Moreover, growth and performance reassure others that obstacles will be overcome.

4.2 The Selected Hexagrams of Inspirational Motivation

Corresponding to the second dimension of transformational leadership, we have selected four paradigms, Yu, Ting, Ching, and Tung Jen.

Yu

Yu, which means providence according to the Image of I-Ching, is the sixteenth of the sixty-four hexagrams. It infers an influential force beyond human efforts but is thought to control people's lives. The essential driver of human living is to seek higher-value goals and achievements. Providence's modality is the enthusiasm with constant alertness, like riding a wild and mighty elephant can be both good and bad. The ambiance requests good preparation and planning that generate new opportunities. Prudent leaders should know their people's dreams, desires, and needs by maintaining trust-in-leader relations with the people they lead.

Ting

Ting is the fifth of the sixty-four hexagrams. It refers to openness and approachability. A Ting in ancient China is a three-leg or four-leg utensil; therefore, it is called a tripod in the Book of I-Ching. The modality of the tripod symbolizes the king's supremacy with good governance. At first, a tripod was used for cooking, and later it was used for sacrifice. Tripod's ambiance represents nourishment, reformation, regeneration, and punishment. All relevant ingredients, like cooking, must be managed and controlled orderly. Prudent leaders show absolute power to protect their people for safety and prosperity.

Ching

Ching is the forty-eighth of the sixty-four hexagrams. It provides essential resources for people daily living, like people drawing water from a well. Well's morality means valuable and helpful resources, like clear and drinkable water. The ambiance of a well refers to keeping and maintaining good equipment in workable condition for drawing water from a well. It is a misfortune if the rope does not go all the way to the water level and the bucket is broken and leaking. It implies three matters: finding valuable resources, using appropriate equipment, and proper training for skills to manage these resources. As such, prudent leaders must continually set challenging and meaningful goals for followers to achieve for their survival and self-worthiness.

Tung Jen

Tung Jen, colleagues in the Image of I-Ching, is the thirteenth of sixty-four hexagrams. It means collaboration, cooperation, and competition. The modality of colleagues is for mutual gains and support, i.e., shared respect, humility, and openness. The ambiance emphasizes the atmosphere, allowing team efforts to solve all problems and issues. As such, prudent leaders should know their people's strengths and weaknesses and offer necessary tangible and non-tangible resources to motivate followers to reach personal goals that may benefit the institutions and communities.

Comparison Analysis

After clearly defining the inspirational motivation dimension of transformational leadership and their corresponding four hexagrams of I-Ching, we compare the four pairs as the following: -

Inspirational Motivation Yu, Ting, Ching, and Tung Jen

The second dimension of transformational leadership focuses on inspirational motivation, which consists of three operationalized statements: 1. I express with a few simple words what we could and should do. 2. I provide appealing images about what we can do. 3. I help others find meaning in their work. We delineate these statements into four foci. First, motivation needs to set up high-value goals for achievement. Second, motivation needs guidance from the resourceful superior legitimacy. Third, motivation needs peer support and fair competition among colleagues. Fourth, motivation requires developing a high self-efficacy capability to face challenging (higher value) goals and resources. These foci match the meaning of "inspirational" and "motivation." Inspirational refers to high-value achievements, and motivation is a dynamic force of balancing internal perception and external circumstances.

In the I-Ching perspective, the four hexagrams share the same outcome: inspirational motivation seeks to accomplish challenging goals, from a higher value to primary survival goals. However, I-Ching further provides

additional conditions and factors to enrich motivation. For example, the Yu hexagram denotes a paradoxical goal-setting mentality. The Ting hexagram indicates that motivation requires a superior's legitimacy support. The Ching hexagram emphasizes that motivation needs self-efficacy and self-cultivation enhancement to accomplish challenging personal and institutional goals. Finally, the last hexagram of Tung Jen emphasizes that motivation comes from external pressure from superiors, peers, and subordinates. Therefore, the I-Ching motivation approach is based on a 360-degree multi-dimension of influences, while transformational leadership is more or less on two levels: leader-follower interpersonal relationship.

4.3 The Selected Hexagrams of Inspirational Stimulation

Corresponding to the third dimension of transformational leadership, we have selected four hexagrams: Ko, Da You, Hsien, and Fu. Table 3 describes the characteristics of these virtues.

Ko

Ko, skinning in the Image of I-Ching, is the forty-ninth of sixty-four hexagrams. It refers to revolution turmoil as a routine change. The modality of this paradigm is to discover the truth, authenticity, and genuine fulfillment. The ambiance is facing fear, anger, and frustration during change. The skinning process is natural, like animals and reptiles shed their skin in cycles. As such, prudent leaders surf above the wave of change to help people to embrace any change ahead and give supports to deal with conflicts and sufferings during change.

Da You

Da You, which means excellent possessing in the Image of I-Ching, is the fourteenth hexagram of I-Ching. It refers good harvest. The modality of this paradigm is a sense of success in a favorable position. The ambiance is to call for union and a time of joining and partnerships. In full possession and at the height of power, prudent leaders remain modest and give honor to the sage who stands outside the affairs of the world.

Hsien

Hsien, which means Influence in the Image of I-Ching, is the thirty-first hexagram. It refers to an acceptable solution after complicated negotiation where all parties accept what they get at this moment. The modality focuses on mutual dependency. For example, in a courtship between two genders, the masculine takes the initiative and places himself below the feminine. However, the ambiance of influence warns that excess joy is harmful, and the pleasure should be contained within proper bounds. As such, prudent leaders know how to use their attraction and charisma to keep followers under their sphere of influence and be good listeners of their voice, like the lake nourishes the mountain while the mountain causes the rain to fall and fill the lake.

Fu

Fu, which means returning in the Image of I-Ching, is the twenty-fourth hexagram. It refers to returning to where we started, like going home. The modality focuses on examining original intentions and purposes in the current direction. This internalization process helps people to see what they may have done wrong and look for new improvements. The ambiance is to reconnect and encounter others for a fresh start. Prudent leaders show original sincerity by aligning intention, commitment, and skills to achieve a new beginning.

Comparison Analysis

After clearly defining the intellectual stimulation dimension of transformational leadership and their corresponding four hexagrams of I-Ching, we compare the four pairs as the following: -

Intellectual Stimulation and Ko, Da You, Hsien, and Fu

The third dimension of transformational leadership focuses on intellectual Stimulation, which consists of three operationalized statements: 1. I enable others to think about old problems in new ways. 2. I provide others with a new way of looking for puzzling things. 3. I get others to rethink ideas they had never questioned before. We delineate these statements into four focuses. First, intellectual Stimulation requires two concerning parties: a leader and a follower. Second, they come together to accomplish a task. Third, someone should take the lead and initiates a guided dialogue between a leader and a follower. Usually, a leader should first take the lead with followers. Fourth, the fruitful stimulation outcome can go beyond the comfort zone and look for new answers. These foci match the meaning of “intellectual “and “stimulation.” Intellectual refers to the interaction of cognition and logic of two individuals, and Stimulation is a dynamic synergically process to offer a solution acceptable between the concerned parties.

From the I-Ching perspective, while the impact of the four hexagrams shares the exact outcome of intellectual Stimulation for finding better solutions, I-Ching further provides more to enrich the results. For example, the Ko hexagram emphasizes embracing and facing unharmonious conditions such as fear and pain during any intellectual stimulation encounter. The Da You indicates that intellectual Stimulation is not only advancing a war but also winning a battle as the central perspective of this dimension. The Hsien hexagram points out that any meaningful stimulation comes from mutual attraction and respect at the same level rather than showing supremacy over others. Finally, as the fourth hexagram, Fu emphasizes that any smoothly intellectual stimulation must be conducted with the parties’ mutually supportive intentions and benefits. As such, it is acceptable to admit mistakes and rectify any sidetracked conditions so that

concerning partners can allow a new start. Therefore, the I-Ching perspective on intellectual Stimulation is about self-cultivation.

4.4 The Selected Hexagrams of Individual Consideration

Comparing Individual Consideration with Four I-Ching Hexagrams: Kun, Sun, Chieh, and Wei Chi.

Corresponding to the first dimension of transformational leadership, we have selected four hexagrams, Kun, Sun, Chieh, and Wei Chi. Table 4 describes the characteristics of these virtues.

Kun

Kun, one of the essential hexagrams in I-Ching, carries the meaning of the receptive and represents the earth. The Image of the earth is analogous to a “mother” who embraces and protects her son and daughters in her vast womb. According to Baynes and Wilhelm (2011), it demonstrates the nature of the man who is devoted to serving four characteristics: yielding, devoted, moderate (central), and correct. This is the second of sixty-four hexagrams in the book of I-Ching.

Kun requires an ambiance that is warm and mild so that receiving ideas by listening from followers and caring and nurturing followers become a symbol of motivation.

However, there are several things that a receptive leader should observe when making decisions. First, the leader should take a long-term and broad view of auspiciousness while planning. Second, do not overstate or exaggerate when presenting. Third, the risk is low as the followers support the leaders. Finally, the leader will make full use of ideas from followers. Therefore, the results will be noteworthy auspicious.

Sun

Sun is the second hexagram corresponding to the individual consideration we selected. It means that things cannot be permanently amid obstruction. Now leaders are reaching a stage of decrease in a time of leanness. As such, the leader may need to practice redirecting resources, not much in the way of luxuries. Nevertheless, specific values still shine through sincerity, peace, innocence, standstill, and self-sacrifice (corresponding to hexagrams 11, 12, and 25).

Wilhelm (2000) argues that the hexagram Sun (decrease) should be read together with the hexagram Yi (increase). He says that “decreasing what is above, increasing which is below and then the joy of people is boundless. Chen (1998) suggests three prerequisites for leaders to be self-constrained. First, they must be competent and resourceful and come out with sincerity and trustworthiness. Second, to their followers, they need to behave righteously and not be biased on both sides in their words and deeds.

He also suggests two principles for leaders to be self-constrained in distributing resources to motivate their

followers. The first principle is to work from their hearts as long as they do not fail and do according to propriety. That decrease and increase come alternatively or randomly leads to the second principle, which advises leaders to perform timely and adequately.

Chieh

Chieh is the third hexagram corresponding to individual consideration, and it has the meaning of limitation. Regarding running the business, leaders must carefully plan to allocate resources to individual followers according to their needs.

Limitations are troublesome. By imposing restrictions on followers, leaders would make them rebel and unhappy. Therefore, leaders should set fixed limits on expenditures, act to preserve property, and prevent injury to individual followers.

Wei Chi

Wei Chi is the last hexagram of I-Ching. Although so, it does not mean the end of the large cycle of I-Ching. Instead, it means that the time transiting from disorder to order is not yet complete. The leader is working on a task that promises success because there is a goal that can unite the forces now tending in different directions. Now the situation is like walking over ice which tends to crack, so leaders should lead their followers to search carefully and circumspectly for the safest spots.

The Image of this hexagram is the condition before transition (Baynes & Wilhelm, 2011). The leader should be scrupulous and able to differentiate things so that each follower finds his/her safest place to move on.

Comparison Analysis

After clearly defining the individual consideration dimension of transformational leadership and their corresponding four hexagrams of I-Ching, we compare the four pairs.

Individual consideration and Kun, Sun, Chieh, and Wei Chi

The last dimension of transformational leadership focuses on individual consideration, which consists of three operationalized statements: 1. I tell my followers what to do if they want to be rewarded, 2. I let them know what I think they are doing, and 3. I give personal attention to their work. We delineate these statements into four focuses. First, rewards are to be allocated to the followers. Second, how to get these individual rewards. Third, communication with followers concerning their performance. Fourth, the leader cares about the followers' work.

These foci match the meaning of "individual" and "consideration." Individual refers to followers, while consideration denotes rewards and attention.

On the contrary, in the I-Ching approach, while the four hexagrams bring up ideas that are congruent with that of

the transformational leadership approach, they provide conditions to which these foci are in the consequences they lead. For example, the Chieh hexagram denotes the allocation of resources in a time of limitation. In the Wei Chi hexagram, individual attention to followers should keep up individual and team spirit. Further, in the I-Ching approach, Kun denotes that "these considerations" are not made or created, so they only last for a short time. It shows the virtue of leaders who display a "no pretend" loving care for their followers.

Therefore, we consider the I-Ching approach more ethical-oriented than the transformational leadership approach, which tends to be temporal. Comparing the two approaches, we believe that individual consideration is like Kun, which is characteristic of forming bases and backing up followers whenever helps are needed.

Now, we employ the comparison criteria to compare the two approaches.

As for management functions, the I-Ching approach continuously looks for planning and controlling. Kun is the propelling force behind individual consideration, whereas Chieh sets forth to plan in the time of limitation. Sun serves to control the allocation of rewards or expenditures to followers accordingly to performance. In this regard, the pattern is consistent with the Western ways of transformational leadership.

Both approaches deal with considerations in the time of leanness. In particular, we select Chieh, a hexagram that denotes the time of limitation, analogous to leanness in meaning. This is when followers need to be motivated and communicated with what the leaders are thinking. Further, this is also the time to deliver care and love through pep talks.

As far as communication is concerned, people are receptive and passive. Therefore, ensuring the communications are bi-directional, flexible, and transparent. This is consistent with the transformational leadership approach, which focuses on transparent communication. Let the followers know they benefited miraculously from having good communication with the leaders.

Concerning the growth and performance of the organization, individual consideration is suitable for the preparatory stage, leading to lateral changes and growth. In a period of limitation, it is helpful that constraints prepare the organization to react to the development. As Kun indicates, it is necessary to be open-minded and develop ideas to fertilize the ground for business growth. On the contrary, transformational leadership tends to be different in arousing team spirit.

Regarding creativity, the I-Ching approach lets leaders favorably receive new and good ideas from their followers, but not so in the time of gaining. However, leaders should not be so timid and self-limiting to deny a challenge, which is consistent with transformational

leadership, which tends to be receptive to creative ideas.

Concerning taking risks, both approaches consider risks pretty low. Therefore, it is not a concern for leaders but an opportunity for individual followers to grow.

In short, first, I-Ching is far broader and deeper in meaning than transformational leadership's dimensions. Based on Bass's scale (1996), there are four dimensions for the transformational leadership scale; each dimension has three statements, whereas there are 16 paradigms that can interpret transformational leadership. Therefore, each paradigm's meaning is far more profound and broader than that of the transformational leadership counterpart. For instance, as explained in the previous section, regarding the first dimension of transformational leadership, Idealized Influence's three statements.

Summary

The first dimension of transformational leadership is related to creating a friendly relationship with others, gaining trust from others, and being proud. However, the four paradigms carry far broader and deeper meanings. For instance, Chien in the I-Ching leadership refers to humbling oneself to communicate with subordinates and includes the value of being not too complacent. Otherwise, the I-Ching leader may not be successful.

Second, I-Ching is culturally bounded and is a true manifestation of Chinese virtues. In other words, I-Ching leaders put formidable emphasis on the intention and ethics of the leaders, who practically adopt an ethical consequentialist approach. However, transformational leaders can ignore ethics and intention and adopt a utilitarian consequentialist approach. Western scholars worry about the possible absence of ethics in transformational leadership (Burnes, Hughes, & By, 2016; Burnes, 2014; Burnes and By, 2012; Dunphy et al., 2007). It is not difficult to find that transformational leaders just changed the organization to please the interests of the significant stakeholders without observing the interests of the small stockholders of the same organization. For instance, the third dimension of I-Ching Kun is the virtue of taking a macro and comprehensive view of the organization.

The last paradigm Chung Fu (中孚), is related to the virtue of integrity of the I-Ching leader. An honest leader will eventually attract others to trust and follow. However, in Western culture, transformational leadership's dimensions are not related to virtues but the means only. Instead, it is attached to the utilitarian consequentialist approach, leading to short-term rewards and gratifications. In other words, transformational leaders ignore integrity and honesty; they care more about the result. Though sometimes transformational leaderships are found to care about their followers, the primary purpose is to attain a result. In brief, all four paradigms selected from I-Ching are based on virtues, but transformational leadership is based on utilitarian results.

Third, I-Ching is a deep-down cultivation process, but transformational leadership is more superficial than the I-Ching approach. In addition, I-Ching leaders pay attention to training and teaching the followers so that followers will become virtuous I-Ching leaders after the cultivation process.

5. Conclusion

This paper supports that leadership roles and styles are influenced by the cultural value frame of reference (framing) when dealing the ever-changing environments. Transformational leadership has been one of the most studied models in the leadership and management field in the past decades, and it was introduced to China in the 2000s (Doci, Hofmans, Nijs & Judge, 2020, Berkovick, 2018). Chinese scholars have launched substantial research on this Western leadership behavior because this leadership presupposition seems closely related to Chinese governance philosophy (Zhang & Tan, 2021). Our study concludes that there are similarities and differences, as mentioned above in sections 3 and 4, between transformational leadership's four dimensions and the 16 chosen paradigms of I-Ching. We propose the following three implications:

5.1 Theoretical Implication

Leadership literature has been dominated by the Western perspective (Kwan, 2020) because of political and economic dominance for decades. However, China's recent rise in power and America's relative decline provoked a vital question: What makes China successful in reducing its disparity in capability with the USA and EU? Theoretically, China should not be able to surpass the United States in such a short time in terms of military power, dollar hegemony, semiconductor technology, and space exploration. Institutional theorists attribute the advancement of the Western capability of modernization, industrialization, or financial growth to the United States democratic system and the strict separation of institutional powers. However, both aspects are not fully endorsed and adopted in China's governance system. This paper finds fundamental theoretical differences in the transformational leadership formation process between China and the United States in the following ways. First, the Chinese focus on an 'organic mindset' while the Americans look for the analytical (Steward & Burnett, 1991). Second, the Chinese emphasize analogical and correlative thinking, while Westerners think of causal effects. Third, under the different cultural frames of reference, the Chinese prefer interplay relationships, and Westerners focus on the role of social relationships (Kwock, James, & Tsui, 2014; 2015). Fourth, I-Ching provides far broader and more profound meaning in explaining transformational leadership's dimensions. Fifth, I-Ching is beyond a culturally fixed mindset that should be adopted worldwide. In other words, I-Ching leaders put formidable emphasis on the intention and ethics of the leaders, who practically adopt

an ethical consequentialist approach. Last, the I-Ching approach is a deep-down cultivation process, while the transformational leadership approach tends to be superficial. In sum, our paper provides a comparison of two different frames of reference of I-Ching governing leadership and transformational leadership by looking at the Western current management framework of meaning, modality, ambiance, leader's behaviors, follower's responses, management functions, growth & performance, communications & feedback, creativity & innovation, and risk, as referencing. The structural rationalism of governance about societal, ontological, human nature, and epistemological human affairs in Chinese perspectives.

5.2 Management Implication

Good leadership in the Chinese perspective can deal with constantly changing environments. Transformational leadership in the Chinese perspective goes beyond a "self" journey of protecting self-esteem and achieving self-actualization according to the modern needs theories of motivation (Marcrak & Yawson, 2021; Sullivan, 1989). A transformed leader, in the eyes of the Chinese, focuses on self-cultivation to awake self-conscience (良知/良心) for the benefit of others. The self-conscience, drawn from classic Chinese literature, i.e., I-Ching, Confucianism, and Taoism, can be developed through different means, such as meditation and contemplation. Therefore, the transformational process is not an "add-on" behavior that creates emotional dissonance and hypocrisy. A trustworthy transformed leader must promote five cardinal relationships and practice eight virtues, i.e., father and son, order of elders and children, the difference between husband and wife, righteousness between ruler and minister, and trust among friends. In addition, the leaders must live out the eight virtues of Loyalty, Filial, Piety, Benevolence, Loyalty, Love, Faith, and Peace. These measures as a transformational process require an education and training process. As such, we propose that the human resources unit of institutions consider a new direction of leadership development that focuses on a transformational mindset.

5.3 Education Implication

This paper concludes that the I-Ching's frame of reference shares many common meanings and interests for transformational leadership in the Western world. In other words, I-Ching is a vital learning source for developing business leaders with cross-cultural management perspectives. One of the human resources responsibilities is leadership development, and without good leadership, organizations will go astray and fail. As such, we propose a paradigm-shift-leadership-development-training framework for senior managers based on the I-Ching-Transformational Leadership framework of three dimensions and 16 managerial behaviors as follows:

1. Tian-Dimension contains some selected Hexagrams

of Chien (謙), Chien (乾), Kuan (觀), Ko (革), and Fu (復). Tian (天) means heavenly mandate that matches the concepts of values, visions, and missions of Western strategic management. Tian-Leadership defines a transformation leader as not an add-on feature behavior but a beyond self-wakening process (Grady & Gough, 2014; Dishman et al., 2005; Manz & Sims, 1980). Despite recent literature warning that's dark side creates hypocrisy that destroys trust, emotional dissonance, and non-sustainable performance, Tian-Dimension seeks harmonious and balanced relations with full respect for the laws of nature. The core mandate of business leadership is to explore the world's unlimited potential growth of the trade market and follow the trend without destroying it. Therefore, the Tian dimension must respect laws of change that govern humanity's development.

2. De-Dimension pertains to some chosen Hexagrams of Yu (豫), Ting (鼎), Ching (井), Tung Jen (同人), and Kun (坤). De (地) means the earth that covers three essences of motivation drivers of survival, growth, and prosperity in the West and Fu (福), Lu (祿), and Shou (壽) in China. Fu means auspiciousness, blessing, or happiness obtained through a Locus of Control based on internal & external forces (Lefcourt, 2014). Lu (祿) means remunerations, including basic salary, bonus, and various forms of recognition. The other meaning of Lu (路) is pathway and road. It implies that building infostructures are an artificial collective effort for the prosperity and security of a nation. Shou (長壽/首腦/手藝) means longevity, headship, and skillful hands. These three elements are obtainable through a hard-working process of accumulating knowledge and practicing skills. As a result, Fu, Lu, and Shou are core motivation drivers to move people toward a better civilization. These three drivers relate to intrinsic motivation and extrinsic motivation studies (Yudhvir & Sunita, 2012; Sullivan, 1989) based on needs-based theories of motivation and process theories of motivation (Marcrak & Yawson, 2021). Therefore, influential business leaders must offer appropriate solutions to maintain people's motivation to perform.
3. Ren (人/忍/仁) means men (two individuals), endurance with tolerance and patience, and co-humanity (humaneness), which relate to team theories in Western management studies (Ashkanasy et al., 2017; Nielsen, 2010). Ren-Dimension refers to some selected Hexagrams of Hsien (咸), Chung Fu (中孚), Da You (大有), Sun (損), Chieh (節), and Wei Chi (未濟). Furthermore, the ren-dimension focuses on maintaining proper relationships with people regarding emotional safety, job security, and equity balance of membership status during the team formulation process. As such, trust-in-leader and

trust-in-follower are dynamic cycles of choosing and selecting the right talents for the right jobs in Chinese leadership. As a result, the impact of the Ren dimension focuses on renewable resources of people's capacities for the sustainable growth of performance (Yin et al., 2019; Shahab et al., 2018).

Limitations and Future Research

This research has some limitations that need further study. First, the proposed I-Ching-Transformational Leadership framework is relatively new and requires further investigation, mainly using mediation analysis to understand the transformational mechanism process. Second, this paper is not a quantitative study to compare the data of Western and China leadership. However, a scale of the I-Ching-Transformational Leadership construct for statistical analysis should be employed for further predictive validation in the cross-cultural setting. Third, the scope of choosing other hexagrams of I-Ching will enhance cross-cultural leadership studies. Finally, more cross-cultural leadership case study analyses should be conducted to bridge and integrate Western pragmatism in management and Chinese structural rationalism in governance.

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Table 1 Idealized Influence

	I-Ching Paradigms (hexagrams)				Transformational Leadership's Equivalent Features
Related Paradigms	15 Chien ☰ ☷	1 Kin ☵ ☲	20 Kuan ☵ ☲	61 Chung Fu ☰ ☷	Idealized Influence
Meaning	Modesty	The creative	A panoramic view	Honesty/trust-worthy	Role models
Modality	Opportunities for recognition.	The impulse to action, energy regeneration	Align with organizational vision.	Predispose others	Walk extra miles.
Ambiance	The arrogant falls and modesty assume prominence	Ideals, beginning of growth, originality	Quietness/contemplation	Creating an emulation atmosphere	Amicable atmosphere
Leadership behaviors/styles	Worked conscientiously without help but will persevere.	Recruiting young and inexperienced	Contemplating in quietness at all levels.	Intuition, communication, and cooperation.	Admiration, respect, and trust
Management functions	Planning needed	Have creative energy, organize staff and resource	Staffing	Planning needed	Planning, Organising, Staffing, and Directing
Followership	Passive	Active	Passive	Conformist	Conformist
Communications and feedback	Active	Proactive	Active	Active	Active
Growth and Performance	High	High	Moderate	Moderate.	High
Creativity / innovation	High	High	Moderate	High.	High
Risks	Low	Low	Low	Low +	High

Table 2 Inspirational Motivation (IM)

	I-Ching Hexagrams				Transformational Leadership's Equivalent Features
Related Paradigms	16 Yu ☰	50 Ting ☵	48 Ching ☱	13 Tung Jen ☶ ☶	Inspirational Motivation
Meaning	preparing high-value goal	Well Governing	sustainable nurture	Collaboration	Motivation and inspiration
Modality	courage to move forward	excellent performance	non-substitutional resources	teamwork	High involvement.
Ambiance	Self-awareness to understand the situation	Institutional rationalization	Reasonable resources	Affinity	Enthusiasm
Leadership behaviors/styles	Knowing people's needs and wants	Well mannered	Resourceful	team spirit	Compelling vision
Management functions	Planning / Organizing	Staffing / Directing / Controlling	Planning/organizing	Staffing / Directing	Exemplary
Followership	Exemplary / Conformist	Conformist	Conformist	Exemplary / Conformist	Conformist
Communications and feedback	Effective	Effective	Effective	Effective	High
Growth and Performance	Positive Feed Forward	Positive feed-forward	positive	Positive	High
Creativity / innovation	Moderate	low	low	High	High
Risks	low,	high	high	Moderate	High

Table 3 Intellectual Stimulation

	I-Ching Hexagrams				Transformational Leadership's Equivalent Features
Related Paradigms	49 Ko ☰	14 Ta Yu ☱ ☱	31 Hsien ☰	24 Fu ☰	Intellectual Stimulation
Meaning	Revolution	heyday: full but not overflowing	Empathy	Turnaround	Problem Solving for improvement

Modality	Real fulfillment	A sense of your success time arrival	Co-ordination & collaboration	Anti-villain	Extra Effort
Ambiance	Leveraging ability for survival	A sense of union	Self-control	Cautiously	Supportive with collaboration
Leadership behaviors/styles	High in power	Self-awakening	Nourishing	Alignment	Advancement: Beyond the comfort zone
Management functions	Directing / controlling	Staffing	Organizing/staffing	Planning	Planning
Followership	Pragmatic Survivor	Conformist	Conformist	Pragmatic Survivor	Conformist
Communications and feedback	Passive	Proactive	Effective	Effective	Effective
Growth and Performance	High	High	High	High	High
Creativity / innovation	High	Moderate	High	High	High
Risks	High	Low	Average	High	High

Table 4 Individual consideration

	I-Ching Hexagrams				Transformational Leadership's Equivalent Features
Related Paradigms	2 Kun ☵	41 Sun ☵	60 Chieh ☵	64 Wei Chi ☵☵	Individual consideration(s)
Meaning	Receptive/ Care	Financially Losing	Controlling	Never Ending	motivate and inspire those around them by providing meaning and challenge to their followers' work.
Modality	Making things grow	Teaching, training, connecting, and communicating	Expenditures are planned carefully.	Going concerned.	Get followers involved in envisioning attractive future states
Ambiance	To ideas, to listen, to care, and nurture.	Lean times	Limited resources	Not complacent	Enthusiasm is displayed

Leadership behaviors/styles	Understand the responsibility of how individual followers grow and prosper	Recruiting young and inexperienced.	To appraise funding and re-organize resources	Moving toward completion with changes and transitions due to imbalanced states.	The leader articulates a compelling vision of the future
Management functions	Long-term planning and broader view	Need training and learning. No big plan.	Staffing and workforce at the individual level	Plan to consider challenges. Directing needed.	Need training and learning.
Followership	Passive	Passive	Conformist	Conformist	Conformist
Communications and feedback	Proactive	passive	Passive	Effective if followed. passive	Transparent communication
Growth and Performance	High	Moderate	Moderate	moderate	Team spirit is aroused.
Creativity / innovation	High.	Average	Average	Moderate	Receptive to creative ideas.
Risks	Low	Low	Average	Average	Average

How Networking Competence Influences Career Control: A parallel Multiple Mediation Model

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Abstract

Drawing on social capital theory, the aim of the present research is to examine the association between networking, work exploration, reflection on motivation, and career control. The sample was gathered from 421 employees working in public and private organizations in North India. To investigate the relationship among variables regression analysis was performed. Also, Hayes process macro and bootstrapping analysis were put into use to investigate the parallel mediation effect. The important findings of the study are as follows: (i) networking competence has a positive impact on career control; (ii) networking competence, work exploration, and reflection on motivation are pivotal antecedents of career control; (iii) work exploration and reflection on motivation partially mediate the association between networking and career control. Furthermore, Results also showed that work exploration is a more important mediating factor than a reflection on motivation in the examined relationship. The current study findings imply that employees who are proficient in networking competence will be having more control over their careers.

Keywords

Career Control, Networking, Reflection on Motivation, Social Capital Theory, Work Exploration, Parallel Mediation

Introduction

According to the boundaryless career perspective (Arthur and Rousseau, 1996) or protean career perspective (Hall, 2004), networking competence is a key and way of seizing control of ones' career and thus plays a significant role in scholarship on employability (Briscoe and Finkelstein, 2009) and career management and development (Sturges *et al.*, 2002). Past several studies have revealed the networking is positively associated to job search (Wanberg *et al.*, 2000), to career success (Forret and Dougherty, 2001; Wolff and Moser, 2009), and to performance improvements (Thompson, 2005). Furthermore, personal social ties are important in finding employment (Granovetter, 1973). Consistent with the above significant outcomes, a scholar's recommendations can be summed up as "Networking, networking, networking" (Watanabe, 2004 p. 812).

In consistent to the findings of (McArdle *et al.*, 2007), the current study investigates the association between networking and career control. Akkermans and colleagues (2013) defined career control as "actively influencing learning processes and work processes related to one's personal career by setting goals and planning how to fulfill them". It refers to that, people who feel in control of their career believe they own their destiny and are in charge

of building their own careers. It indicates the amount to which individuals accept personal responsibility for their own growth and work environment, as seen by less challenges in choosing on a future job, i.e., greater career decidedness (Savickas, 2002)conduct and analyze social surveys. It emphasizes the links between theory and research, the logic and interpretation of statistics and the practices of social research. This fifth edition has been completely rewritten with new examples and data. It also includes new material on technology, using qualitative and quantitative methods together, and data analysis. As well as showing how to conduct good surveys, De Vaus provides the tools to enable readers to become critical consumers of research. He stresses that the logic of surveys and statistics is simply an extension of the logic we use in everyday life, but that analysis is an art which requires creativity and imagination rather than the application of sterile mechanical procedures. In consequence, his presentation highlights the plain logic, selection and interpretation of statistics rather than formulae and computation. The aim is to help students-understand the purpose of statistics. Surveys in Social Researches essential reading for students and anyone else working with surveys. It assumes no background in statistical analysis, and gives readers the tools they

need to come to grips with this often-confusing field of work.”Savickas, 2002. According to researchers, developing career control competency, among further skills and competencies, should lead to people having a more optimistic perspective of their potential to seek and sustain employment. To build career control competency, one of the antecedent that play an important role is a reflection on motivation. (Akkermans *et al.*, 2013) defined Reflection on motivation, as “reflecting on values, passions, and motivations with regard to one’s personal career”. Individuals who are competent and consistently reflect on their beliefs, motivation, and passions, are said to have a comprehensive awareness of their self-concept and the ability to use that understanding to make informed decision related to their career that are in sync with their self-concept. In career competencies scholarship, self-awareness referred as a precise and comprehensive appraisal of one’s own traits, attributes and qualities, regarded as an important component of career development and work exploration (Greenhouse, J., Callanan, G., & Godshalk, 2000). Work exploration is one of the “knowing how” career competencies, defined as “actively exploring and searching for work-related and career-related opportunities on the internal and external labor market”. More concisely, (Zikic and Klehe, 2006) defined career exploration as “the gathering of information relevant to the progress of one’s career” (p. 393). Work exploration competency stimulates the development of coherent career vision, aiming for meaningful work-life, managing the constant quick changes, and supports the individual in handling diverse career and life transitions (Zikic and Klehe, 2006). Given that individuals are increasingly required to engage in career exploration not just at the start of their careers, but continually and during all phases of their careers, an evolution in the conception of career exploration is important (Zikic and Hall, 2009). As a result of these shifting contexts, work exploration is now seen as an important aspect of career adaption (Marciniak *et al.*, 2021) and as an essential factor for career success and career endeavors (Savickas, 2002)conduct and analyze social surveys. It emphasizes the links between theory and research, the logic and interpretation of statistics and the practices of social research. This fifth edition has been completely rewritten with new examples and data. It also includes new material on technology, using qualitative and quantitative methods together, and data analysis. As well as showing how to conduct good surveys, De Vaus provides the tools to enable readers to become critical consumers of research. He stresses that the logic of surveys and statistics is simply an extension of the logic we use in everyday life, but that analysis is an art which requires creativity and imagination rather than the application of sterile mechanical procedures. In consequence, his presentation highlights the plain logic, selection and interpretation of

statistics rather than formulae and computation. The aim is to help studentsunderstand the purpose of statistics. Surveys in Social Researchis essential reading for students and anyone else working with surveys. It assumes no background in statistical analysis, and gives readers the tools they need to come to grips with this often-confusing field of work.”(Savickas, 2002).

Comprehending how employees’ networks, explore the job in labor market and also impact of reflecting on career motivation to further enhance employees’ career control are important questions for career mentors and human resource development practitioners. Drawing on social capital theory, which constitutes a useful resource that gives you access to fresh information, resources, and possibilities both inside and beyond your organization (Tymon and Stumpf, 2003). They also asserted that social capital is extremely important and that it provides employees with a considerable source of strength and power. It might lead to symbolic capital, which is useful for gaining control over one’s career. Since Mid-1990’s numerous studies have addressed social capital theory, its measurement, association with individual characteristics, and organizational related variables (Ansari, 2016; Boxman *et al.*, 1991; Villesèche and Josserand, 2017). However, research on the relationship between networking, work exploration, reflection on motivation, and career control is scarce. For this very reason, the current research significantly adds to the existing theory i.e., social capital theory and career competencies literature by investigating the unexplored path of networking behavior and career control relationships in different ways. First, past empirical studies showed that different competencies significantly impact the career success and development of an individual (Gray *et al.*, 2020), and hence, different career competencies have been studied to influence the career of an individual such as self-profiling (Akkermans *et al.*, 2013), reflection on qualities; therefore, we choose networking competence for measuring career control.

Second, a few past existing studies have been examined empirically to explore the association between networking competence and career control and used several mediators such as optimism (Spurk *et al.*, 2015), and mentoring support (Blickle *et al.*, 2009) but no study has explored work exploration and reflection on motivation as parallel mediators. Third, very few empirical studies have been overseen to determine networking competence and career control relationship in the Indian context by adding different mediating variables (Agarwala, 2008; Younger *et al.*, 2015). But no empirical work has been conducted in manufacturing and IT service sector organizations. So, this is the seminal research to measure the role of networking competency on career control through parallel mediating variables work exploration and reflection on motivation in Indian manufacturing and IT service organizations.

Theoretical Background and Development of Hypotheses

Networking competence and Career Control

(Kuijpers & Scheerens, 2006, p.313) defined career control as “career-directed planning and influencing of learning and work processes; also, planning and negotiating the development and the deployment of work competencies for one’s own career”. Because of the numerous benefits such as cooperation, information sharing, vocational support, career planning, upward mobility, and strategy development, networking is regarded as a critical component for influencing and managing their career (Forret and Dougherty, 2004). Furthermore, (De Vos *et al.*, 2009) we tested a theoretical model that specified the relationships between career progress goals, career planning, networking behaviours, and career success. A longitudinal panel study was conducted within two samples using a 3-year (sample 1 discovered that networking behaviours are strongly related with subjective and subjective career success in a survey that looked at networking during the formative years of employees. In the current study, authors theorised the impact of individuals’ networking competence employing social capital theory. According to the theory, knowledge, contacts, and opportunities obtained through networking behaviours would enhance an individual’s career control and movement within the organisation in the view of hierarchical advancement and pay raise (Florin *et al.*, 2003). According to schools of sociology, social capital is “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition” (Bourdieu, 1985:51). According to (Lin, 2019), social capital consists of resources appraised or mobilized for a person through his or her relationships.

The empirical findings on the advantages of network competence are vast, indicating that building a large network of ties is crucial for obtaining work, for making intrafirm agility (Burt, 1997) , for the advancement of industry-level learning and information exchange (Jones, 1996) Yale, and MIT’s Sloan School of Management, this book explores the ways that careers have changed for workers as their firms reorganize to meet global competition. As firms re-engineer, downsize, enter into strategic alliances with other firms, and find other ways to reduce costs, they frequently lay off workers. Job security has been replaced by insecurity and workers have been forced to take charge of their own career development in ways they have never done before. The contributors to the book analyse the implications for these workers, who now have “boundaryless careers”. While many find the challenge rewarding as they find new opportunities for growth, others are finding it difficult to adapt to new jobs in new locations. The book looks at policy issues that can provide safety nets for those who are not able to find a

place in the new world of boundaryless careers.” (Jones, 1996), as well as for the enhancement of one’s apparent externally and internally marketability (Eby *et al.*, 2003). In essence, these findings imply (Granovetter, 1983) at persons with substantial knowing-whom competence such as networking can lessen career instability by allowing them to be informed about and suggested for new chances in different work environments, hence enabling their subsequent work.

In the view of above empirical findings, we anticipate that the employees’ active involvement in networking behavior enhances their control over their careers. Therefore, we hypothesized that:

Hypothesis 1: Networking competency is positively related to Career Control.

Networking and Work Exploration

The mobilization of network resources is a focus of job-search networking research in the discipline of psychology. They emphasize the importance of a variety of determinants to networking throughout the job hunt, including networking comfort, agreeableness, extraversion, and having a broader social-network with stronger relationships (Van Hoya *et al.*, 2009). Past studies suggested that participating in job-search networking resulted in more career opportunities and faster re-employment after layoffs (Wanberg and Kammeyer-Mueller, 2000). Furthermore, (Granovetter, 1995) asserted that ‘weak’ network links, such as acquaintances, are the most productive with respect to labour allocation. This is thought to be because weaker network linkages are more effective to obtain out into the larger social system, allowing for the acquisition of new job information (Granovetter, 1983). Traditionally, job search information sources were categorised as either official or casual (Saks, 2005). “The former is considered to be the use of employment agencies or job search databases, whereas the latter are described as the use of personal contacts such as friends, family members, or work contacts”. Leveraging these connections and relationships is known as “networking” behaviour, and it has been identified as a requirement for a high-quality job-search. (Van Hooft *et al.*, 2013).

However, there is empirical data that shows that in specific labour market circumstances, strong network linkages are the most successful (Franzen and Hangartner, 2006; Watanabe, 2004) M. (1973). As a result, it’s possible that the level of trust and duty in such connections has an impact on the job search phase (Granovetter, 1983). Based on the above arguments, we hypothesized that;

Hypothesis 2: Networking competency is positively related to Work Exploration.

Mediating Role of Work Exploration

Individuals who feel helpless to retain continuous work (i.e., employability) in their professions face career

instability. It has been suggested that developing and utilizing career competencies such as work exploration is predicted to perform a key part in reducing career insecurity when working in a boundaryless environment (Hall and Mirvis, 1996). Individuals with wide, flexible, and transferable knowledge and skills, such as work exploration, decreases career instability (Kanter, 1989) and improve career control, because a strong foundation is linked to increased employability (Saxenian, 1996). The depth of these talents and abilities had an impact on the quality of later employment. (Eby *et al.*, 2003) also found that employees' internal and external marketability were also boosted by wide, adaptable, and transferable job and career-relevant abilities. Work or career exploration raises young adults' understanding of themselves and the workplace, allowing them to make better judgments about their future employment (Blustein, 1997)1980. Work exploration has been seen in multiple research to improve self-efficacy or confidence in making career decisions (Lent *et al.*, 2017). (Koen *et al.*, 2010) performed research on individuals finding job in the employment market and discovered that career exploration, as a way of responding to the changing job market, helped them find good jobs. Individuals who engage in more work exploration activities have a wider range of job-search tactics and are thus more effective at re-employment. Based on the above discussion, we hypothesized that;

Hypothesis 3: Work Exploration is positively related to career control.

Hypothesis 4: Work exploration mediates the association between networking competency and career control.

Mediating Role of Reflection on Motivation

The "knowing why" mediating variable in the current study is reflection on motivation. Reflection on motivation, defined as "reflecting on values, passions, and motivations with regard to one's personal career" (Akkermans *et al.*, 2013). In addition to that, (Kuijpers *et al.*, 2006) defined it as "reviewing one's own competencies, desires, and values with respect to one's career". Knowing-why skills are defined by a deep grasp of one's own self-concept (i.e., self-awareness) and the capacity to comprehend the driving force behind one's actions. Self-awareness, defined as a relatively comprehensive and correct appraisal of one's own attributes and characteristics, is regarded as a critical component of career development in the literature (Greenhouse, J., Callanan, G., & Godshalk, 2000). Self-awareness, in combination with "environmental awareness", is thought to help people manage their careers more effectively by allowing them to define realistic professional objectives and build suitable career strategies (Greenhouse, J., Callanan, G., & Godshalk, 2000). As a result, it's plausible to assume that people who understand why competencies are less likely to experience job instability since their great self-awareness makes it easier for them to get work. Individuals who reflect regularly on

their career goals and who have a stronger awareness of what they like, and what is important in their career are more likely to report higher career control.

Hypothesis 5: Reflection on Motivation is positively related to Career Control.

Hypothesis 6: Reflection on motivation mediates the relationship between networking competency and career control.

Parallel Mediating role of Work exploration and Reflection on motivation

We argued that work exploration and reflection on motivation are positively associated with career control based on the above discussion. Further, authors have claimed that networking has a direct and positive association with career control. When all of the hypotheses are considered together, we believe that work exploration and reflection on motivation will likely mediate the association between networking and career control.

Hypothesis 7: Work exploration and reflection on motivation partly mediates the association between networking competency and career control.

Method

Sample

A sample of full-time employees working in IT service and Manufacturing industry in North India participated in the study. Through mail, a survey questionnaire was sent to a random sample of 615 participants and assured their confidentiality. Out of 615 participants, we finally obtained 421 final responses resulted a response rate of 68.45%. We excluded individuals working part-time or owning their own business, as they are having different career-related behavior, as compare to employees working full-time. Among total (N=421) respondents 274 were males resulting in 65.1 per cent and 147 (34.9 per cent) were female respondents (see Table 1, Demographic characteristics of respondents). Overall, 78.4 per cent of total respondents were between 21-35 years of age, and 54.6 per cent were having postgraduate degrees table 1). A total of 317 out of 421 respondents were working in private organization. Thus, our study sample was adequately representative to achieve the aim of this research.

Measures

Networking

Networking variable was evaluated with a scale comprising four items developed by (Akkermans *et al.*, 2013). A sample item for networking competency is "I know a lot of people outside my work who can help me with my career", and "I know how to ask for advice from people in my network". The Likert scale with seven-point response was employed under this study ("strongly disagree" =1, "strongly agree" =7) and high-score indicate that higher networking competency. The internal consistency (alpha

coefficients) was 0.90 for Indian samples, respectively (see Table 3, Results of Measurement Model).

Work Exploration

Work Exploration, a sub-scale (a three-item instrument) validated by (Akkermans *et al.*, 2013), was used to evaluate work exploration “knowing how competency”. A sample item for work exploration is “I know how to search for development in my area of work” and “I am able to explore my possibilities on the labor market”. The Likert scale with a seven-point response was employed under this study (“strongly disagree” =1, “strongly agree” =7), and high-score indicates higher work exploration. The internal consistency (alpha coefficients) for work exploration was 0.89 for current research.

Reflection on Motivation

Reflection on Motivation a sub-scale (a four-item instrument) developed and validated by (Akkermans *et al.*, 2013) was taken to measure Reflection on Motivation. A sample items for Reflection on Motivation is “I know what I like in my work” and “I know what is important to me in my career”. The Likert scale with seven-point response was employed under this study (“strongly disagree” =1, “strongly agree” =7) and high-score indicates higher career control. The alpha coefficient of the reflection on motivation measure was found 0.84 for the present research.

Career Control

Career Control a sub-scale (a four-item instrument) developed and validated by (Akkermans *et al.*, 2013) was taken to measure career control. A sample items for career control is “I can create a layout for what I want to achieve in my career” and “I am able to set goals for myself that I want to achieve in my career”. The Likert scale with seven-point response scale was taken under this study (“strongly disagree” =1, “strongly agree” =7) and high-score indicates higher career control. The alpha coefficient of this scale was found 0.83 for this study.

Control variables

Gender, age, education, and work experience were added as control variables. As prior studies have indicated that such gender differences influence the networking competency of working professionals (Forret and Dougherty, 2004). Gender was labeled as a dummy (0= female and, 1 = male).

Common Method Bias

To examine and check for common method bias, Harman’s single factor test was performed, as the data for studied variables were collected from the same source. Unrotated factor analysis were tested in SPSS software version 27.0. The single ‘one-factor’ explained maximum variance was 40%, which is lower than the suggested criterion of 50% (Podsakoff *et al.*, 2003). Findings demonstrated that there was no evidence of common method bias in the

present research. These results are then checked against a correlation matrix to determine whether any of the correlations are greater than 0.9 (Pavlou *et al.*, 2007). All correlations below the threshold value (see Table 2), confirming the findings that there was no evidence of common method bias in the present study.

Results

Descriptive statistics

Table 2, demonstrated the descriptive statistics, such as mean, standard-deviation value, inter-item correlations, square of correlation among variables, and average variance extracted. It has been clearly shown that, there is a significant correlation between networking and career control ($r=.588$, $p<0.01$), networking and work exploration ($r=.594$, $p<0.01$), networking and reflection on motivation ($r=.403$, $p<0.01$), work exploration and career control ($r=.625$, $p<0.01$), and reflection on motivation and career control ($r = 0.564$, $p < 0.01$). All four study variables’ mean and standard and deviation are ranged from (Mean: 5.30 to 6.01) and (SD; 0.92 to 1.28) respectively. Table 2 also showed AVE (Average variance extracted) values bold diagonally ranged from 0.72 to 0.75. These values are higher than the criterion value 0.50 suggested by (Fornell and Larcker, 1981) in addition to the known problems related to sample size and power, is that it may indicate an increasing correspondence between the hypothesized model and the observed data as both the measurement properties and the relationship between constructs decline. Further, and contrary to common assertion, the risk of making a Type II error can be substantial even when the sample size is large. Moreover, the present testing methods are unable to assess a model’s explanatory power. To overcome these problems, the authors develop and apply a testing system based on measures of shared variance within the structural model, measurement model, and overall model.” (Fornell and Larcker), 1981 to prove the convergent validity.

Measurement Model Results

We framed a four-factor measurement model. The alpha coefficients, CR (Composite reliability), and factor loadings (standardized), and t-value are described in table 3. The alpha values for all considered variables are vary from 0.83 to 0.90. The acceptable alpha reliability criterion is 0.70 (Hussain *et al.*, 2019) medical equipment, distance from the hospital, and physical infrastructure influenced patient satisfaction at public hospitals in Southern Punjab, Pakistan. An exploratory research technique was used. We distributed 700 questionnaires through a random method, and 579 provided proper responses. A confirmatory factor analysis (CFA). The factor loading (standardized) for all the 15 items are ranged between 0.78 to 0.93. As these values are more than 0.50, they also exhibit convergent validity (Asif *et al.*, 2019) administrative quality (AQ). All 15 items’ t-value are larger than the criterion value

of 1.96 (Asif *et al.*, 2019) administrative quality (AQ), indicating that our model is significant. Similarly, the CR value is more than 0.60 (Bagozzi and Yi, 1988) critiqued, and illustrated. An overall program for model evaluation is proposed based upon an interpretation of converging and diverging evidence. Model assessment is considered to be a complex process mixing statistical criteria with philosophical, historical, and theoretical elements. Inevitably the process entails some attempt at a reconciliation between so-called objective and subjective norms. © 1988 Academy of Marketing Science.” (Bagozzi and Yi, 1988), ranging between 0.88 to 0.92.

Confirmatory Factor analysis

A model fit was measured and analyzed using confirmatory factor analysis. Before performing mediation analysis, CFA (“Confirmatory factor analysis”) is widely performed to test the model fit (Credé and Harms, 2015). The four latent factors networking, work exploration, reflection on motivation, and career control model fitted the data well with values ($\chi^2=132.662$, $p\text{-value} < 0.01$, CFI (“Comparative Fit Index”) = 0.998, GFI (“Goodness of Fit Index”) = 0.996, RMSEA (“Root Mean Square Error of Approximation”) = 0.05, SRMR (“Standardized Root Mean Square Residual”) = 0.04, TLI (“Tucker-Lewis Index”) = 0.997) (table 4) recommended by (Hooper *et al.*, 2008) guidelines are presented on their use. The paper also provides reporting strategies of these indices and concludes with a discussion on the future of fit indices. © Academic Conferences Ltd.”, (See Table 4, Model Fit Measures). We compared the baseline measurement model with other five models (one-factor, two-factor, and three-factor). Firstly, for the model with three-factor model, we clubbed networking and work exploration in one factor. For another model with three-factors, we clubbed networking and ‘reflection on motivation’ in one factor. In third model with three-factor, we clubbed work exploration and ‘reflection on motivation’ in one factor. Likewise, for the model with two-factor, we clubbed networking, work exploration, and reflection on motivation in one factor. Finally, in the model with one-factor, all the variables networking, work exploration, reflection on motivation and career control were clubbed into one factor. As shown in Table 5 (Confirmatory Factor analysis Results), the comparison measurement model of our studied variables was better fit than all the nested models.

Hypothesis Testing

We employed PROCESS macro (Hayes, 2013) conversational discussion of the fundamentals of mediation, moderation, and conditional process analysis, this book has been fully revised with 50% new content, including sections on working with multicategorical antecedent variables, the use of PROCESS version 3 for SPSS and SAS for model estimation, and annotated PROCESS v3 outputs. Using the principles of ordinary

least squares regression, Andrew F. Hayes carefully explains procedures for testing hypotheses about the conditions under and the mechanisms by which causal effects operate, as well as the moderation of such mechanisms. Hayes shows how to estimate and interpret direct, indirect, and conditional effects; probe and visualize interactions; test questions about moderated mediation; and report different types of analyses. ; Part I. Fundamentals. Introduction ; Fundamentals of linear regression analysis -- Part II. Mediation analysis. The simple mediation model ; Casual steps, confounding, and casual order ; More than one mediator ; Mediation analysis with a multicategorical antecedent -- Part III. Moderation analysis. Fundamentals of moderation analysis ; Extending the fundamental principles of moderation analysis ; Some myths and additional extensions of moderation analysis ; Multicategorical focal antecedents and moderators -- Part IV. Conditional process analysis. Fundamentals of conditional process analysis ; Further examples of conditional process analysis ; Conditional process analysis with a multicategorical antecedent -- Part V. Miscellanea. Miscellaneous topics and some frequently asked questions -- Appendices. A. Using PROCESS ; B. Constructing and customizing models in PROCESS ; C. Monte Carlo confidence intervals in SPSS and SAS.”,(Hayes), 2013 for evaluating the hypothesis of the study which revolved around the parallel mediation between networking and career control through work exploration and reflection on motivation. Three important conditions were required for this method to work. First, there must be a strong relationship between the independent and dependent variables. Second, the predictor variables must have a significant link with both the mediators, who must likewise have a significant and positive association with the outcome variable. Third, the indirect impact of mediators’ variables should be considered at the same time. Model 4 of Hayes PROCESS-macro was employed to examine these three relationships. The results were also tested with 5000 bootstrapped samples at 95% confidence interval. The analysis of Hypothesis 1 reflected an overall total effect of networking that impacts career control, which was found to be significant ($\beta=.196$, $t=4.69$, $p<0.01$), therefore, H1 was accepted.

The results revealed that networking is positively associated with mediating variables of the study, i.e., work exploration ($\beta = 0.583$, $t = 14.71$, $p<0.01$) and Reflection on motivation ($\beta=.437$, $t=9.96$, $p<0.01$), and this association explains about 34% of variance in work exploration ($R^2 = 0.34$) and 19% variance in reflection on motivation ($R^2= 0.191$) respectively. Moreover, both the mediating variables were positively associated with career control, i.e., work exploration ($\beta = 0.398$, $t = 9.32$, $p < 0.01$), and reflection on motivation ($\beta = 0.300$, $t = 7.79$, $p < 0.01$) and they together explain 53% variance in career control.

Consequently, we determined that Hypothesis 1, Hypothesis 2, Hypothesis 3, and Hypothesis 5 were supported. Furthermore, work exploration ($\beta=.232$, $SE=.35$, $LLCI=.165$, $ULCI=.306$) and reflection on motivation ($\beta=.131$, $SE=.030$, $LLCI=.076$, $ULCI=.192$) also mediated the association separately. Hence, H4 and H6 are also supported. Lastly, Hypothesis 7 stated that work exploration and reflection on motivation mediated the relationship between networking and career control. To investigate Hypothesis 7, the total effect of networking competence on career control was investigated and obtained significant results ($\beta = 0.487$, $SE = .035$, $LLCI = 0.418$, $ULCI = 0.556$). Therefore, work exploration and reflection on motivation both mediated the association between networking competence and career control however, this parallel mediation was of partial nature (see Table 7).

Discussion

Drawing on social capital theory, the purpose of the present study was to investigate the impact of networking behavior on career control by using parallel mediation mechanism of work exploration and reflection on motivation. The results of the current research showed significant association among networking, work exploration, reflection on motivation and career control while both work exploration and reflection on motivation parallel mediate the positive relationship of networking and career control. These results are in line with the past findings of (Gray *et al.*, 2020; De Janasz and Forret, 2008; Rasdi *et al.*, 2013) particularly in industries like sales and marketing. Success in the sales industry is directly tied to networking and building relationships. In this article, we shed light on the relationship between women, business, and golf as a potential networking tool. Many believe golf is the *pièce de résistance* of business networking, yet there is no research to support this assumption. To boot, women report golf as one of the primary informal networks they feel excluded from, which creates a disadvantage for women working in sales in marketing. We conducted a content analysis of over 500 pages of articles about women and golf from which three primary categories emerged: the benefits of golf for women in business, the effects of not golfing, and the reasons why women don't golf. We include recommendations for managers who may want to encourage their teams to get in the game." "In this era of boundaryless careers, with individuals making frequent career moves and needing to get up-to-speed quickly, networking is seen as a critical competency. Developing and maintaining relationships with others for the purpose of mutual benefit can help individuals search for and secure employment opportunities, gain access to needed information or resources- especially on short notice-and obtain guidance, sponsorship, and social support. Such networking skills are crucial for enhancing social capital and career success; however, many individuals feel

uncomfortable with, or unskilled in, networking. Given the importance of networking for business students, we discuss the benefits and challenges of networking and then share a set of exercises and experiences that have been effective in increasing students' networking abilities. © 2008 Organizational Behavior Teaching Society." "Purpose: This paper aims to examine the relationships between networking behaviours objective and subjective career success, and the moderating role of gender on these relationships among Malaysian public sector managers. Design/methodology/approach: The study utilised a cross-sectional design and surveyed 288 randomly selected public sector managers who were employed full-time. Findings: Increasing internal visibility was the only form of networking that related to both monthly gross incomes and subjective career success. Gender did not moderate the relationships between networking behaviours and the career success measures. Research limitations/implications: The public sector and cultural contexts of the study may limit the generalisability of the findings. However, the paper did find that the measures used were appropriate and valid. Practical implications: The study highlights the importance of internal networking and the value of training managers in networking skills. Originality/value: The study contributes to the emerging literature on the career success of managers in non-Western countries. © Emerald Group Publishing Limited." "demonstrating that an engaging in networking behavior helped employees to find career opportunities and job in the labor market.

Theoretical implications

The current research significantly adds to the existing theory i.e., social capital theory and career competencies literature by investigating the unexplored path of networking behavior and career control in different ways. Our results revealed that networking competence is most critical skills, through which an individual generate social resources, which are pivotal for generating an impact on career outcomes. This is really an interesting from the viewpoint of social capital theory, where it is posited, where it is proposed that social capital is an useful resource that allows access to fresh knowledge, tools, ideas and opportunities both within and beyond one's workplace (Tymon and Stumpf, 2003). The positive link between networking and career control shows that employees proactively engaged in networking behavior such as maintaining contacts, internal visibility and engaging in professional activities can help and build the career control of the employees. The results of the present study are consistent with the findings of (Eby *et al.*, 2003), they discovered that people who have a large network within an organisation are more likely to see themselves as well-positioned for progress within the firm and highly employable outside of it.

From the findings of the current research, we discovered

that networking behavior as a significant predictor of key career competencies such as work exploration and reflection on motivation. Our research findings are also corroborating with research findings of (Van Hoye *et al.*, 2009; Wanberg *et al.*, 2020). These studies show that individuals who have a great self-awareness of their career-related values, interests, and preferences are more likely to succeed (reflection on qualities), establishing a broad network of professional and personal ties outside of the current organisation (i.e., networking), and proactively assessing the current labor environment (work exploration) are required not only for individuals to build self-directed, autonomous careers but also enhance the control over their career when facing a boundaryless career and protean career environment.

These studies showed that employees who are competent in knowing whom competencies such as networking competence can reduce job insecurity because they have a large network of relationships that help them obtain valuable information and recommendations for new career development opportunities in the labour market. Consequently, it assists in searching for better career and job opportunities. Networking behavior enhances individual's competence such as self-confidence and self-profiling. Working professionals must engage in career-related networking habits in order to maintain and advance their careers and future prospects. The creation of social resources aids in the fulfilment of the basic need for relatedness as well as the development of employability-enhancing abilities, emphasizing the relevance of professions as a relational phenomenon (Hall, 2004). In addition to that, authors found that individuals who reflect on their career goals regularly, and have a self-awareness of what they like and what is important in their career, are more likely to report higher career control. Self-awareness, coupled with environmental awareness, is thought to help people manage their careers more effectively by allowing them to create realistic professional objectives and build suitable career strategies (Greenhouse, J., Callanan, G., & Godshalk, 2000) as well as making wise career choices (Singh and Greenhaus, 2004).

The present study investigated the parallel mediation and reported that both work exploration and 'reflection on motivation' are important mediating variables between networking competence and career control. Interestingly, after the findings of both the mediating role (NETW-EXPLORE-CAREER, $\beta=0.232$, NETW-RMOT-CAREER; $\beta=0.114$), we found that work exploration has a stronger effect on career control than a reflection on motivation in networking competence and career control relationship (see Table 6).

Practical implications

The current study also makes a contribution by giving some practical implications for both working professionals and those who assist them in their career development.

The rising relevance of social contact and connections at work is highlighted by the changing nature of jobs and organisations. These developments have had an impact on the concept of employees' careers, the nature and type of work as an organisation, which has grown flatter, and the enlargement of the professional landscape's borders. Managers must recognize the value of networking habits and develop their networking behaviours in order to address the difficulties of a competitive global market. In fact, workplace social interactions and connections are regarded important factors in assuring the efficiency of human resource development initiatives and programs (Storberg, 2002) a term that more accurately describes the intangible components of capital. One component of neocapital, social capital, is increasingly being viewed as integral to organizational success. However, theories (and their resulting concepts and operational definitions. Furthermore, networking is vital for developing and unlocking human potential and knowledge in order to achieve individual and organisational success. Engaging in professional activities, participating in community activities, improving internal visibility, and socializing are all forms of networking activity that HR professionals who want to progress their careers should engage in. Our findings revealed that people and working professionals would benefit from maintaining relationships and networks in order to improve their employment and labour market chances. Individuals should be more proactive and access the environment on a regular basis when it comes to work exploration career competencies. Individuals should also match their networking activities to their job objectives. In this regard, networking training modules might be incorporated into career self-management training (Raabe *et al.*, 2007) career goal commitment, and career plan quality. As hypothesized, these three variables were positively related to subsequent career self-management behaviors, which led both directly and indirectly to career satisfaction almost 10 months after the intervention. Self-management career interventions based within an employing organization appear feasible. © 2006 Elsevier Inc. All rights reserved.", "author": [{"dropping-particle": "", "family": "Raabe", "given": "Babette", "non-dropping-particle": "", "parse-names": false, "suffix": ""}], [{"dropping-particle": "", "family": "Frese", "given": "Michael", "non-dropping-particle": "", "parse-names": false, "suffix": ""}], [{"dropping-particle": "", "family": "Beehr", "given": "Terry A.", "non-dropping-particle": "", "parse-names": false, "suffix": ""}], "container-title": "Journal of Vocational Behavior", "id": "ITEM-1", "issue": "2", "issued": {"date-parts": [{"2007"}]}, "title": "Action regulation theory and career self-management", "type": "article-journal", "volume": "70", "uris": [{"http://www.mendeley.com/documents/?uuid=e65050ef-a09c-36bd-b0c7-be07786c66d6"}]}, "mendeley": {"formattedCitation": "(Raabe <i>et al.</i>, 2007 to highlight the importance of networking

competency (De Janasz and Forret, 2008) with individuals making frequent career moves and needing to get up-to-speed quickly, networking is seen as a critical competency. Developing and maintaining relationships with others for the purpose of mutual benefit can help individuals search for and secure employment opportunities, gain access to needed information or resources- especially on short notice-and obtain guidance, sponsorship, and social support. Such networking skills are crucial for enhancing social capital and career success; however, many individuals feel uncomfortable with, or unskilled in, networking. Given the importance of networking for business students, we discuss the benefits and challenges of networking and then share a set of exercises and experiences that have been effective in increasing students' networking abilities. © 2008 Organizational Behavior Teaching Society.”,author”:[{“dropping-particle”:””,“family”:”Janasz”,“given”:”Suzanne C.”,“non-dropping-particle”:”De”,“parse-names”:false,“suffix”:””}],[{“dropping-particle”:””,“family”:”Forret”,“given”:”Monica L.”,“non-dropping-particle”:””,“parse-names”:false,“suffix”:””}],“container-title”:”Journal of Management Education”,“id”:”ITEM-1”,“issue”:”5”,“issued”:[{“date-parts”:[[“2008”]],“page”:”629-650”,“title”:”Learning the art of networking: A critical skill for enhancing social capital and career success”,“type”:”article-journal”,“volume”:”32”}],“uris”:[{“http://www.mendeley.com/documents/?uuid=7cb7365d-3f36-3c38-9f99-29bb80771cb5”}],“mendeley”:[{“formattedCitation”:”(De Janasz and Forret, 2008. Therefore, coaches and trainers need to be mindful that networking is a medium-term approach that requires time to realize the rewards (Wolff and Moser, 2010).

Limitation and future scope

Even though the study aimed to investigate one of the most important connections, its findings should be viewed with caution due to a few shortcomings. First, because the data were gathered from the same source, common method bias might be an issue. Harman’s single factor test and correlation matrix, on the other hand, suggested that common method bias was not a problem in this study. Because the study used a self-reported survey approach, the results are deemed true to the degree that respondents are open in answering to the questions. Second, because the data is cross-sectional, further longitudinal research are needed to saw real casual predictions. Third, the study comprises of ample of full-time working professionals only. Therefore, it is difficult to generalize the findings to those who are self-employed and part-time employees. Also, the purpose of this study is to offer insight into the impact of intervening factors (such as work exploration and intentional behavior) between networking and career control; future studies can also investigate the role of other mediating variables such as self-profiling and reflection on qualities. Furthermore, Future studies can be

done to examine the role of different types of networking behavior (career-based networking and community-based networking behavior) on career control. Past studies have revealed that men are involved more in networking behavior than women (Forret and Dougherty, 2004), therefore, the interaction impact of gender and networking on career control could be examined in the future.

Conclusion

Comprehending how to enhance the career control of individual and working professionals through key career competencies is critical in the view of human resource development. Drawing on social network theory, authors have provided evidence of the impact of networking competence in enhancing career control, and the parallel mediating mechanism played by work exploration and reflection on motivation. Authors argued that individuals who are actively involved in networking activities are more likely to influence their career, they will be proactively involved in career and work exploration, and also continuously reflect and develop career insights and leading to enhance the control of their career. The current study adds to the existing literature on career competencies by investigating the association between networking, work exploration, reflection on motivation and career control at individual level. The current study highlights the pivotal role of reflection on motivation, knowing why career competence, which is important to enhance the career insights and ultimately enhance the influence over career.

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Table 1 Demographic characteristics of the respondents

Demographic Characteristics	N	Frequency (%)
Gender		
Female	147	34.9
Male	274	65.1
Total	421	100.00
Age (years)		
21-35	330	78.4
36-50	84	20.0
51-65	7	1.7
Total	421	100.00
Education		
Diploma	12	2.85
Graduate	128	30.40
Post Graduate	230	54.6
Ph.D.	51	12.11
Total	421	100.00
Job Position		
Senior level	95	22.6
Middle level	217	51.5
Junior level	109	25.9
Total	421	100.00
Experience		
1-10 years	307	72.9
11-20 years	102	24.2
More than 20 years	12	2.85
Total	421	100.00
Organization status		
Private	317	75.3
Public	104	24.7
Total	421	100.00

Table 2 Descriptive Statistics

		Mean	S.D.		Correlations									
	Factors			1	2	3	4	5	6	7	8	9	10	
1	Age	.20	.436	---										
2	Gender	---	---	.042	---									
3	Education	1.99	.600	.264**	-.129	---								
4	Job position	1.16	.687	-.246**	-.095	-.050	---							
5	Experience	.25	.520	.792**	.072	.128*	-.23**	---						
6	Organization status	.22	.414	.004	.044	.144*	.162**	.002	---					
7	Networking	5.30	1.28	-.017	0.027	-.082	-.178**	.058	-0.38	0.74	0.35	0.16	0.35	
8	Work exploration	5.61	1.02	.055	.044	.011	-.102	.026	0.14	.594**	0.72	0.21	0.39	
9	Reflection on motivation	6.01	.92	0.45	-.123	-.004	-.088	.097	.036	.403**	.462**	0.73	0.32	
10	Career Control	5.62	1.07	.001	.067	-.054	-.145*	.029	.074	.588**	.625**	.564**	0.75	

Note. M=Mean; S=Standard Deviation. N=421; CR = Composite reliability of the measurement model; and α = Cronbach alpha. The average variance extracted of each construct (No. 7, 8, 9, 10) is represented in **bold** along the diagonal. Values above the diagonal (i.e., AVE) are square of correlations; Values below the diagonal represent inter-construct correlations.

* $p < 0.05$ (2-tailed). ** $p < 0.01$ (2-tailed).

Table 3 Measurement model results

Variable	No. of items	Alpha coefficient	Items' short name	Factor Loadings	Standard Error	t-value	Composite Reliability
Networking	4	0.90	NETW1	0.88			0.92
			NETW2	0.86	0.025	38.662***	
			NETW3	0.82	0.026	35.940***	
			NETW4	0.89	0.026	38.251***	
Work Exploration	3	0.89	EXPLO1	0.87			0.88
			EXPLO2	0.89	0.037	27.247***	
			EXPLO3	0.78	0.038	23.343***	
Reflection on Motivation	3	0.84	RMOT1	0.80			0.89
			RMOT2	0.84	0.050	21.049***	
			RMOT3	0.93	0.049	23.609***	
Career Control	4	0.83	CAREER1	0.88			0.92
			CAREER2	0.87	0.022	45.009***	
			CAREER3	0.90	0.021	48.812***	
			CAREER4	0.82	0.028	33.082***	

Significance: *** $p < 0.001$ (2-tailed)

Table 4 Baseline Model Fit measures

Model Fit Indices	Value	Cutoff	Observations
x/df	1.86	<3	Yes
SRMR	0.04	<0.08	Yes
RMSEA (Root mean square error of approximation)	0.05	<0.06	Yes
Incremental Fit Measures	0.99	>0.95	Yes
CFI	0.99	>0.95	Yes
GFI	0.99	>0.95	Yes

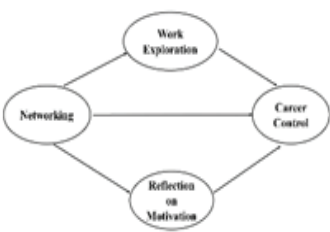
Table 5 Results of Confirmatory Factor Analysis

Models	X2	df	X2/df	$\Delta\chi^2(\Delta df)$	CFI	IFI	TLI	RM-SEA	SRMR	GFI
Baseline model	132.66	71.00	1.86	-	0.998	0.998	0.997	0.057	0.042	0.996
3-Factor model (NETW + EXPLORE)	376.73	74.00	5.09	244.069 (3)**	0.988	0.988	0.985	0.123	0.068	0.989
3- Factor model (NETW + RMOT)	579.77	74.00	7.83	447.112 (3)**	0.980	0.980	0.976	0.159	0.095	0.983
3-Factor model (EXPLORE+ RMOT)	425.02	74.00	5.74	292.361 (3)**	0.986	0.986	0.983	0.133	0.076	0.987
2-Factor model (NETW +EXPLORE + RMOT)	814.16	76.00	10.72	681.499 (5)**	0.971	0.971	0.966	0.190	0.102	0.976
1-factor model	1095.20	77	14.22	962.547 (6)**	0.960	0.960	0.953	0.222	0.112	0.967

Note: NETW: Networking, EXPLORE: Work Exploration; RMOT: Reflection on Motivation

Significance: **p<0.01 (2-tailed)

Table 6 Bootstrapping results for indirect effects

			95% CI (Bias-Corrected)		
Path	Indirect estimate	S.E.	Lower limit Confidence Interval	Upper limit Confidence Interval	Result
NETW→ EXPLORE→ CAREER	.232	0.035	.165	.306	Supported
NETW→ RMOT→ CAREER	.131	0.030	.076	.196	Supported
	.364	0.038	.292	.443	Supported

Note: NETW-Networking, Explore-Work Exploration, RMOT-Reflection on Motivation, CAREER- Career Control, SE- Standard Error, ULCI- Upper Limit Confidence Interval, LLCI- Lower limit confidence interval, 5000 sample Bootstrapping procedure was put into use.

Table 7: Summary of Parallel mediation model

	Consequent								
	M1 (EXPLORE)			M2 (RMOT)			Y (CAREER)		
Antecedent	coefficient	Standard Error	p	coefficient	Standard Error	p	coefficient	Standard Error	p
X (NETW)	.583	.033	$p < 0.01$	.437	.032	$p < 0.01$	.196	.036	$p < 0.01$
M1 (Explore)	---	---	---	---	---	---	.398	.044	$p < 0.01$
M2 (RMOT)	---	---	---	---	---	---	.300	.045	$p < 0.01$
Constant	2.98	.185	$p < 0.01$	4.358	.179	$p < 0.01$	.222	.259	$p < 0.01$
	$R^2 = 0.340$ $F(1,419) = 216.63, p < 0.01$			$R^2 = 0.191$ $F(1,419) = 99.37, p < 0.01$			$R^2 = 0.544$ $F(3,417) = 165.80, p < 0.01$		

Note: N=421; NETW = Networking; Explore = Work Exploration; RMOT = Reflection on Motivation; CAREER = Career Control. This table demonstrates regression coefficient (Coeff.), standard errors (SE), and Parallel mediator model summary. M1: Mediator first, M2: Mediator second

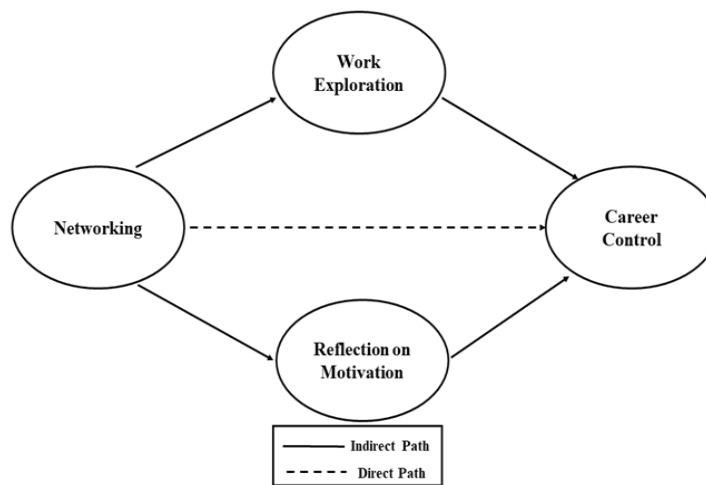


Figure 1: Hypothesized Model

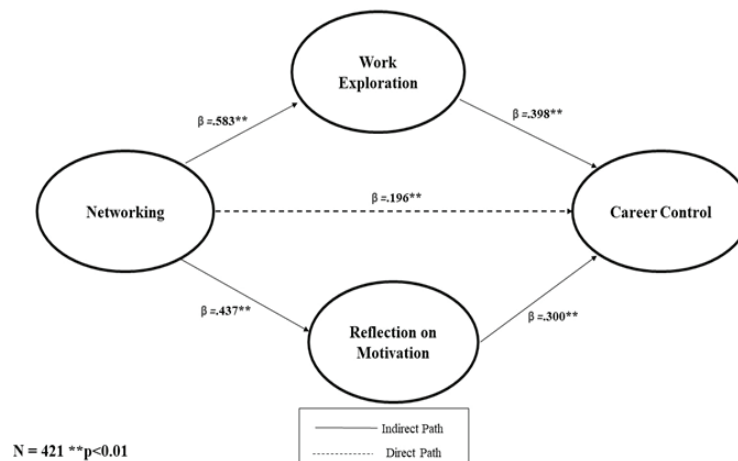


Figure 2: Representing direct and indirect with path coefficients (standardized) of parallel mediation. Also shown explained variance (R²)

Do Mindful employees fit well in the community: A sequential model through wisdom and person-organization fit

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Abstract

Current literature explains the role of mindfulness in developing wisdom and the role of wisdom in attaining person-organization fit and community fit. However, there is a gap to bridge it into a single model. This gap is addressed by building on the Moral foundation theory and Value congruence theory suggesting that mindful employees tend to be wise and fit well with the organization and community. Hayes process macro is employed on parcelled construct score after checking the measurement model fit and accounting for different reliabilities and validities. Mindfulness among employees was found positively associated with wisdom, which is then positively associated with the person-organization fit, which ultimately leads to the employees' community fit. The paper contributes to both theories and recommends practitioners adopt mindfulness practices in their organizations to make employees cultivate wisdom and establish congruence among personal and organizational values along with fitting in their respective communities.

Keywords

Mindfulness, Wisdom, Person-organization fit, Community fit, Moral foundation theory, Value congruence theory

Introduction

"Calmness of Mind is one of the beautiful jewels of wisdom" - James Allen

Organizations globally aspire for the employee's fit in the organization and the community as a recipe to upsurge both positive job outcomes and individual well-being. Organizations look forward to nest employees into the community to attain social acceptability, better coordination of operations, and acquire resources & a customer base. (Marquis et al., 2007; T. A. Williams & Shepherd, 2021) all rights reserved." An important and underexamined topic in the growing literature on community-embedded organizing concerns situations in which dramatic shifts in the environment require the time-sensitive re-establishment of both communities and organizations to address urgent needs. We conduct a qualitative study of emergent community-organization trajectories in the aftermath of the 2010 Haiti earthquake and explore differences in the processes and interactions between emerging organizations and communities. Despite all organizations in our data facing the same external shock, they differed in how they interpreted the

nature of crisis-induced voids, established boundaries to build and organize communities, and created connections to bind themselves to their communities. We compare and contrast these differences to reveal three trajectories of community-organization emergence, explain why these trajectories initially formed in the ways they did, and identify unique mechanisms that led to these trajectories' divergence. Our findings contribute to the literature on community-embedded organizing by demonstrating how organizations re-establish communities while simultaneously emerging within those communities." (Marquis et al., 2007; T. A. Williams & Shepherd, 2021). Thus, it is required that employees should fit well in their communities so that it would be easier for the organization to embed itself in those communities. However, the degree of embeddedness may change as few organizations could have been deeply nested in their respective communities (Marquis & Battilana, 2009), while some organizations may be nested in their respective communities just for the sake of acquiring a particular market niche (Marquis & Lounsbury, 2007). From an employee's perspective, it thus becomes essential to embed themselves in both, their communities

and organizations, considering the elementary human need for belongingness (Singh et al., 2018). Defining embeddedness as a psychological construct that influences individuals to stay, we draw on conservation of resources theory to develop and test a model of the influence of contextual social support resources on both organizational and community forms of embeddedness. In addition to the direct relationship between support and embeddedness, we also assess the mediating influence of organizational and community psychological safety and the moderating impact of need to belong. Using a multisource sample of employees and coworkers (N = 165).

On the other side of the story, we support the argument that mindfulness leads to wisdom among employees and lays the foundation for individuals' values and morals (Deroche, 2021) on the basis of ethics, progresses from 'study,' to 'reflection,' to 'cultivation,' and argues that mindfulness plays a critical role at each of these steps, forming the common thread joining them together. Beyond opposing statically the mnemonic, conceptual, and attentional dimensions of mindfulness, this threefold paradigm of 'mindful wisdom' can serve to articulate them dynamically within the context of the path. The model is first examined with special consideration of Mahāyāna sources and its relation to the epistemic foundations of tradition, reason, and direct experience. Then, in reference to living Tibetan and Himalayan traditions, each step of wisdom is shown to rely upon a distinct aspect of mindfulness or presence: keeping in mind the teachings present, forming adequate re-presentations, and cultivating a presence of mind. Ultimately, the paper inquires into the emergence of self-knowledge and the integration of personality." (Deroche, 2021). Both the linkage between mindfulness to wisdom and person-organization fit to community fit is somewhat evident and well established in the existing literature. However, there is a research gap in bridging the relation between mindfulness and wisdom to person-organization fit and community fit. To the best of our knowledge, this gap has not been addressed so far.

Here, the role of morals and values comes into the picture, which is crucial for attaining both organization and community fit (Dhir & Dutta, 2020) person-job fit (PJF). The current study has taken morals and values as a binding force among mindfulness and wisdom to the relationship between person-organization fit and community fit. Taking inspiration from and expanding on Moral foundation theory, we propose that mindfulness helps individuals to develop wisdom about their surroundings and themselves, which ultimately helps them to build moral foundations – both individualizing foundation and binding foundations. Moral foundation theory is a vital concept that explains how values evolve, which unite or differentiate individuals, organizations, and communities (Graham et al., 2011). Developing upon Moral foundation

theory and criticizing a few of the conclusions of Haidt (2008), the model of Moral motives (Janoff-Bulman & Carnes, 2013) argues that the values and morality of any individual are focused on the individual himself/herself. From the leadership perspective, few researchers agree that morality may help individuals get involved in the organization more deeply (Lungeanu & Weber, 2021) such as to corporate community or environmental programs. We extend research on executive influence on corporate attention to alternative causes by showing how chief executive officers' (CEOs'. The importance of values in bridging this gap is clear from the value congruence theory, which states that the values of a person must match the values of an organization (Liedtka, 1989). The study aims to build a sequential meditation model between mindfulness and community fit after bridging the gap between wisdom and person-organization fit, which are well-established consequents and antecedents of mindfulness and community fit. It is essential to fulfill this objective and bridge the research gap by establishing and examining the integrative model, considering the need to discover how to attain organization fit and community fit and the accumulating focus on the positive outcomes of mindfulness in organizational settings. Furthermore, it becomes imperative to examine these links when considering the model's potential practical implications.

Literature review

Mindfulness

Mindfulness may seem like a new concept since it started to get recognition in modern literature three decades ago, but actually, it is an ancient Buddhist concept that has been present in Buddhist text for many centuries (Baer, 2011) including depression, anxiety, pain, and stress. However, the processes of change that produce these beneficial outcomes are not entirely clear. Central questions include whether mindfulness training leads to increases in the general tendency to respond mindfully to the experiences of daily life, and if so, whether these changes are responsible for the improvements in mental health that are often observed. Answering these questions requires methods for assessing mindfulness. Several tools for this purpose are now available and early evidence suggests that they are useful and informative, despite shortcomings that require additional work. This paper summarizes the rationale for mindfulness questionnaires, the methods used to construct them, and research findings on their utility. Challenges related to maintaining consistency with Buddhist conceptions of mindfulness while applying psychological research methods to the study of its assessment are discussed." (Baer, 2011). Mindfulness is associated with being conscious in the present moment. According to "*The Sutra of Mindfulness*,"

"When walking, the practitioner must be conscious that he is walking. When sitting, the practitioner must be conscious that he is sitting. When lying down, the

practitioner must be conscious that he is lying down... No matter what position one's body is in, the practitioner must be conscious of that position. Practicing thus, the practitioner lives in direct and constant mindfulness of the body." (Hanh, 2008)

It is evident that mindfulness is a concept relating to the core of individual behavior, but as the research on the construct is proceeding, exploration of the role of mindfulness in an organizational context is also gaining momentum (Sutcliffe et al., 2016). Research on mindfulness has grown rapidly in organizational psychology and organizational behavior. Specifically, two bodies of research have emerged: One focuses on the intrapsychic processes of individual mindfulness and the other on the social processes of collective mindfulness. In this review we provide a pioneering, cross-level review of mindfulness in organizations and find that mindfulness is neither mysterious nor mystical, but rather can be reliably and validly measured, linked to an array of individual and organizational outcomes, and induced through meditative and nonmeditative practices and processes at the individual and collective levels. Our analysis of the combined literatures further reveals that although each literature is impressive, there is a significant need for multilevel mindfulness research that simultaneously examines individual and collective mindfulness and broadens its conception of context. This research agenda provides a more robust understanding of the antecedents, processes, and consequences of individual and collective mindfulness as well as more definitive evidence maximizing mindfulness and its benefits in practice." (Sutcliffe et al., 2016). Moreover, developing further, the concept has also evolved into social mindfulness, expressed as the cognitive (understanding viewpoint) and affective (being compassionate) readiness to act in a fashion that may create opportunities for others (Gerpott et al., 2020).

Mindfulness and wisdom

"Knowledge Speaks, but Wisdom listens" – Jimi Hendrix
The age of the learning organization, which lasted from 1990 to 2010, is considered to have ended, and the era of organizational knowledge started from 2011 onwards (Hays & Chen, 2008). Wisdom is a distinctive psychological attribute, thoroughly conversed in the humanities discipline. In contrast, it has begun to operationalize in the psychology and sociology domain (Meeks & Jeste, 2009). Wisdom is seen as one of the core psychological strengths, as a part of character strengths (Gerpott et al., 2020). It has started to gain the attention of researchers as a construct in the last 30 years. Also, it has been observed that life experience may develop one's wisdom (P. B. Williams & Nusbaum, 2016). Moreover, Williams and Nusbaum (2016) enlist wisdom as a set of six factors: "Prosocial behavior, emotional homeostasis, Self-understanding, value tolerance, acknowledgment,

and social decision-making." The noteworthy thing is that role of mindfulness is significant in Prosocial behavior – one of the six factors of wisdom. As Jon Kabat-Zin emphasized that "Compassion and kindness towards oneself are intrinsically woven into Mindfulness." (Kabat-Zin, 2012), which is directly linked to the prosocial facet of wisdom.

Continuing to the thought of wisdom cultivation, ancient Indian literature *Upanishad-s* describe a three-fold progression of wisdom i.e., from studying or learning, thinking or reflecting, and cultivation or practice. The role of mindfulness in all three stages of wisdom development is observed by Deroche (2021) on the basis of ethics, progresses from 'study,' to 'reflection,' to 'cultivation,' and argues that mindfulness plays a critical role at each of these steps, forming the common thread joining them together. Beyond opposing statically the mnemonic, conceptual, and attentional dimensions of mindfulness, this threefold paradigm of 'mindful wisdom' can serve to articulate them dynamically within the context of the path. The model is first examined with special consideration of Mahāyāna sources and its relation to the epistemic foundations of tradition, reason, and direct experience. Then, in reference to living Tibetan and Himalayan traditions, each step of wisdom is shown to rely upon a distinct aspect of mindfulness or presence: keeping in mind the teachings present, forming adequate re-presentations, and cultivating a presence of mind. Ultimately, the paper inquires into the emergence of self-knowledge and the integration of personality." (Deroche, 2021).

Furthermore, the mindfulness of a person plays an essential role while determining how the cognitive activities of a person work. Since mindfulness is all about the deliberate concentration of thoughts, it helps build higher cognition levels among individuals, representing a state of wisdom by psychological researchers (Good et al., 2016). Thus considering the above arguments, we propose our first hypothesis, which states:

Hypothesis 1: Mindfulness has a positive association with wisdom

Mindfulness and person-organization fit: role of wisdom as a mediator

Earlier researchers have studied mindfulness and various core values of an individual such as Curiosity (Kashdan et al., 2011), Creativity (Cheung et al., 2020), Psychological well-being (Brown & Ryan, 2003), Compassion (Zoghbi-Manrique-de-Lara et al., 2019) that is, the use of the company's internet connection for personal purposes, may be due to a workplace that lacks mindfulness and compassion. The authors first hypothesize that supervisors' mindfulness is related to the mindfulness of their direct followers, and that both are related to employees' compassion at work. The authors also hypothesize that compassion mediates the link

between supervisors' and followers' mindfulness and cyberloafing, and that empathic concern mediates the link from compassion to cyberloafing. Design/methodology/approach: A questionnaire was distributed to followers working in groups of three with the same leader in all of the 100 banks in London (UK, and Wisdom (studies in the previous section) as the most critical core values which are affected by mindfulness. Wisdom can contribute to the well-being of employees in organizations in various ways, as identified by Limas & Hansson (2004) much theoretical and empirical attention has focused on wisdom as a psychological construct. The development of wisdom is viewed as a positive aspect of aging, but also has a complement to more traditionally- studied domains of intelligence. Two studies, involving a total of 327 adults, examined how our understanding of the construct might be furthered by its application into specific, problematic contexts, and by having its utility assessed. This involved:

1. Chatman (1989) defined Person-organization fit as "the congruence between the norms and values of organizations and the values of persons." Since then, researchers have continuously emphasized the likeness of fundamental values of organizations and individual employees for the sake of maintaining Person-organisation fit (Dhir & Dutta, 2020) **person-job fit (PJF**. Given this argument, values become an essential facet to bind wisdom to person-organization fit.

Hypothesis 2a: Wisdom has a positive association with the person-organization fit.

Moreover, the scholars working on mindfulness in an organizational context emphasized positive employee psychology and positive workplace outcomes like performance, relationships, and well-being. Good et al. (2016) states that mindfulness leads to greater attention, cognition, emotion, behavior, and physiology, which are prime factors leading to wisdom. Also, functional outcomes further lead to workplace outcomes, including job, task, and constructs like citizenship behavior. Thus laying a foundation for our argument that mindfulness relates to person-organization fit; however, the relationship is mediated by wisdom (Good et al., 2016).

The employee well-being perspective also supports this argument since the person-organization fit is directly associated with employees' well-being (Park et al., 2011), an outcome of mindfulness. Taking both arguments as the basis we form the following hypothesis:

Hypothesis 2b: Wisdom mediates the positive association between mindfulness and person-organization fit.

Wisdom and Community fit: role of person-organization fit as a mediator

It is a well-understood fact that organizations have to somehow operate as a part of the community (T. A.

Williams & Shepherd, 2021) they differed in how they interpreted the nature of crisis-induced voids, established boundaries to build and organize communities, and created connections to bind themselves to their communities. We compare and contrast these differences to reveal three trajectories of community-organization emergence, explain why these trajectories initially formed in the ways they did, and identify unique mechanisms that led to these trajectories' divergence. Our findings contribute to the literature on community-embedded organizing by demonstrating how organizations re-establish communities while simultaneously emerging within those communities." (T. A. Williams & Shepherd, 2021. It is also evident that engaging more deeply in the community would help (or inhibit) organizations to engage in entrepreneurial activity, align with community needs and capabilities and extract value from the environment by providing strategic options (Marquis et al., 2007, 2013; Marquis & Battilana, 2009). Also, it is apparent from past research that community may influence organizations from different aspects such as organization establishment (Marquis & Lounsbury, 2007), innovation (Garud et al., 2006, 2013), resources (Murray et al., 2020) we derive a holistic framework of community-based resource mobilization. Our framework consists of three distinct processes entrepreneurs use to attain financial capital from non-professional resource providers over time: community building to establish psychological bonds with individuals possessing domain-relevant knowledge, community engaging to foster social identification with existing resource providers, and community spanning to leverage proofpoints with intermediaries who can help orchestrate resource mobilization with broader audiences. Entrepreneurs' enactment and temporal sequencing of these three processes distinguish successful versus unsuccessful resource mobilization efforts in a crowdfunding setting. Community building is used by successful entrepreneurs primarily prior to a campaign's launch, community engaging is used throughout a campaign, and community spanning is most effectively used after achieving a campaign's initially-stated funding goal. This study empirically illustrates and theoretically conceptualizes the dynamics of resource mobilization in a crowdfunding setting." (Murray et al., 2020, and corporate strategies (Lounsbury 2007). Taking into account the above-explained arguments, we propose the following hypothesis:

Hypothesis 3a: Person-organisation fit is positively associated with community fit.

Wisdom plays a crucial role in making an employee fit in his organization and community as already been observed

that wise people tend to be more concerned with making their values congruent with their environment. Wise people find themselves cultivating a need for belongingness to their environment (Deroche, 2021) on the basis of ethics, progresses from ‘study,’ to ‘reflection,’ to ‘cultivation,’ and argues that mindfulness plays a critical role at each of these steps, forming the common thread joining them together. Beyond opposing statically the mnemonic, conceptual, and attentional dimensions of mindfulness, this threefold paradigm of ‘mindful wisdom’ can serve to articulate them dynamically within the context of the path. The model is first examined with special consideration of Mahāyāna sources and its relation to the epistemic foundations of tradition, reason, and direct experience. Then, in reference to living Tibetan and Himalayan traditions, each step of wisdom is shown to rely upon a distinct aspect of mindfulness or presence: keeping in mind the teachings present, forming adequate re-presentations, and cultivating a presence of mind. Ultimately, the paper inquires into the emergence of self-knowledge and the integration of personality. (Deroche, 2021, and belongingness is directly associated with organizational fit and community fit (Singh et al., 2018) Ltd. Defining embeddedness as a psychological construct that influences individuals to stay, we draw on conservation of resources theory to develop and test a model of the influence of contextual social support resources on both organizational and community forms of embeddedness. In addition to the direct relationship between support and embeddedness, we also assess the mediating influence of organizational and community psychological safety and the moderating impact of need to belong. Using a multisource sample of employees and coworkers (N = 165. Thus, we propose the following hypothesis:

Hypothesis 3b: Person-organisation fit mediates the positive association between wisdom and community fit

Mindfulness and community fit: role of wisdom and person-organization fit as mediators in a sequential manner

“Community fit is the extent to which individuals’ needs and interests are congruent with the community’s environment” (Cowell & Green, 1994; Hassan et al., 2010; Pugh et al., 2008). Considering the development of the social mindfulness construct, it becomes evident that mindfulness has some role to play in organizations.

Mindfulness has been very well explained by Sajjad & Shahbaz (2020) on three levels: individual, organizational, and societal levels. They give the integrative mindfulness-social sustainability framework, which states that mindfulness raises from the individual to the organizational and then societal level, as mindfulness increases and adopted by more and more people. Our model in the current study (see Figure 1) also moves in a similar fashion where wisdom is an individual-level construct, the person-organization fit is an organization-level construct,

and community fit is a societal-level construct. Thus, we form the following hypotheses considering different paths of mindfulness and community fit.

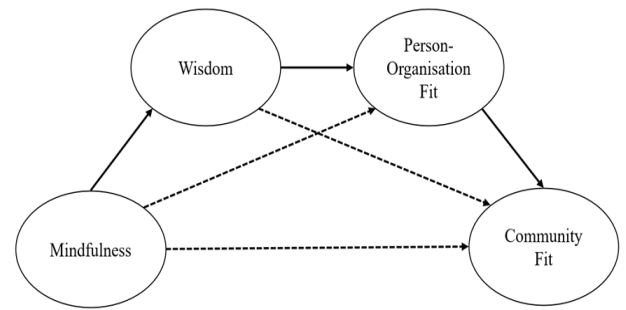


Figure 1 Conceptual Model

Hypothesis 4a: Mindfulness is positively associated with community fit

Hypothesis 4b: Wisdom mediates the positive association between mindfulness and community fit

Hypothesis 4c: Person-organisation fit mediates the positive association between mindfulness and community fit.

Hypothesis 4d: Wisdom and Person-organisation fit sequentially mediate the positive association between mindfulness and community fit

Methods

Procedures and design

This study was carried out as a non-experimental field survey structured in a cross-sectional research design where the data was collected from various subjects at one time. Participants were ensured of the confidentiality of their identity and use of data only for academic purposes well in advance. The respondents were requested to choose the response which best manifests their opinion about the items on the Likert 7-point scale. All responses were completely filled, so there was no case of missing data values.

Participants

Data was collected through 191 employed adults (58.6% male & 41.4% female) through online questionnaires prepared with “Google Forms” sent to Indian employees working in public and private sectors. The age of participants ranges from 21 years to 65 years, with a mean age of 35.93 years and an average job experience of 10.28 years. The median annual income of the participants was about 5,690 US dollars (4,22,556 Indian Rupees). Among the respondents, 24.1% were junior-level, 49.2 % were middle-level, and 26.7% were senior-level employees.

Measures

Mindfulness was measured using a three-item subscale from “State Self-Compassion Scale - Long-form (SSCS-L)” developed by Neff et al. (2021) and a six-item

State Self-Compassion Scale-Short form (SSCS-S with a “7-point Likert Scale” where “1” depicts “Very untrue for Me,” and “7” depicts “Very true for me.” We asked the respondents to assume any painful situation they are going through, either any challenge or inadequacy they feel, and respond to the questions according to the feelings they have for themselves in such a situation. Sample item being “I am taking a balanced view of this painful situation.”. The alpha coefficient was $\alpha=0.67$.

Wisdom was measured through a subscale of the Character Strength Rating Form (CSRF) developed by Ruch et al. (2014). Sample item being “Love of Learning (Inquisitive, desire to hold on to and deepen acquired information): Curious people and those who are willing to learn like to master new skills, topics, and bodies of knowledge and are excited about learning. They add new skills and abilities or expand existing knowledge.” The internal consistency was $\alpha=0.82$.

Person-organization fit was measured through a six-item subscale of Job Embeddedness (Mitchell et al., 2001) with a “7-point Likert Scale” where “1” depicts “Very untrue for Me” and “7” depicts “Very true for me.” Sample item being “I feel like I am a good match for my organization.” The Cronbach alpha was $\alpha=0.91$.

Community fit was measured through another five-item subscale of Job Embeddedness (Mitchell et al., 2001) with a “7-point Likert Scale” where “1” depicts “Very untrue for Me,” and “7” depicts “Very true for me.” Sample item being “This community I live in is a good match for me.” The reliability was $\alpha=0.87$.

Control variables

We have included a total of five demographics as control variables in our study as per the suggestions of Becker (2005), which included gender (0= Male and 1=Female), age (0=below 21 years, 1=21years to 35years, 2= 36years to 50 years, and 3=more than 50 years), job position (0=low level, 1=middle level and 2=upper lower), annual income (0=less than 5,00,000 INR, 1= 5,00,000 INR to 10,00,000 INR and 2=more than 10,00,000 INR) and total work experience (0=less than ten years, 1= 10 to 20 years, 2= more than 20 years).

Analytical strategy

We first tested the measurement fitness of our conceptual model (as given in Figure 1) using Confirmatory Factor Analysis with the help of R-studio software. We also tested for composite reliability, Average Variance Extracted, and discriminant validity of our model. Then afterward, we parcel out the score of different items of each construct as average scores of the underlying constructs, and then regression and mediation (along with sequential mediations were tested using IBM SPSS 27 version along with 3.5.5 PROCESS macro provided by Hayes (2013, 2018) with 5000 random bootstrapping samples and 95% confidence interval.

Table 1 Factor loadings for confirmatory factor analysis

Variables and item headings	
Mindfulness:	0.670
Keeping emotions in a balanced perspective	0.742
Taking a balanced view of this painful situation	0.824
Keeping things in perspective	0.578
Wisdom:	0.820
Creativity	0.716
Curiosity	0.768
Judgment & Open-Mindedness	0.649
Love of Learning	0.791
Perspective	0.771
Person-Organisation Fit:	0.910
Utilization of skills and talents	0.820
Match for organization	0.888
Valued personally by the organization	0.890
Customized Work Schedule	0.715
Fit with the organization’s culture.	0.879
Authority and responsibility at the organization	0.852
Community Fit:	0.870
Love for Community	0.820
Family-oriented environment	0.859
Suitable Match	0.851
Thinking of Community as home	0.859
Leisure activities (e.g., sports, outdoors, cultural)	0.720

Note. Values in Bold are Cronbach Alpha, others are item loadings

Results

Testing for reliability and validity

First of all, we measure internal consistency or reliability using Cronbach’s alpha for all four constructs, ranging from 0.67 to 0.91 (see Table 1) and thus found to be adequate as suggested by Hair et al. (2010). To further ensure the constructs’ reliability, we measure the Composite reliability of constructs which was found to be above 0.7, as a suggestive threshold limit given by Anderson & Gerbing (1988)we provide guidance for substantive researchers on the use of structural equation modeling in practice for theory testing and development. We present a comprehensive, two-step modeling approach that employs a series of nested models and sequential chi-square difference tests. We discuss the comparative advantages of this approach over a one-step approach. Considerations in specification, assessment of fit, and respecification of measurement models using confirmatory factor analysis are reviewed. As background to the two-step approach, the distinction between exploratory and confirmatory analysis, the distinction

between complementary approaches for theory testing versus predictive application, and some developments in estimation methods also are discussed.” (Anderson & Gerbing, 1988). To check for the discriminant and convergent validity, we calculated the AVE and square of inter factor correlations. For assuring discriminant validity, the AVE of any construct should be more than the square of inter factor correlation between that construct and other constructs (Fornell & Larcker, 1981) in addition to the known problems related to sample size and power, is that it may indicate an increasing correspondence between the hypothesized model and the observed data as both the measurement properties and the relationship between constructs decline. Further, and contrary to common assertion, the risk of making a Type II error can be substantial even when the sample size is large. Moreover, the present testing methods are unable to assess a model’s explanatory power. To overcome these problems, the authors develop and apply a testing system based on measures of shared variance within the structural model, measurement model, and overall model.”(Fornell & Larcker, 1981), and it was found to be adequate in the current study (see Table 2). Similarly, for assuring convergent validity, composite reliability should be more than 0.70, and the Average Variance Extracted should be more than 0.50 (Fornell & Larcker, 1981)in addition to the known problems related to sample size and power, is that it may indicate an increasing correspondence between the hypothesized model and the observed data as both the measurement properties and the relationship between constructs decline. Further, and contrary to common assertion, the risk of making a Type II error can be substantial even when the sample size is large. Moreover, the present testing methods are unable to assess a model’s explanatory power. To overcome these problems, the authors develop and apply a testing system based on measures of shared variance within the structural model, measurement model, and overall model.” (Fornell & Larcker, 1981), and it was also found to be adequate in the current study (see Table 2). Also, Table 2 reveals the descriptive statistics & the correlation scores among the variables of interest.

Table 2 Descriptive statistics and correlations

Testing measurement model

We tested for the measurement model, including all the variables in the model using Confirmatory Factor Analysis (CFA). The model was found to fit data very well [$\chi^2_{(106, 474)} = (1.47)^2$, $p > .05$; CFI = .999; RMSEA = .019, SRMR = .018, GFI = .999, TLI=0.974] [CFI= Comparative Fit Index, RMSEA=Root Mean Square Error of Approximation, SRMR=Standardized Root Mean Square Residual, GFI=Goodness of Fit Index and TLI=Tucker-Lewis Index] (Barrett, 2007; Hooper et al., 2008; Hu & Bentler, 1999)reviewers, and readers of research articles, structural equation model (SEM. All

the items load significantly to their latent construct at $p < 0.001$, with values varying between 0.578 and 0.890.

Hypothesis Testing

Table 3 Mediation Coefficients for Hypothesis 2b

(Dependent Variable→)	Wisdom		Person-Organisation Fit	
Independent Variables ↓	B	SE	B	SE
Constant	3.865 ***	0.349	1.409	0.579
Gender	-0.019	0.126	-0.096	0.162
Age	-0.042	0.145	0.343	0.187
Job Position	-0.105	0.114	0.302	0.147
Income	0.263	0.092	-0.280	0.121
Job Experience	0.044	0.148	-0.280	0.190
Mindfulness	0.344 ***	0.059	0.355 ***	0.082
Wisdom			0.339 **	0.095
R	0.451		0.526	
R Square	0.204		0.276	
F-test	7.837 ***		9.990 ***	

** $p < 0.01$, *** $p < 0.001$

B= unstandardized path coefficients, SE= Structural Error

Hypothesis 1 states that mindfulness has a positive association with wisdom. Linear regression was applied to test the hypothesis, which displayed a significant association between mindfulness and wisdom ($\beta = .393$, $p < .001$). Thus, Hypothesis 1 is supported.

Hypothesis 2a stated that wisdom has a positive association with the person-organization fit. Linear regression was applied to test the hypothesis, which displayed a significant association between wisdom and person-organization fit ($\beta = .300$, $p < .001$). Thus, Hypothesis 2a is supported.

Hypothesis 2b stated that wisdom mediated the positive association between mindfulness and person-organization fit. The hypothesis was tested using Model 4 of Hayes PROCESS macro in IBM SPSS version 27. Table 3 displays the regression coefficients of the tested hypothesis, which were found to be significant. Also, the Bootstrapping was performed with 5000 random samples, in which the indirect effect was significant as zero did not lie between the upper and lower limit of the class interval (LLCI=0.031 & ULCI=0.231). Thus, Hypothesis 2b is supported.

Table 4 Mediation Coefficients for Hypothesis 3b

(D.V. →)	Person-Organisation Fit		Community Fit	
I. V. ↓	B	SE	B	SE
Constant	2.255 **	0.570	0.759	0.506
Gender	-0.118	0.170	0.121	0.148
Age	0.455	0.194	0.107	0.168
Job Position	0.331	0.154	0.120	0.133
Income	-0.360	0.125	-0.220	0.109

Job Experience	-0.293	0.199	-0.010	0.170
Wisdom	0.501 ***	0.091	0.392 ***	0.084
Person-Organization Fit			0.442 ***	0.063
R	0.449		0.639	
R Square	0.202		0.409	
F-test	7.782 ***		18.081 ***	

p < 0.01, *p < 0.001

B= unstandardized path coefficients, SE= Structural Error

Hypothesis 3a stated that person-organization fit has a positive association with community fit. Linear regression was applied to test the hypothesis, which displayed a significant association between person-organization fit and community fit ($\beta = 0.091, p < 0.001$). Thus, Hypothesis 3a is supported.

Hypothesis 3b stated that person-organization fit mediated the positive association between wisdom and community fit. The hypothesis was tested using Model 4 of Hayes PROCESS macro in IBM SPSS version 27. Table 4 displays the regression coefficients of the tested hypothesis, which were found to be significant. Also, the Bootstrapping was performed with 5000 random samples, in which the indirect effect was significant as zero did not lie between the upper and lower limit of the class interval (LLCI=0.108 & ULCI=0.344). Thus, Hypothesis 3b is supported.

Table 5 Mediation Coefficients for Hypothesis 4b

(D.V. →)	Wisdom		Community fit	
I.V. ↓	B	SE	B	SE
Constant	3.865 ***	0.349	1.084	0.563
Gender	-0.019	0.126	0.087	0.158
Age	-0.042	0.145	0.220	0.182
Job Position	-0.105	0.114	0.244	0.143
Income	0.263	0.092	-0.315	0.117
Job Experience	0.044	0.148	-0.129	0.185
Mindfulness	0.344 **	0.059	0.280 **	0.080
Wisdom			0.485 ***	0.092
R	0.451		0.544	
R Square	0.204		0.296	
F-test	7.837 ***		11.015 ***	

p < 0.01, *p < 0.001

B= unstandardized path coefficients, SE= Structural Error

Hypothesis 4a stated that mindfulness has a positive association with community fit. Linear regression was applied to test the total effect, which displayed a significant association between mindfulness and community fit ($\beta = 0.280, p < 0.001$). Thus, Hypothesis 4a is supported.

Hypothesis 4b stated that wisdom mediated the positive

association between mindfulness and community fit. The hypothesis was tested using Model 4 of Hayes PROCESS macro in IBM SPSS version 27. Table 5 displays the regression coefficients of the tested hypothesis, which were found to be significant. Also, the Bootstrapping was performed with 5000 random samples, in which the indirect effect was significant as zero did not lie between the upper and lower limit of the class interval (LLCI=0.060 & ULCI=0.298). Thus, Hypothesis 4b is supported.

Hypothesis 4c stated that person-organization fit mediated the positive association between mindfulness and community fit. The hypothesis was tested using Model 4 of Hayes PROCESS macro in IBM SPSS version 27. Regression coefficients of the tested hypothesis are given in Table 6, which were found to be significant. Also, the Bootstrapping was performed with 5000 random samples, in which the indirect effect was significant as zero did not lie between the upper and lower limit of class interval (LLCI=0.114 & ULCI=0.345). Thus, Hypothesis 4c is supported.

Table 6 Mediation Coefficients for Hypothesis 4c

(D.V. →)	Person-Organization Fit		Community Fit	
I.V. ↓	B	SE	B	SE
Constant	2.718 **	0.462	1.672	0.451
Gender	-0.102	0.167	0.126	0.150
Age	0.328	0.193	0.044	0.174
Job Position	0.267	0.151	0.067	0.136
Income	-0.191	0.122	-0.098	0.110
Job Experience	-0.265	0.196	0.018	0.176
Mindfulness	0.471 ***	0.078	0.224 ***	0.076
Person-Organization Fit			0.473 ***	0.066
R	0.475		0.607	
R Square	0.226		0.368	
F-test	8.949 ***		15.217 ***	

p < 0.01, *p < 0.001

B= unstandardized path coefficients, SE= Structural Error

Table 7 Mediation Coefficients for Hypothesis 4d

(Dependent Variable →)	Wisdom		Person-Organization Fit		Community fit	
Independent Variables ↓	B	SE	B	SE	B	SE
Constant	3.865 ***	0.349	1.409	0.579	0.511	0.521
Gender	-0.019	0.126	-0.096	0.162	0.126	0.144
Age	-0.042	0.145	0.343	0.187	0.080	0.167
Job Position	-0.105	0.114	0.302	0.147	0.121	0.132
Income	0.263	0.092	-0.280	0.121	-0.202	0.109
Job Experience	0.044	0.148	-0.280	0.190	-0.015	0.169

Mindfulness	0.344 ***	0.059	0.355	0.082	0.136	0.076
Wisdom			0.339	0.095	0.347	0.087
Person Organization Fit					0.406	0.066
R	0.451		0.526		0.647	
R Square	0.204		0.276		0.419	
F-test	7.837 ***		9.990		16.408	

p < 0.01, *p < 0.001, B= unstandardised path coefficients
SE= Structural Error

Hypothesis 4d stated that wisdom mediated the positive association between mindfulness and community fit. The hypothesis was tested using Model 6 of Hayes PROCESS macro in IBM SPSS version 27. Regression coefficients of the tested hypothesis are given in Table 7, which were found to be significant. Also, the Bootstrapping was performed with 5000 random samples, in which all three indirect paths present in the model were significant as zero did not lie between the upper and lower limit of the class interval. For indirect effect 1, which was from mindfulness to wisdom and then community fit lower limit of the class interval was 0.037 & the upper limit of the class interval was 0.225. For indirect effect 2, which was from mindfulness to person-organization fit and then community fit lower limit of class interval was 0.063 & the upper limit of class interval was 0.236. For indirect effect 3, which was from mindfulness to wisdom to person-organization fit and then community fit, the lower limit of class interval was 0.037 & the upper limit of class interval was 0.225. A summary of Bootstrapped results is given in Table 8. Thus, Hypothesis 4d is supported

Table 8 Bootstrapped Hypothesis summary

Hypothesis B	Estimate			C. I.
	SE	Lower	Upper	
H1				
Total effect	0.341	0.088	0.173	0.520
H2a				
Total effect	0.470	0.103	0.247	0.652
H2b				
Total effect	0.471	0.077	0.318	0.624
Direct effect	0.355	0.082	0.193	0.516
Indirect effect	0.116	0.517	0.031	0.231
H3a				
Direct effect	0.567	0.075	0.419	0.711
H3b				
Total effect	0.613	0.087	0.442	0.785
Direct effect	0.392	0.084	0.227	0.557
Indirect effect	0.221	0.061	0.108	0.344
H4a				
Direct effect	0.471	0.090	0.290	0.643

H4b

Total effect	0.447	0.078	0.292	0.601
Direct effect	0.280	0.080	0.123	0.438
Indirect effect	0.167	0.063	0.060	0.298

H4c

Total effect	0.447	0.078	0.292	0.601
Direct effect	0.224	0.076	0.074	0.374
Indirect effect	0.223	0.060	0.099	0.280

H4d

Total effect	0.471	0.077	0.320	0.622
Direct effect	0.150	0.076	0.001	0.299
Indirect effect 1	0.101	0.044	0.029	0.199
Indirect effect 2	0.178	0.047	0.095	0.280
Indirect effect 3	0.042	0.023	0.008	0.096

B= unstandardized regression coefficient, SE=structural error, C.I. = 95% Bootstrapped Class interval

Checking for any common method bias

Since the current study design is cross-sectional and measured using a self-reported questionnaire for all constructs, there can be chances of Common Method Bias (Podsakoff et al., 2003). However, to check for any such bias, we adopted the methods suggested by Podsakoff et al. (2012) and the pervasiveness of research settings with the potential to produce them, there is disagreement about whether they really are a problem for researchers in the behavioral sciences. Therefore, the purpose of this review is to explore the current state of knowledge about method biases. First, we explore the meaning of the terms "method" and "method bias" and then we examine whether method biases influence all measures equally. Next, we review the evidence of the effects that method biases have on individual measures and on the covariation between different constructs. Following this, we evaluate the procedural and statistical remedies that have been used to control method biases and provide recommendations for minimizing method bias. © 2012 by Annual Reviews. All rights reserved." (Podsakoff et al., 2012) both procedural remedies (i.e., to reduce ambiguity) and statistical remedies (i.e., the unmeasured latent method factor technique). While measuring the constructs using the selected scales, we retained items related to each construct placed together to keep ambiguity low, and also, a few words with ambiguous meanings were replaced with specific meaning words. As a statistical remedy, we introduced a first-order common latent factor in the measurement model whose measures are the indicator items of all the four constructs, i.e., mindfulness, wisdom, person-organization fit, and community fit. The model fit, including the common latent factor, indicated a significant indirect effect of mindfulness on community fit, indicating that no "common method bias" was there in measured constructs.

Discussion

How does an employee find himself fit with their organization and community? Building upon the literature on mindfulness (Good et al., 2016) and community fit (Singh et al., 2018) Ltd. Defining embeddedness as a psychological construct that influences individuals to stay, we draw on conservation of resources theory to develop and test a model of the influence of contextual social support resources on both organizational and community forms of embeddedness. In addition to the direct relationship between support and embeddedness, we also assess the mediating influence of organizational and community psychological safety and the moderating impact of need to belong. Using a multisource sample of employees and coworkers (N = 165, our work contributes to the organization's fit and community fit literature by providing key findings to answer this fundamental question. We focused on the mindfulness construct for making employees fit into their community. This paper aims to bridge the gap between the two earlier established relations of mindfulness to wisdom and person-organization fit to community fit. A sequential mediation model was proposed and tested to achieve the objectives of the study. The result of statistical analysis showed that all our hypotheses were supported, and it is evidenced that mindfulness leads to community fit through wisdom and person-organization fit. The results lay the foundation for making employees practice mindfulness to fit their communities, be wise, and fit themselves better in their organizations. The findings advocate that the mediating role of wisdom and person-organization fit is critical in making mindful employees attain community fit, taking into account the role of morality and values of individuals and organizations that were in line with Good et al. (2016). We are discussing theoretical and practical contributions in the following section of this paper.

Theoretical contributions

The study takes ground from the moral foundation theory and value congruence theory to bridge the gap between two established relations: mindfulness and wisdom (Deroche, 2021) on the basis of ethics, progresses from 'study,' to 'reflection,' to 'cultivation,' and argues that mindfulness plays a critical role at each of these steps, forming the common thread joining them together. Beyond opposing statically the mnemonic, conceptual, and attentional dimensions of mindfulness, this threefold paradigm of 'mindful wisdom' can serve to articulate them dynamically within the context of the path. The model is first examined with special consideration of Mahāyāna sources and its relation to the epistemic foundations of tradition, reason, and direct experience. Then, in reference to living Tibetan and Himalayan traditions, each step of wisdom is shown to rely upon a distinct aspect of mindfulness or presence: keeping in mind the teachings present, forming adequate re-present-ations, and cultivating a presence of mind.

Ultimately, the paper inquires into the emergence of self-knowledge and the integration of personality." (Deroche, 2021), person-organization fit, and community fit (Singh et al., 2018) Ltd. Defining embeddedness as a psychological construct that influences individuals to stay, we draw on conservation of resources theory to develop and test a model of the influence of contextual social support resources on both organizational and community forms of embeddedness. In addition to the direct relationship between support and embeddedness, we also assess the mediating influence of organizational and community psychological safety and the moderating impact of need to belong. Using a multisource sample of employees and coworkers (N = 165.

The results from the study contribute to the extension of moral foundation theory for both facets, i.e., the role of wisdom in contributing to values which says moral values can be formed by having a wise approach or mindful outlook. Secondly, the theory can be extended to view the impact of moral values in the organizational context. Since moral foundation theory is studied more in the political and religious context, the use of this theory in the organizational context provides a new perspective to the theory and an organizational lens to look forward to the concept of morality.

The study also contributes to the extension of value congruence theory which states that an individual's values should match the values they encounter in their work environment. We have extended this theory by empirically testing the role of mindfulness via wisdom in attaining congruence between employees and their organizations or communities. We argued that these values among employees and their organization could be balanced with the help of a mindful approach. We support the argument that wise people tend to make their values congruent to what the values are in their environment rather than being inflexible and keeping themselves misfit for the organization or community.

Practical contributions

Our study identified mindfulness as a contributor to positive psychological constructs relating to organizations, i.e., wisdom, person-organization fit, and community fit. However, we observe that a better-explained version of attaining community fit from mindfulness is through the sequential path from the wisdom and person-organization fit. The practitioner can utilize the findings to improve the community fit of their employees, significantly reducing employee turnover, and absenteeism, at the same time increasing organizational citizenship behavior and job performance. (Lee et al., 2004) which was disaggregated into its two major subdimensions, on-the-job and off-the-job embeddedness. As hypothesized, regression analyses revealed that off-the-job embeddedness was significantly predictive of subsequent "voluntary turnover" and volitional absences, whereas on-the-job embeddedness

was not. Also as hypothesized, on-the-job embeddedness was significantly predictive of organizational citizenship and job performance, whereas off-the-job embeddedness was not. In addition, embeddedness moderated the effects of absences, citizenship, and performance on turnover. Implications are discussed.”(Lee et al., 2004) We argue that if mindfulness practices are introduced in workplaces, it would significantly improve the wisdom of people since they would be having prosocial behavior, emotional homeostasis, self-understanding, value tolerance, acknowledgment, and social decision-making (P. B. Williams & Nusbaum, 2016).

Moreover, when recruiting new employees in the organization, HR managers can consider judging the level of mindfulness of applicants to determine if the employee would depict a better organization and community fit since these constructs have been associated with turnover and performance.

Limitations and further research

The research design of this study was cross-sectional, and the data was collected using a self-reported questionnaire which may sometimes result in common method bias. However, both procedural and statistical remedies (Podsakoff et al., 2012) and the pervasiveness of research settings with the potential to produce them, there is disagreement about whether they really are a problem for researchers in the behavioral sciences. Therefore, the purpose of this review is to explore the current state of knowledge about method biases. First, we explore the meaning of the terms “method” and “method bias” and then we examine whether method biases influence all measures equally. Next, we review the evidence of the effects that method biases have on individual measures and on the covariation between different constructs. Following this, we evaluate the procedural and statistical remedies that have been used to control method biases and provide recommendations for minimizing method bias. © 2012 by Annual Reviews. All rights reserved.”(Podsakoff et al., 2012 to account for any common method bias were applied. Still, there can be a minor possibility of common method bias. Also, cross-sectional studies limit proof of causality; thus, in future research, experimental or longitudinal research design can assure the causality of the associations found in this study and eradicate any chance of common method bias.

In this study, the sample was collected from a single country (India), limiting the cultural freedom of the results and rather laying a question that whether the model would have similar results in the western context, which could be tested in future research. This study consists of the respondents working as full-time employees in public and private sector organizations of various industrial sectors in India. Thus, the same conceptual model can be studied in a specific industry.

The study uses a sample size of 191 employees, although

the sample size was adequate as per the suggestions of Hair et al. (2010), which states that the sample size should be 5 to 10 times the total number of items, i.e., 19 in this study (see table 1). Still, further research can be done including a larger sample size. There are five control variables in this study which all are demographic characteristics of respondents, so further studies can be conducted by considering other variables which have an impact on community fit, such as social exchange (Hom et al., 2009) and the need for belongingness (Singh et al., 2018)Ltd. Defining embeddedness as a psychological construct that influences individuals to stay, we draw on conservation of resources theory to develop and test a model of the influence of contextual social support resources on both organizational and community forms of embeddedness. In addition to the direct relationship between support and embeddedness, we also assess the mediating influence of organizational and community psychological safety and the moderating impact of need to belong. Using a multisource sample of employees and coworkers (N = 165.

Conclusion

This article shows the effect of mindfulness on the community fit of employees via a series of mediation through wisdom and person-organization fit. We sincerely expect that our contribution would encourage organization and community fit among employees by using mindfulness practices and other approaches to cultivate wisdom among employees in their respective organizations and motivate future research on similar concepts that would benefit both organizations and employees.

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Perseverance and Stress Tolerance as Mediators between Positive Affect to Future and Openness

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Abstract

Openness has been associated with several benefits; However, potential predictors and underlying mechanism have not been investigated. To address this concern, this study examines the relationship between positive affect to future self and openness among Indian executives with perseverance and stress tolerance as serial mediators. The data was analyzed using structural equation modeling and results showed that positive affect to future self, stress tolerance, and perseverance were related to openness to ideas and perseverance and stress tolerance were found to be acting as serial mediators. The implications for theory and practice are discussed.

Keywords

Positive affect to future self, Stress tolerance, Perseverance of effort, Openness to people's ideas, Serial mediation

Introduction

Technological and economic dynamics are continuously changing (Di Fabio & Kenny, 2019; Taber & Blankemeyer, 2015), businesses are seeking such people who can adapt their knowledge, skills, and abilities (KSAs) to changing environmental needs (Le Pine et al., 2000) Conscientiousness, and Openness to Experience predict decision-making performance prior to and after unforeseen changes in the task context. Seventy-three undergraduates made decisions on a series of 75 problems during a 3-hour computerized simulation. Unbeknownst to participants, the rules used in determining correct decisions changed after problems 25 and 50. Effects of the individual differences on decision-making performance became significantly stronger after the changes. Only cognitive ability explained variance in prechange performance. Individuals with higher cognitive ability made better decisions. After the change, the cognitive ability effect increased and the effects of Conscientiousness and Openness became statistically significant. As expected, those with high Openness made better decisions. Unexpectedly, those with low Conscientiousness made better decisions. Subsequent analyses revealed that this surprising effect for Conscientiousness was due to the traits reflecting dependability (i.e., order, dutifulness, deliberation. The broader idea of openness is particularly of importance in the working environment since open people are more likely to engage in the type of self-

monitoring and assessment that promotes learning (Le Pine et al., 2000) Conscientiousness, and Openness to Experience predict decision-making performance prior to and after unforeseen changes in the task context. Seventy-three undergraduates made decisions on a series of 75 problems during a 3-hour computerized simulation. Unbeknownst to participants, the rules used in determining correct decisions changed after problems 25 and 50. Effects of the individual differences on decision-making performance became significantly stronger after the changes. Only cognitive ability explained variance in prechange performance. Individuals with higher cognitive ability made better decisions. After the change, the cognitive ability effect increased and the effects of Conscientiousness and Openness became statistically significant. As expected, those with high Openness made better decisions. Unexpectedly, those with low Conscientiousness made better decisions. Subsequent analyses revealed that this surprising effect for Conscientiousness was due to the traits reflecting dependability (i.e., order, dutifulness, deliberation. People who are open to other people's thoughts and perspectives are more likely to learn new things and improve their skills. Openness to other people's ideas (openness), defined as a desire to detect other people's ideas, opinions, thoughts, and potential, is one such psychological resource that is considered a vital skill for effective leadership and better handling of any workplace social

conflict (Kashdan et al., 2020). Exploring and tolerating unexpected ideas, inventiveness, and innovativeness are just a few of the characteristics that distinguish openness from other psychological resources (Cherry, 2020). Although attributes like openness were once assumed to be relatively stable, it is now recognized that they exhibit developmental patterns over one's life (Hotchin & West, 2021b) individuals higher in prejudice are less interested in contact with diverse groups. This research investigates a novel method of encouraging interest in contact, particularly for those lower in the personality trait of Openness/Intellect, who tend to be higher in prejudice. Although long-term traits are relatively stable, momentary personality states show considerable within-person variation, and can be manipulated. In two experimental studies (total N = 687. Although several benefits of openness have been reported in organizational context, there are very few empirical studies that explore the possible enhancers and mechanisms of change in openness (Hotchin & West, 2021a; Wanberg & Banas, 2000) but relatively few studies have examined causes of change in Openness. We investigated whether it is possible to influence state Openness, and through what mechanisms this effect may occur. Method: In two experiments (Study 1: N = 144, Mage = 36.4, 58% female, 88% White; Study 2: N = 269, Mage = 34.0, 60% female, 91% White).

Some of the past studies have indicated that positive affect could enhance the state aspects of openness (Caligiuri et al., 2000; Hotchin & West, 2021a) Foreign Experiences, Openness Attitudes, and Comfort with Differences. Additional analyses establish a nomological network for this construct by demonstrating convergence between the ABOS and theoretically linked sociopolitical constructs, attitudinal and personality constructs, in particular a self-rated adjective measure of openness. © 1999 Elsevier Science Ltd. All rights

Personality change is a growing field of interest, but relatively few studies have examined causes of change in Openness. We investigated whether it is possible to influence state Openness, and through what mechanisms this effect may occur. Method: In two experiments (Study 1: N = 144, Mage = 36.4, 58% female, 88% White; Study 2: N = 269, Mage = 34.0, 60% female, 91% White. Furthermore, positive affectivity toward the future may help build an individual's resources to cope with unfavorable events and emotions in the future and improve the experience of positive emotions in the present (Botella et al., 2018). The current study intends to evaluate the potential predictive role of positive affect to future self, stress tolerance, and effort perseverance over openness by combining the findings of previous studies. We also examine the impact of positive affect on stress tolerance and perseverance in the future. A serial mediation model was used to investigate the indirect effect of positive emotions towards the future self on openness via stress tolerance and perseverance. (See Figure 1.)

Literature review and hypothesis development

Theoretical underpinning

The broaden and build theory of positive emotions proposed by Fredrickson (2001) gives theoretical support for this study. According to the theory, positive emotions might strengthen brief through-action repertoires and drive activities and actions that can lead to comparable emotions. Positive experiences like these can further drive an individual towards sustained action. Positive emotions not only broaden one's thought-action repertoire, but they also help to build personal resources, such as physical, psychological, intellectual, and social ones.

Positive affect to the future self comprises having positive feelings and caring for the future self (Hershfield, 2011). It appears that such favorable emotions could lead to positive results in terms of sustained behaviors and increased openness to fresh ideas. Previous studies have also shown that holding positive views about ageing could lead to increased longevity and sustained financial planning (Hershfield, 2011; Levy et al., 2002). Personal resources developed through the thought-action repertoire serve as a reserve that can be drawn upon later to increase coping and survival chances. People who tend to experience good emotionality by adopting optimistic and energetic approaches to life are more likely to "bounce back" from any stressful circumstance (Fredrickson, 2004) including joy, interest, contentment and love. A key proposition is that these positive emotions broaden an individual's momentary thought-action repertoire: joy sparks the urge to play, interest sparks the urge to explore, contentment sparks the urge to savour and integrate, and love sparks a recurring cycle of each of these urges within safe, close relationships. The broadened mindsets arising from these positive emotions are contrasted to the narrowed mindsets sparked by many negative emotions (i.e. specific action tendencies, such as attack or flee. Positive emotions, according to the broaden and build idea, can help people develop psychological resilience and cope more effectively.

Positive affect to future self and openness to people's ideas

Experiencing positive feelings prompts individuals to engage with their environments, to approach and explore novel objects, people, and situations by enhancing their confidence (Fredrickson, 2004) including joy, interest, contentment and love. A key proposition is that these positive emotions broaden an individual's momentary thought-action repertoire: joy sparks the urge to play, interest sparks the urge to explore, contentment sparks the urge to savour and integrate, and love sparks a recurring cycle of each of these urges within safe, close relationships. The broadened mindsets arising from these positive emotions are contrasted to the narrowed mindsets

sparked by many negative emotions (i.e. specific action tendencies, such as attack or flee. Past studies have also suggested that when people experience positive emotions, they are likely to be more open towards new experiences and ideas (Wilson et al., 2017). As findings of their multiple studies, Hotchin & West (2021) but relatively few studies have examined causes of change in Openness. We investigated whether it is possible to influence state Openness, and through what mechanisms this effect may occur. Method: In two experiments (Study 1: N = 144, Mage = 36.4, 58% female, 88% White; Study 2: N = 269, Mage = 34.0, 60% female, 91% White recently reported that recalling either positive or novel experiences increased openness among the respondents. Therefore, we hypothesize that,

Hypothesis 1: Positive affect to future self will be positively related to openness to people's ideas.

Positive affect to future and stress tolerance

The undo hypothesis of broaden and build theory suggests that positive emotions may help people place the events in their lives in a broader context, thus lessening the effect of negative events and emotions (Fredrickson, 2004) including joy, interest, contentment and love. A key proposition is that these positive emotions broaden an individual's momentary thought-action repertoire: joy sparks the urge to play, interest sparks the urge to explore, contentment sparks the urge to savour and integrate, and love sparks a recurring cycle of each of these urges within safe, close relationships. The broadened mindsets arising from these positive emotions are contrasted to the narrowed mindsets sparked by many negative emotions (i.e. specific action tendencies, such as attack or flee. Also, the personal resources accrued due to positive emotions can be drawn on to deal with unfavorable and stressful situations later on. Previous studies have suggested that having a positive affect towards the future, holding positive expectations, and hope for the future are negatively associated with anxiety and depression (Judge et al., 2005; Sokol & Serper, 2019). Studies have also reported that experiences of positive affect, use of positive affirmations, and positive self-talk help people cope better during chronic stress (Folkman & Moskowitz, 2000; O'Neal et al., 2016). Based on these arguments, we hypothesize,

Hypothesis 2a: Positive affect to future self will be positively related to stress tolerance.

Positive affect to future and perseverance of efforts

Individuals who hold positive views about their worthiness, competence, and capability to achieve future goals are more likely to pursue their goals (Judge et al., 2005). Fredrickson (2001) explains the concept of positivity offset as a tendency of experiencing a positive affect while engaging in some action or thought. It is this offset that motivates people to continue along any

line of thinking or action that they have initiated. Also, affection towards a desirable future outcome could lead an individual to persist in the pursuit of one's goals (Blouin-Hudon & Pychyl, 2015). In this regard, we hypothesize that:

Hypothesis 2b: Positive affect to future will be positively related to perseverance of efforts.

Stress tolerance and openness to ideas

Past studies have suggested a positive influence of openness on stress responses (Schneider et al., 2012). Based on a population-based study in Denmark, Ebstrup et al. (2011) have reported a negative association between perceived stress and openness. Accordingly, we expect to find that ability to handle uncertain and stressful situations would be positively associated with openness.

Hypothesis 3: Stress tolerance will be positively associated with openness to people's ideas.

Perseverance and Openness to ideas

The fine line that differentiates perseverance from persistence is the ability to make adjustments while working continuously towards a long-term goal (Conroy, 1998). A perseverant individual is more likely to be open to novel ideas and make adjustments while working towards the objectives. Also, past studies have reported some common correlates of both perseverance and openness. For example, creativity is positively related to both perseverance and openness (Prabhu et al., 2008) given its importance and applicability to literally every field. Personality traits have been frequently and predictably related to creative achievement... (Prabhu et al., 2008), while moral disengagement was reported to be negatively related to openness as well as perseverance (Sagone & Caroli, 2013). Therefore, our fourth hypothesis assumes that,

Hypothesis 4: Perseverance of efforts will be positively related to openness to people's ideas.

Stress tolerance and perseverance as mediators

Based on the relationships suggested by previous studies and basic tenets of broaden and build theory, we constructed a serial mediation model relating positive affect to future with openness to people's ideas with stress tolerance and perseverance as mediators in serial. Also, the predictive role of stress tolerance over perseverance has been indicated earlier (Hernández et al., 2018) persistent, and intense. Individual characteristics and regular physical activity produce differences in ways of coping with pressure situations, stressing the necessity of teenagers handling them in an effective way for their psychological adjustment and well-being. The purpose of this investigation was to identify how the frequency of physical activity and the influence of certain personality traits (perfectionism and perseverance. Therefore, we postulated that stress tolerance would precede the perseverance among the two predicted mediators.

Hypothesis 5: Stress tolerance and perseverance of efforts will operate as serial mediators between positive affect to future self and openness to people's ideas.

Method

Participants and procedure

The sample consisted of 313 Indian working professionals (63.9% male, 36.1% female). The majority of participants (77.23%) were between 26 and 35 years old, 16.34% were between 36 and 50 years old, and 6.44% were 51 years and above. Regarding the educational level, 47.52% of the participants had a graduate degree, 38.61% were postgraduates, 8.91% had doctoral degrees, and 4.95% were diploma holders (See Table 1).

For data collection, a cross-sectional survey-based design was adopted. Recruitment of respondents for the study was initiated through online correspondence. Using the convenience sampling technique, an e-mail containing an overview of the study, requirements and time commitment needed to participate, and a link to the survey was floated. The only inclusion criterion was that participants must have at least one year of work experience. Those who chose to participate were assured that participation was voluntary and that their responses would remain confidential and anonymous. Once informed consent was attained, the survey was initiated. In total, 650 survey forms were mailed to the executives, and 313 usable responses were returned with a response rate of 48.15%. This sample size satisfies the minimum requirement of 200 sample items in order to ensure normality in data (Hair et al., 2010) this text has provided students with the information they need to understand and apply multivariate data analysis. Hair, et. al provides an applications-oriented introduction to multivariate analysis for the non-statistician. By reducing heavy statistical research into fundamental concepts, the text explains to students how to understand and make use of the results of specific statistical techniques. In this seventh revision, the organization of the chapters has been greatly simplified. New chapters have been added on structural equations modeling, and all sections have been updated to reflect advances in technology, capability, and mathematical techniques. Preparing For a MV Analysis; Dependence Techniques; Interdependence Techniques; Moving Beyond the Basic Techniques MARKET: Statistics and statistical research can provide managers with invaluable data. This textbook teaches them the different kinds of analysis that can be done and how to apply the techniques in the workplace" Multivariate Data Analysis (7th Edition. Also, the appropriate sample size for this study was determined using a priori statistical analysis (Soper, 2021) given the probability level, the anticipated effect size (Cohen's D. A minimum sample size of 207 was recommended to conduct an SEM analysis over the hypothesized model (given effect size is 0.3, statistical power = 0.95, at 0.05 significance level with four latent variables and 13 observed variables). The current sample

size, $n = 313$, is well above the recommended sample size and is therefore sufficient.

Measures

Positive affect to future self

Three items from Future self-continuity scale (Sokol & Serper, 2020) the sense of persistence of selfhood from the present to the future, is a fundamental feature of personal identity. Decreased self-continuity between the present and future self is associated with disadvantageous behaviors and increased psychopathology. The primary aim of the series of studies reported in this article was to develop and assess the psychometric properties and validity of an instrument designed to measure present to future self-continuity, the Future Self-Continuity Questionnaire (FSCQ) were adopted to measure participants' care and future self towards their future selves. Each item was rated on a 7-point Likert scale from 1 (*not at all*) to 7 (*perfectly*). Sample items of the scale included: "Do you like what your personality will probably be like ten years from now?" The Cronbach coefficient for the scale was 0.89.

Stress Tolerance

Stress tolerance, which is the perceived potential of an individual to handle ambiguous and stressful situations, was measured with three items from the multidimensional workplace curiosity scale (Kashdan et al., 2020). The responses were gathered on a 7-point Likert scale, with 1 denoting '*Strongly Disagree*' to 7 denoting '*Strongly Agree*'. The sample item for stress tolerance included: "The possibility of being distressed does not impact my motivation to work on new projects." The internal consistency (Cronbach's coefficient) was 0.80.

Perseverance of Efforts

Perseverance of efforts was measured through three items borrowed from the triarchic model of grit scale (Datu et al., 2017). This scale was more suitable for this study since it was developed in an eastern collectivist context similar to India. Each item was rated on a 7-point scale from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Sample items included, "I am a hard worker" and "I finish whatever I begin". The Cronbach coefficient for the scale was 0.75.

Openness to People's Ideas

Openness to people's ideas was assessed with four items drawn from multidimensional workplace curiosity scale (Kashdan et al., 2020). The responses were gathered on a 7-point Likert scale, with 1 denoting '*Strongly Disagree*' to 7 denoting '*Strongly Agree*'. The sample item included: "It is important to listen to the ideas of people who think differently." The internal consistency (Cronbach's coefficient) was 0.83.

Statistical Analysis

The SPSS v.27 software was used to do the data analysis. In the first instance, descriptive statistics such as mean,

standard deviation, and correlation coefficients between the variables under investigation were generated. Hypothesis testing was then carried out with the help of the PROCESS macro (Hayes, 2012). Model 6 was used to test a serial mediation model. Before the model was tested, all variables were standardized. 10,000 bootstrapped resamples with 95% confidence intervals were used to determine the significance of the regression coefficients. Regression coefficients are significant, if the confidence interval does not include zero (Hayes, 2012).

Results

Descriptive statistics

Table 2 contains descriptive data such as mean, standard deviation, inter-item correlation, square of the correlation between variables, and average variance extracted. According to the findings, all of the study variables have a moderate but highly significant association. The study variables' standard deviations ranged from 0.57 to 1.03. (See Table 2)

Evaluation of the measurement model

The reliability and validity of all the main variables in this study were estimated through confirmatory factor analysis (CFA) using maximum likelihood estimation technique. $\chi^2(58) = 65.511$, $\chi^2/df = 1.13$, CFI = 0.99, TLI = 0.99, RMSEA = 0.02, SRMR = 0.03 showed an adequate model fit. The standardized estimates for all items were satisfactory, ranging from 0.65 to 0.89, and all parameter estimates were significant at the $p < 0.001$ level. All of the key variables have internal consistency ranging from 0.75 to 0.89.

Common method biasness

The researchers adopted a cross-sectional design using self-reported measures to capture the constructs. The use of self-reported measures is most appropriate because the study analyzes self-referential perceptions (Brannick et al., 2010; Spector, 2006). Moreover, Rindfleisch et al. (2008) editors, reviewers, and authors have expressed increasing concern about the validity of this approach. These validity concerns center on reducing common method variance bias and enhancing causal inferences. Longitudinal data collection is commonly offered as a solution to these problems. In this article, the authors conceptually examine the role of longitudinal surveys in addressing these validity concerns. Then, they provide an illustrative comparison of the validity of cross-sectional versus longitudinal surveys using two data sets and a Monte Carlo simulation. The conceptualization and findings suggest that under certain conditions, the results from cross-sectional data exhibit validity comparable to the results obtained from longitudinal data. This article concludes by offering a set of guidelines to assist researchers in deciding whether to employ a longitudinal survey approach. © 2008, American Marketing Association.”(Rindfleisch et al., 2008) also noted that

cross-sectional designs are appropriate when the target sample is well educated, which is the situation in this study. It does, however, create the prospect of common method biasness. Several procedural and statistical methods were used to keep it to a minimum. As proposed by Podsakoff et al. (2003), respondents' identities were kept anonymous and secret. Second, the acceptable construct validity of the proposed measures was proven, excluding the potential of method effects (Conway & Lance, 2010). Third, the survey instrument was developed in such a way that various sections were clearly labelled, and variables were appropriately specified in accordance with Brannick et al. (2010)'s recommendations to reduce the likelihood of method variance. A re-estimation of the measurement model was done, including a common latent component related to all the items, to see how successful these measures were. There was no discernible difference between the fit indices of the two models. Furthermore, Harman's single factor test (Harman, 1976) revealed that variables failed to converge on a common single factor, and the first factor could only explain 31.72% of the total variance in the data, which is less than half of the total variance. On the basis of these findings, it could be appropriately concluded that common method bias was not a threat in the current model.

Test of the mediation model

Table 3 shows the results of the serial mediation model tested using PROCESS macro, Model 6. In this model, age, gender, and educational level were included as covariates. In the first stage, positive affect to the future self is positively associated ($\beta = 0.33$, $p < .001$) with stress tolerance, thus supporting hypothesis 2a. In the second stage, both stress tolerance ($\beta = 0.53$, $p < .001$), and positive affect to future self ($\beta = 0.16$, $p = 0.001$) are positively associated with perseverance of efforts, supporting hypothesis 2b. In stage three, positive affect to future self ($\beta = 0.15$, $p < 0.01$), stress tolerance ($\beta = 0.31$, $p < 0.001$), and perseverance ($\beta = 0.16$, $p < 0.01$) are positively related to openness to people's ideas, lending support to hypothesis 1, 3, and 4 respectively. Table 4 shows the direct and total effects of positive affect towards future self on the openness to people's ideas and indirect effects through stress tolerance and perseverance. The results show that both the total ($\beta = 0.31$, CI = [0.15, 0.28]) and direct effects ($\beta = 0.11$, CI = [0.05, 0.17]) are significant as the range of confidence of interval does not contain 0. Furthermore, there is also a significant indirect effect ($\beta = 0.03$, CI = [0.03, 0.06]) of the serial mediation of stress tolerance and perseverance of efforts, thus lending support to hypothesis 5.

Discussion

The current study investigated whether the ability to handle stress and tendency to persevere as mediators in serial would mediate the relationship between positive affect to future self and openness to people's ideas. The

performed analysis supported H1, indicating that love and affection towards the future self can predispose an individual to be more open to novel ideas. This aligned with findings of recent studies from the UK and US where positive affect significantly related with state openness (Hotchin & West, 2021a; Wilson et al., 2017) but little is known about the processes underlying these fluctuations. In two ecological momentary assessment studies ($Ns = 124, 415$). Further, we found that positive affect to future was significantly associated with stress tolerance (supporting H2a), suggesting that executives who reported higher levels of love and care towards the future tended to be better at dealing with stressful events. This is in line with the findings of recent studies suggesting that positive affect could dampen the adverse effects of stressful situations (van Steenbergen et al., 2021).

Furthermore, researchers have consistently suggested that people having a positive connection with the future self are likely to engage in continued action (Blouin-Hudon & Pychyl, 2015). On similar lines, our current results where positive affect to future was positively related to perseverance (supporting H2b) backs the argument that positive emotions foster cognitive and behavioral engagement (Lam & Zhou, 2020) only a handful of studies focused on examining the potential mediators in this association. The current study examined the mediating role of life satisfaction and perceived distress in the relationship between growth mindset and perseverance of effort. A total of 377 undergraduate students responded to an online survey package. Structural equation modeling results showed that growth mindset, life satisfaction, perceived distress were significantly associated with perseverance of effort. Moreover, a serial mediation was found among the variables: students with a growth mindset tended to report higher general life satisfaction, which further decreased perceived distress level, and subsequently weakened perseverance of effort. Theoretical and practical implications were discussed.” (Lam & Zhou, 2020). We also found a positive association between stress tolerance and openness to ideas (supporting H3). This result highlights that tolerance of stressful situations, being a motivational aspect of openness (Williams et al., 2009) could improve it positively. Conroy (1998) emphasized that being open to making adjustments while persisting is central to perseverance. Our findings corroborate this notion, where perseverance positively associates with openness (supporting H4). This indicates that a more perseverant individual is more likely to be open as compared to people less on perseverance.

The confirmed serial mediation effect (supporting H5) corroborates broaden and build theory (Fredrickson, 2001) in an eastern collectivist context. The study shows that experiencing positive emotions, even towards the future self could set in motion a series of other positive psychological and behavioral outcomes that would result in enhanced personal resources.

Theoretical implications

This study extended the existing literature by developing a comprehensive model consisting diverse dimensions related to individual behavior. Positive affect towards future self, stress tolerance and perseverance were of particular interest in this study because of their influence on employees and organizations, which is often overlooked by employers. Further, it has addressed a research gap by illuminating the mechanism between positive affect to future and openness to people’s ideas through a serial mediation test. This study also highlighted various predictors of openness to people’s ideas and thus contributes to openness literature. Thus, this study makes an attempt to explore new areas of behavioral research to contribute to the growth and well-being of employees through fostering some psychological constructs among them.

Practical implications

The findings of this study have numerous implications for practitioners from the eastern collectivist context. Since openness among individuals is a critical trait with pertinent consequences for performance and training readiness (Barrick & Mount, 1991), institutions need to explore ways through which it could be sustained and enhanced. Apart from that ability to handle stressful events and persevere through difficult times are also a few qualities that are pivotal in the current VUCA (volatility, uncertainty, complexity, ambiguity) world. This study implores the supervisors, employers, and organizations to actively develop and adopt human resource practices that could enhance positive emotions among the workforce. Particularly, a positive connect with the future self could be fostered by interventions such as writing letters to the future self or using virtual reality to get in touch with future selves (Blouin-Hudon & Pychyl, 2017; Hershfield et al., 2018). In collectivist cultures such as India, employees expect a certain degree of care and support from their organizations. In such situations, supervisors can also play a crucial role in strengthening these psychological constructs.

Limitations of the study and future directions

There are some limitations associated with the current study. First, the survey only included Indian executives. Larger samples from other cultures could be recruited in future studies to replicate the current findings for cross-cultural generalization. Second, the postulated causality of the hypothesized model is confined by the cross-sectional research design (Levin, 2006). Longitudinal or experimental studies are necessary to examine possible causal relationships. Third, the current study relied entirely on self-reported data, raising questions regarding the measurement validity of our findings (Mickalide, 1997). A number of data types, such as behavioral data, could be used in future studies. Fourth, the current study only looked at stress tolerance and perseverance as mediating factors; future research could look into the role of other psychological traits such as adaptability, in the given relationship (Karaevli & Tim Hall, 2006).

Conclusion

In line with broaden and build theory, the present research explored different ways through which a positive affect towards the future could induce other positive outcomes such as an enhanced ability to handle ambiguous situations, persevere through difficult times, and maintain an open attitude towards people's ideas. Also, the underlying mechanism connecting all these outcomes is also illuminated. Nevertheless, additional research is needed including other positive emotions and behavioral outcomes to understand better how positive emotions broaden and build psychological resources among people.

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Table 1 Socio Demographic Characteristics of Participants

Characteristics	N	%
Gender		
Men	200	63.90
Women	113	36.10
Total	313	100
Age, range		
26-35 years	236	75.40
36-50 years	54	17.25
51 years and above	23	7.34
Total	313	100
Education Level		
Diploma	22	7.03
Graduate	145	46.32
Post Graduate	116	37.06
PhD	30	9.58
Total	313	100
Job Position		
Junior Level	98	31.31
Middle Level	143	45.69
Senior Level	72	23.00
Total	313	100
Organization Status		
Public	70	22.36
Private	228	72.84
Other	15	4.79
Total	313	100

Table 2: Descriptive Statistics

		Mean	S.D.	CR									
	Factors				1	2	3	4	5	6	7	8	9
1	Gender	---	---	---	---								
2	Age	---	---	---	.001	---							
3	Education	---	---	---	-0.25**	0.12*	---						
4	Job position	---	---	---	-0.06	-0.4**	-0.01	---					
5	Organization status	---	---	---	0.03	-0.1**	-0.03	-0.03	---				
6	Positive Affect to Future Self	0	1.03	.894	0.08	-0.001	-0.07	0.00	-0.02	.714			
7	Stress Tolerance	0	.70	.756	0.05	0.02	0.00	0.02	-0.04	.371***	.735		
8	Perseverance	0	.77	.752	0.05	-0.02	-0.10	-0.07	0.08	.289***	.274***	.859	
9	Openness to People's Ideas	0	.57	.824	0.07	-0.02	-0.11	-0.06	0.07	.483***	.320***	.293***	.709

Note. M=Mean; S.D.=Standard Deviation. N=313. *p < 0.05, **p < 0.01, ***p < 0.001. The square root of average variance extracted of each construct (No. 6, 7, 8, 9) is represented in **bold** along the diagonal. Values below the diagonal represent inter-construct correlations.

Table 3. Coefficient estimates for the regression model

	Stage 1			Stage 2			Stage 3		
	Stress Tolerance			Perseverance of efforts			Openness to People's Ideas		
	β	SE	CI [95%]	β	SE	CI [95%]	β	SE	CI [95%]
Constant	0.11	0.12	[-0.08, 0.31]	0.05	0.08	[-0.08, 0.17]	-0.14	0.11	[-0.31, 0.04]
Positive Affect to Future self	0.33***	0.05	[0.18, 0.33]	0.16***	0.03	[0.05, 0.14]	0.15**	0.04	[0.04, 0.17]
Stress Tolerance				0.53***	0.04	[0.32, 0.46]	0.31***	0.08	[0.16, 0.43]
Perseverance							0.16**	0.11	[0.02, 0.38]
Covariates									
Age	0.03	0.07	[-0.15, 0.14]	-0.03	0.04	[-0.10, 0.04]	-0.03	0.06	[-0.06, 0.20]
Gender	0.00	0.09	[-0.06, 0.16]	0.00	0.06	[-0.09, 0.10]	0.05	0.08	[-0.14, 0.06]
Educational level	-0.08	0.06	[-0.18, 0.01]	-0.04	0.03	[-0.08, 0.03]	0.08	0.05	[-0.02, 0.15]
R ²	0.12			0.37			0.25		
f	10.66***			36.46***			17.14***		

Note: N =313; CI = Bootstrapping confidence interval. **p < 0.01, ***p < 0.001

Table 4. Total and Direct effects of positive affect to future self on openness to people's ideas and indirect effects through stress tolerance and perseverance

	β	SE	CI [95%]
Total effect	0.3099	0.0374	[0.15, 0.28] ^a
Direct Effect	0.1059	0.0369	[0.05, 0.17] ^a
Indirect effect through:			
Stress Tolerance	0.1013	0.0338	[0.05,0.16] ^a
Perseverance of efforts	0.0262	0.0193	[0.02, 0.06] ^a
Stress Tolerance and Perseverance of efforts	0.0285	0.0182	[0.03,0.06] ^a

Note: N = 313; CI = Bootstrapping confidence interval; ^a denotes that CI does not include zero

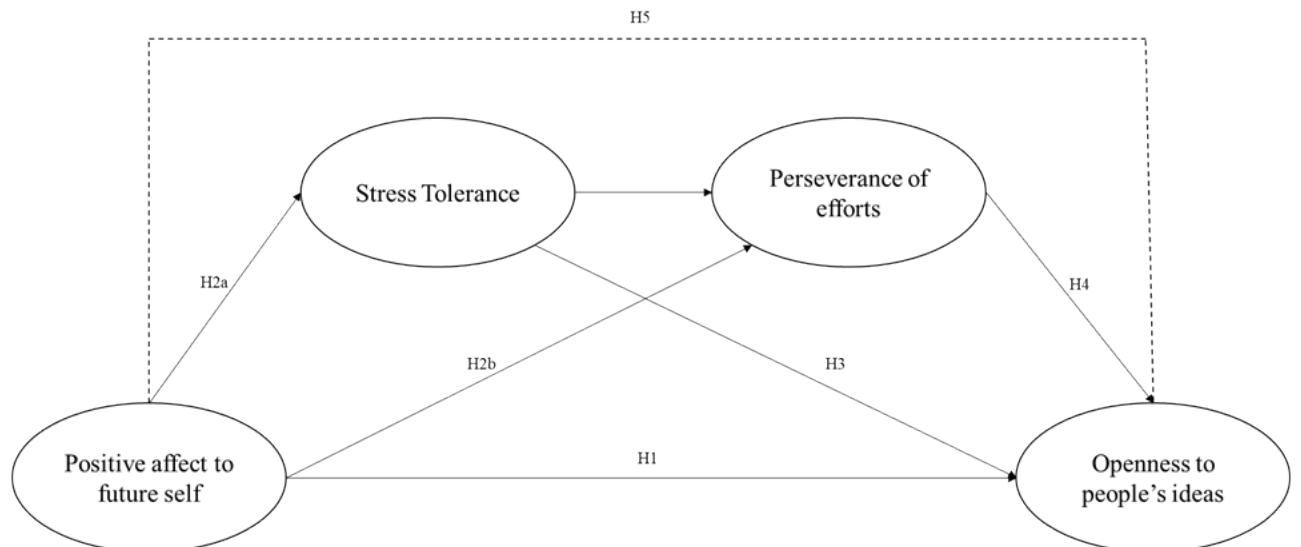


Figure 1. Hypothesized Model

Conceptualizing Sustainable Educational Leadership in the Modern World

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Abstract

This paper attempts to conceptualize sustainable educational leadership that integrates contemporary theories in HE and the Jesuit tradition in the modern world. This conceptual paper first discusses four distinct periods of educational leadership based on the systematic reviews of the literature suggested by academic scholars and contemporary HE leadership models, i.e. transformational leadership, self-leadership, spiritual leadership, servant leadership, and collaborative leadership. Subsequently, I explain critical concepts in the Jesuit tradition, i.e. the Catholic Church's HE philosophy and the background and HE philosophy of the Jesuits. Understanding the missions of the Catholic Church and the Jesuits is beneficial to comprehend sustainable educational leadership. Then, I situate sustainable educational leadership by comparing the five contemporary higher education leadership models with the features of Jesuit educational leaders. Finally, I discuss the ideal characteristics of sustainable educational leadership and its management implications in the modern world.

Keywords

Sustainable education leadership, transformational leadership, self-leadership, spiritual leadership, servant leadership, collaborative leadership

1. Introduction

This paper seeks to develop a conceptual framing of sustainable education leadership that integrates contemporary theories related to higher education and the Jesuit philosophy in particular. It is divided into three sections whose relationship. On top of the introduction section, the second section comprises the following four parts: Jesuit philosophy, educational leadership theories, comparison of modern leadership, and characteristics of sustainable education leadership and its management implications. The final section deals with limitations, and future research suggestions.

2. Conceptualizing sustainable educational leadership in the modern world

This section first explains essential concepts in the Jesuit philosophy, followed by explaining influential contemporary higher educational leadership models. Thirdly, a sustainable educational leadership model created by the Jesuits is explored based on comparing contemporary higher education leadership models with the features of Jesuit education leaders. Lastly, some

characteristics of Jesuit education leaders and their management implications in the modern world are discussed.

2.1 jesuit philosophy

Formerly established in 1540, the Society of Jesus, also called the Jesuits, was the forerunner to respond to and strengthen the role of the Catholic Church in a changing world, and its main purpose was to renew the church spiritually and pursue Christian unity (Howell, 2019). In line with the Jesuits' Universal Apostolic Preferences (UAP), spirituality, walking with the marginalised, walking with youngsters, and caring for the earth are the four major concerns of the Society of Jesus, 2019-2029 (The Jesuits, 2022). Yet, one of the greatest challenges to the missionary work of the Jesuits is the decline in the number of Jesuits from a spike of 36,038 in 1965 to approximately 27,000 by 1974 (Gray, 2018).

The first Jesuit college was built in Messina, Italy, only eight years after the formation of the society in 1540. Among all teaching orders of the Catholic Church, the Jesuits have put far more resources into higher education and have operated the highest number of Catholic

universities in the world i.e. 200 higher education institutions. According to O'Malley (2014), the Society of Jesus have successfully made its HEIs sustainable in three ways. Firstly, the Jesuits have intentionally planned, organised, led, and monitored schools to implement a true ministry of the teaching order, particularly in higher education. Also, the Jesuits has taken up the responsibility and a long-term view on the sustainability of the HEIs. Further, its HEIs aim to nurture students to pursue practical careers in real life.

2.2 Modern educational leadership theories

Modern educational leadership theories include transformational leadership, self-leadership, spiritual leadership, servant leadership, and collaborative leadership. In this paper, an attempt will be made to analyse Jesuit leadership through the five contemporary leadership theories.

Transformational Leadership

Transformational leadership is a style of leadership that influences the followers through idealised influence, intellectual stimulation, inspirational motivation, and individualised consideration (Tsui & Lee, 2018). The major aim of transformational leadership obliges the leader to boost the spirit, motivation, and task attainment of the follower via various means.

Self-leadership

Self-leadership is another contemporary leadership theory. The key aim of self-leadership is to govern an individual's energy according to the individual's leadership ideology. Self-leadership means the centre of power of the team moves from leaders to followers.

Spiritual Leadership

Spiritual leadership refers to the intrinsic motivation of a leader towards people and oneself via one's values, deeds, and attitudes. A key aim of spiritual leadership is to cater to the well-being need of both leaders and followers through these characteristics.

Servant Leadership

Servant leadership is one of the most popular contemporary leadership theories, advocating leaders need to position themselves as the servant of the team and always put the interests of the followers before theirs. Servant leadership stresses empowering the followers by the servant leader to attain the common goal or mission based on a shared value.

Collaborative Leadership

Collaborative leadership refers to the exercise of coordinating and supervising various tasks concerning the program of studies and directions. Also, collaborative leadership represents shared leadership among a group of academics, who have necessarily narrow but deep expertise in their respective areas of study.

2.3 Comparing with modern leadership theories

This part will compare the five contemporary leadership theories in the context of the Jesuit education leadership.

Firstly, there are some distinct differences between **transformational leadership** and Jesuit leadership, which stresses serving others. Jesuit leaders in higher education stress getting their hands dirty while serving others, which is perceived as genuine and honest (Vatican News, 2018).

Jesuit leadership in higher education shares some of the features of **self-leadership**. For instance, the Jesuits has a well-established supervisor system that allows the novice or individual to have a direct face-to-face dialogue or spiritual direction with the supervisor through periodic meetings. This dialogue will facilitate goal-directed behaviour, goal setting, monitoring action, self-regulating, and self-directing.

Spiritual leadership has much in common with Jesuit leadership. The high standards of HEIs set by Jesuits are based on an essential principle, *Ex Corde Ecclesiae* (From the Heart of the Catholic Church) (Brackley, 2008). However, when compared with Jesuit leadership, spiritual leadership seems to have missed a distinctive characteristic that is the aim of public good possessed by Jesuit leadership in higher education. Jesuit leaders stress the aim of servicing others, as proclaimed by Pope Francis as the overriding mission of the Catholic Church.

Although **servant leadership** is more often similar to Jesuit leadership, Jesuit leaders always practice self-awareness and cultural awareness guided by spiritual exercise (Rothausen, 2017).

Similar to **collaborative leadership**, Jesuit leadership is to create a cohesive bonding between Jesuits and the lay collaborators or apostolic partners. Although collaborative leadership is closely related to Jesuit leadership, the element of spirituality is missing, and that is why Jesuit leadership cannot be adequately described by the collaborative leadership model alone.

2.4 Characteristics of contemporary sustainable education leadership

After comparing five contemporary leadership models with the characteristics of the Jesuit leaders, the features of contemporary sustainable education leadership practised by the Jesuits seem to include *interpersonal support, building community, selflessness, equality, integrity, and spirituality*. Some management implications will be discussed.

Interpersonal support

One of the key issues of Jesuits' UAP (Universal Apostolic Preference) is to *walk with youngsters*.

Management implications for interpersonal support

It is essential to put more emphasis on ‘caring for others’ to strengthen interpersonal support.

Community building

The meaning of service to the Jesuits is to serve the weakest people, who could be the least, the less, and the last. Based on the Catechism of the Catholic Church, Society ensures social justice when it provides the conditions that allow associations or individuals to obtain what is their due, according to their nature and their vocation.

Management implications for community building

Jesuit education leaders need to create more opportunities and fieldwork for students to serve the community at large as students are particularly important in building the future society.

Selflessness

Humility refers to selflessness, which is the Jesuit leader’s fundamental principle. As Pope Francis said, the core of a leader is to serve. Jesuit leaders *should not put titles, status, remunerations, outlook, and one’s interests in the first place*, but others.

Management implications for selflessness

Character development is very important in Jesuit education and elite students should learn to be selfless.

Equality

Diversity of students is ensured by providing equal opportunity for people with different socio-economic backgrounds.

Management implications for equality

Customarily, Jesuit higher education leaders treasure hiring presidents or faculty members without considering their religious background because of equality issues.

Integrity

Jesuit leaders pursue *an integral life* without hypocrisy. They do not confine themselves to bureaucracy, maintain direct contacts with reality.

Management implications for integrity

In the long run, this is a big challenge to the integrity of Jesuit HEIs.

Spirituality

According to The Jesuits, Spirituality is usually related to *Spiritual Exercises and discernment*.

Management implications for spirituality

Spirituality is supposed to be highly regarded.

3 Conclusions

To contextualize sustainable education leadership, Jesuit philosophy, the impact of the Vatican II on the Jesuit philosophy in higher education, and the aims of Jesuit higher education were discussed to better understand the context of Jesuit education leadership. Then, the literature was reviewed from various modern higher educational leadership models: transformational leadership, self-leadership, spiritual leadership, servant leadership, and collaborative leadership. In addition, after comparing the modern higher educational leadership models with the Jesuit leaders, I find that no stand-alone contemporary higher educational leadership model can fully describe sustainable education leadership. As such, a conceptual model of six features is presented: *interpersonal support, community building, selflessness, equality, integrity, and spirituality* with management implications.

Limitations and future research

The limitation of the research is that it was only confined to an extensive literature review on contemporary leadership theories without empirical studies. I suggest conducting empirical research to develop a scale for sustainable education leadership in the future, using the six characteristics is encouraged.

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Enhancing Training Effectiveness Through Co-Worker Support: the Moderating Role of Personal Interaction

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Abstract

Drawn from the Conservation of Resources Theory, this article aims to theorize and analyze the conditions under which co-worker support, a vital social support resource, is positively related to training, with the moderating role of personal interaction. Data of 198 collected from participants working in public and private manufacturing and service organizations in India were analyzed by applying confirmatory factor analysis, structural equation modelling and Hayes PROCESS macro with bootstrap resampling. Following our expectations, the results showed a positive relationship between co-worker support and training. Personal interaction moderated the relationship, such that the relationship was stronger and more positive when personal interaction was high. Organizations should consider social factors and nurture social relations. Managers should lead employees in the socialization process and set examples by supporting their aides and inspiring them. This article provides insight into co-worker support as a motivating factor for the effectiveness of workplace training programs, moderated by personal interaction, which is conceptually and empirically designed and tested in the Indian context.

Keywords

Co-worker support, training, personal interaction, structural equation modelling, moderation, Indian organization

Introduction

The extensive research on training has heralded the importance of training outcomes like reaction, learning, behaviour and results (Kirkpatrick, 1976). Researchers have backed training in aiding better job performance (Guan and Frenkel, 2019) Emerald Publishing Limited. Purpose: The purpose of this paper is to investigate the influence of firm training on the job performance of mainly semi-skilled manufacturing employees in the context of changes required to ensure the competitiveness of contemporary Chinese manufacturing. Design/methodology/approach: Data were collected using a survey with time-lagged method and from multiple sources. The sample included 348 supervisor-subordinate dyads from two Chinese manufacturing firms. PROCESS macro tool (Hayes, employability (Bozionelos *et al.*, 2020) this study developed and tested a model whose variables represented key elements of the sustainable career process as captured in up-to-date thinking. The model posited that employees' openness to experience and supervisor

support for training would lead to increases in employees' job performance and employability via learning as the result of an employer-sponsored training course. Training represented the contribution of the employer, who is the other key stakeholder in sustainable careers. The model was tested on 334 salespersons who attended an in-house job training course. Job performance and employability, as assessed by line managers, increased substantially and significantly following the training with respect to their pre-training levels, and learning as a result of the training mediated the relationships of openness to experience and supervisor support with the increases in job performance and employability. Contrary to expectations of a positive synergy, a substitution effect was found between openness and supervisor support in fostering learning as result of training, and subsequently, increases in job performance and employability. The study provided a comprehensive albeit short-term picture of the sustainable careers process as conceptualized in the theoretical literature. In addition, it illustrated the effectiveness of job training in

the enhancement of employability. The implications of the study for theory and further research on sustainable careers and employability are discussed.” (Becker, 1962). Empirical evidence has shown the consequences of training interventions for employees (learning new skills, and knowledge) (Bauer and Erdogan, 2014). Although participating in training sessions leads to personal up-gradation and training transfers as the better-known consequences (Walsh and Magley, 2020), what motivates individuals to actively participate in training interventions and how social associations in the organizations lead to training effectiveness is still unclear.

Social support in the organization is the relationship that provides assistance and endures a feeling of love and care (Hobfoll *et al.*, 1990). These include support from the organization, supervisor and co-workers (Fisher, 1985) a main effect on perceived stress, and a moderating effect on outcomes. The present study investigated the interrelationships of stress, social support, and outcomes at work, using a sample of newly graduated nurses in their first six months on full-time hospital jobs. A longitudinal design employing three waves of data collection was used. Social support was found to have important main effects in reducing the level of unmet-expectations stress and facilitating positive adjustment outcomes among newcomers.” (Fisher, 1985). They are the resources at the workplace that plays a vital role in attenuating stress and role conflict (Mayo *et al.*, 2012), reducing burnout (Schaufeli *et al.*, 2008) burnout, and work engagement - the supposed antipode of burnout - can be distinguished empirically. These three concepts were measured with existing, validated multi-dimensional questionnaires. Structural equation modeling revealed that a slightly modified version of the hypothesised model that assumed three distinct yet correlated constructs - burnout, engagement, and workaholism - fitted the data best. Multiple regression analyses revealed that these three concepts retained unique hypothesised patterns of relationships with variables from five clusters representing (1, and elevating job satisfaction (Chiang and Wu, 2014). Although earlier studies showed co-worker support as a vital source of social support in reducing stress, and burnout, improving job performance and predicting job satisfaction (Chiang and Wu, 2014; Guo *et al.*, 2019; Toker *et al.*, 2015), it has been understudied, and research is scarce in understanding its role in gaining training effectiveness (Newman *et al.*, 2011a) and the relationship between the latter and company performance. Design/methodology/approach: The authors propose and test a model linking constructs related to training (the volume and quality of training, supervisor support, peer support, and organisational incentives.

Transfer of training in job practice cannot be effectively implemented without the support of the supervisor and co-workers (Dermol and Čater, 2013) and the relationship

between the latter and company performance. Design/methodology/approach: The authors propose and test a model linking constructs related to training (the volume and quality of training, supervisor support, peer support, and organisational incentives. Thus, co-worker support for encouraging co-workers to participate in training sessions and the effectiveness of such training is vital to understand, especially in an Indian context. Built on the Conservation of Resources Theory (COR) (Hobfoll, 1989) and consequently, not given to direct empirical testing. Indeed, it is argued that researchers have tended to avoid the problem of defining stress, choosing to study stress without reference to a clear framework. A new stress model called the model of conservation of resources is presented as an alternative. This resource-oriented model is based on the supposition that people strive to retain, protect, and build resources and that what is threatening to them is the potential or actual loss of these valued resources. Implications of the model of conservation of resources for new research directions are discussed.” (Hobfoll, 1989, individuals conserve or spend one resource to gain another resource in their surroundings. We posit that co-worker support as an essential social resource in the organization is conserved, protected and invested (Hobfoll *et al.*, 1990) to obtain knowledge through training and transfer trained knowledge to actual work performances (Bauer *et al.*, 2016).

Moreover, personal interaction among employees at workplaces plays a pivotal role in sharing ideas, information and knowledge (Yi, 2009) little effort has been put into developing a valid and reliable measure of KSB. The primary purpose of this study is to develop a new measure of KSB with desirable psychometric properties - a well-developed KSB scale with a sufficient level of reliability and validity. This main objective was achieved by using the following procedures: (1. Such interactions are the key factors in channelling the drive for employees in tacit knowledge transfer and voluntarily helping co-workers during problematic situations. Thus, we expect that the level of personal interactions among co-workers may affect their motivation for participating in training practices and the effectiveness of training programs.

Employees are generally reluctant to participate in training sessions due to long schedules, unattractive training materials, and less interest in the trainers; thus, they require motivation and interpersonal drive for such activities (Kalargyrou and Woods, 2011) in-depth interviews using pictures were conducted with ten training professionals, where metaphors were widely used and links between concepts were identified. The qualitative software Atlas ti was used in creating a consensus map: a display showing the required competencies of training professionals in hospitality. Findings: The training competencies that resulted from the current study are imperative for the effectiveness of

training and development such as teamwork, inspiration-motivation, creativity, mentoring, keeping current, proactiveness, active listening, staying healthy, training measurement, consistency, and love and passion for the profession. Research limitations/implications: In-depth interviews using pictures is an implicit research technique that attempts to reveal the unconscious thoughts and opinions of training professionals. The study took place in Las Vegas, Nevada, a unique tourist destination, and the interviewees were employed by large hotel-casino corporations. Future studies need to research different sizes of hospitality institutions and different tourist destinations. Practical implications: Human resources management can use the outcome of the study as a guide for compiling competency-based job analyses for training positions, and consequently recruit and appraise training professionals based on these job specifications. Moreover, the outcome of the paper can be proven beneficial not only for hospitality executives, and future and current training professionals, but also for educators since training and teaching show-case many similarities. Social implications: Improved and efficient training will result in lower employee turnover since employees will rate higher in job satisfaction and consequently that will result in better customer service and returning business for the company; a win-win situation for all involved stakeholders in a hospitality company. Originality/value: Both hospitality executives and future and current training professionals should find these research results most interesting as they reveal the necessary competencies that will enable them to best train and develop hospitality employees. © Emerald Group Publishing Limited.”(Kalargyrou and Woods, 2011. Moreover, all the essential training outcomes cannot be obtained unless there is a motivation for training (Tabassi *et al.*, 2012). Therefore, researchers have tried to investigate the stimulus for training and training effectiveness. Because they anticipate that when employees attend training programs with their co-workers, they get encouragement and the company of those co-workers, which may lead to training effectiveness. Although various literature has thrown light on the effect of co-worker support in reducing burnout, job satisfaction, and well-being, the motivating factors that may persuade employees to train are still embraced loosely, especially with personal interaction as a moderator. Thus, this study, anchored on the COR theory, aims to study the relationship between co-worker support and training of the employees and attempts to fill the gap in this relationship in an Indian context.

Furthermore, we consider the role of personal interaction in promoting the proposed relationship. Specifically, we propose that personal interaction can be a moderator, as the experiences that emerge from such interactions may enhance the relationship between co-worker support and training. This study offers specific implications for theory

and practice. Firstly, it adds to the training literature by emphasizing co-worker support as an antecedent to the training of employees. Second, by studying the interaction effect on training effectiveness, the current study focuses on understanding the qualifying effect of personal interaction on the co-worker support-training relationship. Third, it contributes to the concept of Conservation of Resources Theory by extending co-worker support being a social support resource at the job, is conserved and spent for gaining knowledge resources through training at the organizational level, especially in a previously unnoticed still a vital source of participants from the organizations in India.

Theoretical background and hypothesis

Co-worker support

Co-worker support is defined as “the emotional, moral or instrumental sustenance which is provided without financial compensation by other employees in the organization in which one works with the objective of elevating anxiety, fear or doubt” (Taormina, 1997 p. 37). Co-worker support as a resource of social support aids new employees in facilitating adjustment, providing moral support and reducing stress (Fisher, 1985; Taormina, 1997) a main effect on perceived stress, and a moderating effect on outcomes. The present study investigated the interrelationships of stress, social support, and outcomes at work, using a sample of newly graduated nurses in their first six months on full-time hospital jobs. A longitudinal design employing three waves of data collection was used. Social support was found to have important main effects in reducing the level of unmet-expectations stress and facilitating positive adjustment outcomes among newcomers.” This paper presents a model of organizational socialization (OS. Research has demonstrated the role of co-worker support in job satisfaction, better performance, reduced burnout, work engagement, and employee health condition (Schaufeli *et al.*, 2008) ultimately, their ability to perform a job well. The objective of this study is to investigate the effects of job demands on the occupational health of 739 accountants, as well as the role of the moderator that internal resources (locus of control, while a lack of co-worker support leads to turnover intention and reduced job performance. In their study, Rehman *et al.* (2019) emphasized that support from co-workers likely enhances self-determination and confidence in the employees’ ability to pave the way for innovative work behaviour. Thus, it is understood from the theoretical evidence that co-worker support is one of the precious social support resources at the workplace because of the higher interactions occurring among co-workers (Taormina, 1997).

Training

Training is an intervention provided to employees for transferring skills and knowledge related to a job so that

the trainees can effectively deliver work-related actions and performances. Taormina (1997 p. 31) defined training as “the act, process or method by which one acquires any functional skill or ability that is required to perform a specific job”. Similarly, Danvila-del-Valle *et al.* (2019), in the bibliometric analysis of human resource training, pointed out that words like human capital development and performance linked the most with training. This signifies that the employee is the organization’s human capital, which, when provided with training, demonstrates development leading to better job performance. Specific organizations provide a free hand to their employees due to which mistakes are forgiven and learning via training and training transfers occurs in an effective manner (Ng and Dastmalchian, 2011). Such training opportunities can influence performance and improve promotion prospects, leading to better career expectations (Frenkel and Bednall, 2016) requiring discretionary work effort (DWE).

Co-worker support and training

The COR theory stipulates that one resource tends to enrich the other resource, while the loss of one resource leads to the loss of the other resource (Hobfoll *et al.*, 1990). Resources are well-defined as “those objects, personal characteristics, conditions or energies that are valued by the individual or that serve as a means for attaining these objects, personal characteristics, conditions or energies” (Blau, 1981 p 516). In this study, we posit that co-worker support as a source of social support resource, if conserved and provided as a source of encouragement, would pave the way for gaining another resource (knowledge and learning) through training. This is because co-workers’ support induces vitality and motivates employees (Kim, 2019), which may aid in participating and learning from the training sessions and increase training effectiveness.

The support and concern of co-workers help individuals apply the learned concept during the job and assist at the required stage when needed (Dermol and Čater, 2013) and the relationship between the latter and company performance. Design/ methodology/ approach: The authors propose and test a model linking constructs related to training (the volume and quality of training, supervisor support, peer support, and organisational incentives). Employees require motivation and interpersonal drive for training activities since they are generally reluctant to participate in training sessions due to long schedules, unattractive training materials, and less interest in the trainers (Kalargyrou and Woods, 2011) in-depth interviews using pictures were conducted with ten training professionals, where metaphors were widely used and links between concepts were identified. The qualitative software Atlas ti was used in creating a consensus map: a display showing the required competencies of training professionals in hospitality. Findings: The training competencies that resulted from the current study are imperative for the effectiveness of

training and development such as teamwork, inspiration-motivation, creativity, mentoring, keeping current, proactiveness, active listening, staying healthy, training measurement, consistency, and love and passion for the profession. Research limitations/implications: In-depth interviews using pictures is an implicit research technique that attempts to reveal the unconscious thoughts and opinions of training professionals. The study took place in Las Vegas, Nevada, a unique tourist destination, and the interviewees were employed by large hotel-casino corporations. Future studies need to research different sizes of hospitality institutions and different tourist destinations. Practical implications: Human resources management can use the outcome of the study as a guide for compiling competency-based job analyses for training positions, and consequently recruit and appraise training professionals based on these job specifications. Moreover, the outcome of the paper can be proven beneficial not only for hospitality executives, and future and current training professionals, but also for educators since training and teaching show-case many similarities. Social implications: Improved and efficient training will result in lower employee turnover since employees will rate higher in job satisfaction and consequently that will result in better customer service and returning business for the company; a win-win situation for all involved stakeholders in a hospitality company. Originality/value: Both hospitality executives and future and current training professionals should find these research results most interesting as they reveal the necessary competencies that will enable them to best train and develop hospitality employees. © Emerald Group Publishing Limited.”(Kalargyrou and Woods, 2011). Co-worker support may play an essential role in providing work-related support to employees (Chiang and Wu, 2014). Support from co-workers can create emotional bonds among employees who desire to work for the organization and are satisfied with HRM interventions like training (Wang, 2008). In their study, Newman *et al.* (2011) emphasized the positive awareness of training from employees who are highly motivated to learn. At the same time, co-worker support has displayed a positive motivational source for employees’ participation in training and affective commitment (Newman *et al.*, 2011a) and the latter’s relationship with turnover intentions. Structured equation modelling is conducted on survey data from 437 Chinese employees of five multinational enterprises operating in the Chinese service sector. The results of the survey are consistent with social exchange theory. They highlight the importance of training as a tool to enhance the affective organizational commitment of employees, and reduce turnover. The findings differ from that of previous studies in non-Chinese settings. No evidence was found to indicate that motivation to learn and the perceived benefits of training impact on the organizational commitment of employees. This may be explained by three factors: the involuntary nature

of employee training, the limited career development opportunities on offer to local employees of multinational enterprises and the difficulty employees face in applying learnt skills given cultural differences. The implications for research and practice are discussed. © 2011 Taylor & Francis.” Moreover, Dermol and Čater (2013) and the relationship between the latter and company performance. Design/methodology/approach: The authors propose and test a model linking constructs related to training (the volume and quality of training, supervisor support, peer support, and organisational incentives, in their study, have proposed the function of supervisor and peer support in successful training and training transfer.

Applying the argument based on the evidence from the literature, we propose that:

H1. There is a positive relationship between co-worker support and training interventions.

Moderator role of personal interaction

Personal interactions are informal interactions through a person-to-person means among the employees to share knowledge and facilitate them with their work-related aspects (Yi, 2009) little effort has been put into developing a valid and reliable measure of KSB. The primary purpose of this study is to develop a new measure of KSB with desirable psychometric properties - a well-developed KSB scale with a sufficient level of reliability and validity. This main objective was achieved by using the following procedures: (1. To help employees solve issues related to working, sharing their passion on topics of common interest are the aspects of personal interactions. Taormina (1999) claimed personal interactions as an integral aspect of organizational socialization, whereby employees may effectively demonstrate organizational citizenship behaviour. Sáenz *et al.* (2012) personal interaction-based, and embedded in management processes, in their study, have signified personal interactions as a face-to-face medium for expanding skills, knowledge and experiences for problem-solving. Personal interactions arise around a joint enterprise at the workplace, giving rise to shared repertoire and mutual engagement among co-workers (Gertner *et al.*, 2011) collected through interviews with the key partners and the review of relevant documentary material, is analysed through the lens of the communities of practice approach to situated learning. Findings: The analysis of three case studies provides evidence to support the value of conceptualising the process of knowledge transfer between universities and industry as one of learning taking place within communities in which the development of mutual engagement, joint enterprise and shared repertoires play important roles facilitating successful collaborations. Moreover, the analysis highlights the significance of the boundary spanning roles of the KTP partners in facilitating the knowledge transfer process through engagement in both the university and industry communities. Research limitations/

implications: By illuminating the dimensions of the interpersonal interactions involved in the knowledge transfer process the CoPs analysis provides the foundations for recommendations to improve university-industry KTPs, in particular, and, inter-organisational knowledge transfer initiatives in general. A limitation of this research is its focus on the UK context. Moreover, given the exploratory nature of this study further research is required to verify the findings reported here. Originality/value: The article makes an original empirical and conceptual contribution to understandings of university-industry knowledge transfer collaborations. © Emerald Group Publishing Limited.” According to Gil and Mataveli (2017), the interactions among people result in learning experiences and are an antecedent to job satisfaction through positive and negative affect (Dimotakis *et al.*, 2011). Liao *et al.* (2004) have explained the importance of personal interaction in accumulating social capital leading to organizational advancement. This social capital comprises human capital in the organization, which can lead to effective organizations when invested in training (Becker, 1962; Danvila-del-Valle *et al.*, 2019). The social context of personal interaction among employees may develop a bond of emotional connection leading to adequate support and encouragement for co-worker development.

Drawn from the COR theory, personal interaction as a resource is practised and valued in the context of social interactions. When co-worker support and personal interaction combine, employees feel comfortable due to the trust they develop in each other through co-worker support and personal interaction with those co-workers. Thus, we propose that a higher level of social connection can signal support from colleagues for better training effectiveness and training success. Following the interactionist perspective of socialization (Reichers, 1987), we suggest that personal interaction may act as a primary vehicle and influence the positive association between co-worker support and training. While personal interaction among co-workers can smoothen the effect of co-worker support on training, the lower interaction amongst employees may not elevate the association between co-worker support and training. Thus, based on the evidence from the literature, we hypothesize that:

H2. Personal interaction will moderate the relationship between co-worker support and training such that co-worker support will be more strongly related to training when personal interaction among co-workers is high.

Method

Sampling and data collection

By understanding the need for employee development, training emerges as a pivotal HR management function. The data for the current study were gathered from employees working in Indian organizations, mainly public and private sector manufacturing and service

provider companies. Respondents were full-time employees working in these organizations. Researchers have strongly recommended that data collection be done from diverse samples to obtain variable responses and generalizability of the results (Agarwal and Gupta, 2018; Tomarken and Serlin, 1986) but studies about the nutritional content of gluten-free products and coeliac individual's diet quality are scarce. The purpose of this paper is to evaluate the availability, price, and nutritional composition of gluten-free products in retail stores of a Brazilian capital city. Design/methodology/approach – All retail stores listed by the Brazilian Coeliac Association as gluten-free product selling places in the city of Florianópolis were visited. All available products were catalogued and their labels analysed for nutritional content. Similar gluten-containing products were systematically selected in order to allow comparisons. t-test, analyses of covariance, and cluster analysis were performed, all considering a 5 per cent significance level. Findings – Availability and variety of gluten-free products was limited and prices were high. Cluster analysis found similarities in the nutritional content of gluten-free and conventional food products, suggesting that although raw materials different than wheat were being employed, the composition patterns are the same. Certain advantages in the composition of gluten-free products were observed, regarding mainly calories and sodium, however, protein and dietary fibre values were inferior. Social implications – Results observed may negatively impact diet adherence and stimulate the intake of conventional products with harmful consequences to the quality of life and health of coeliac individuals. Originality/value – This paper conducted a careful evaluation of nutrition composition of gluten-free products from different categories, available in retail stores, which is rare in researches on this topic. Moreover, results call attention to the need of better care in product formulation and dietary guidance for. The present Monte Carlo study compared the Type I error properties and power of four commonly recommended analysis of variance (anova. The survey questionnaire consisted of a cover letter summarising the objective of the research and ensuring the use of the data entirely for the research purpose, and maintaining the anonymity of the participants.

A self-reported questionnaire, a structured and sincerely planned data collection method, was employed in quantitative research (Malhotra, 1999). Out of the 500 questionnaires sent as a Google form via email, data 198 was collected, showing a 39.6 per cent response rate. The sample collected fulfilled the conditions recommended by (Hair, JF Jr, Black, W.C., Babin, B.J. and Anderson, 2010), that the sample size should be about five to ten times the total number of observations to be tested under the study. The questionnaire consisted of the items on the demographic profiles of the respondents and scales

for measuring the latent constructs. The respondents consisted of varying job levels with 16.2 per cent at the junior level, 62.6 per cent at the middle level, and 21.2 per cent at senior-level employees. The average age of the respondents was 32 years. 73.2 per cent of respondents were male, while 26.8 per cent were females. 34.8 per cent of respondents represented public organizations, while 65.2 Per cent represented private organizations, respectively.

Measures

The measures exercised in the present study are mentioned further.

Co-worker support was measured using a five-item scale developed by Taormina (2004). The scale items are “My co-workers are usually willing to offer their assistance or advice”, “Other workers have helped me on the job in various ways”. All the items were evaluated on a seven-point Likert scale extending from 1 strongly disagree to 7 strongly agree. Personal interaction is measured using an eight-item scale by Yi (2009) little effort has been put into developing a valid and reliable measure of KSB. The primary purpose of this study is to develop a new measure of KSB with desirable psychometric properties - a well-developed KSB scale with a sufficient level of reliability and validity. This main objective was achieved by using the following procedures: (1. The respondents rated the items on a seven-point Likert scale ranging from 1 as never to 7 as always. The scale items included “Have online chats with others to help them with their work-related problems”, and “Keep others updated with important organizations information through personal conversation”. A five-item measure developed by Taormina (2004) from the organizational socialization inventory was used to measure training. The items were rated on a seven-point Likert scale ranging from 1 strongly disagree to 7 strongly agree. The scale items are “This company offers thorough training to improve employee job skills”, and “The training in this company has enabled me to do my job very well”.

Data analysis

This study applied Confirmatory factor analysis followed by structural equation modelling to analyze the model fit in IBM SPSS Amos 27. The descriptive statistics, reliability and validities, confirmatory factor analysis, and structural equation modelling was analyzed through IBM SPSS Statistics 27. Andrew F Hayes PROCESS macro (Hayes A F, 2018) was also employed with 5000 random bootstraps resamples to take care of the non-normality of data usually obtained after applying the Likert scale.

Results

Measurement model

All the study variables were included in the measurement model and were tested in AMOS. The model demonstrated a good fit with the data with model fit $\chi^2_{(4)} = 13.0$,

$\chi^2/df = 1,918$, $p < .001$, CFI = .901, TLI = .942, RMSEA = .068 (Hooper *et al.*, 2008) guidelines are presented on their use. The paper also provides reporting strategies of these indices and concludes with a discussion on the future of fit indices. © Academic Conferences Ltd.” A cross-sectional study was applied with a self-reported questionnaire considered a good means to obtain sensitive information and reliable responses (Babbie, 2020). Though there are chances of missing responses associated with the self-administered questionnaire, this was not the case with the current study, as the response to all the items was made compulsory in the Google form.

Common method bias

As per the suggestion of Podsakoff *et al.* (2003), the chances of the occurrence of common method variance (CMV) were also substantial; thus, various methodological remedies were undertaken to reduce the erroneous effect of common method bias. The independent and dependent variables were placed in proximity in the survey instrument by undertaking psychological measures. The survey instrument consisted of a cover letter explaining the purpose of the study, and the anonymity of the respondents was also ensured. The participants were requested to respond to each item as honestly as feasible to reduce the evaluation apprehension (Podsakoff *et al.*, 2012) and the pervasiveness of research settings with the potential to produce them, there is disagreement about whether they really are a problem for researchers in the behavioral sciences. Therefore, the purpose of this review is to explore the current state of knowledge about method biases. First, we explore the meaning of the terms “method” and “method bias” and then we examine whether method biases influence all measures equally. Next, we review the evidence of the effects that method biases have on individual measures and on the covariation between different constructs. Following this, we evaluate the procedural and statistical remedies that have been used to control method biases and provide recommendations for minimizing method bias. © 2012 by Annual Reviews. All rights reserved.” (Podsakoff *et al.*, 2012). Moreover, we labelled each point of the response scale (seven-point Likert scale) in the survey instrument to reduce item ambiguity (Krosnick, 1991).

We then statistically controlled the erroneous effect of CMV by analyzing Harman’s (1976) single-factor test. The first single factor in the analysis accounted for 36.483 % of the total variance, which is less than 50 %, reducing the threat of CMV. As per the suggestions by Conway and Lance (2010), authors must provide a substantial reason for supporting the application of a cross-sectional study design. Therefore, supporting the arguments given by Rindfleisch *et al.* (2008) editors, reviewers, and authors have expressed increasing concern about the validity of this approach. These validity concerns center on reducing common method variance bias and enhancing causal

inferences. Longitudinal data collection is commonly offered as a solution to these problems. In this article, the authors conceptually examine the role of longitudinal surveys in addressing these validity concerns. Then, they provide an illustrative comparison of the validity of cross-sectional versus longitudinal surveys using two data sets and a Monte Carlo simulation. The conceptualization and findings suggest that under certain conditions, the results from cross-sectional data exhibit validity comparable to the results obtained from longitudinal data. This article concludes by offering a set of guidelines to assist researchers in deciding whether to employ a longitudinal survey approach. © 2008, American Marketing Association.” the self-reported survey is appropriate for getting the responses from the participants if the target sample is educated. Since our participants in this study were well-educated (categorized from diploma to PhD) thus, the inclusion of a self-reported survey and cross-sectional research design was defended.

Convergent and discriminant validities

The convergent and discriminant validities of the constructs were analyzed after testing the measurement model through CFA. The composite reliabilities (CR) and α -reliabilities of the constructs were above the threshold limit of 0.7, thus demonstrating convergent validities of the latent constructs (Anderson and Gerbing, 1988; Nunnally, J.C. and Bernstein, 1994)” (Anderson and Gerbing, 1988; Nunnally, J.C. and Bernstein, 1994. Furthermore, the discriminant validity was checked as per the recommendations by Fornell and Larcker (1981) in addition to the known problems related to sample size and power, is that it may indicate an increasing correspondence between the hypothesized model and the observed data as both the measurement properties and the relationship between constructs decline. Further, and contrary to common assertion, the risk of making a Type II error can be substantial even when the sample size is large. Moreover, the present testing methods are unable to assess a model’s explanatory power. To overcome these problems, the authors develop and apply a testing system based on measures of shared variance within the structural model, measurement model, and overall model.” (Fornell and Larcker, 1981. If the Average variance extracted (AVE) is greater than the square of the inter-factor correlations, then there exists substantial discriminant validity for the latent constructs. The AVE of all the latent constructs was greater, thus proving the conditions of discriminant validity. To reduce the potential threat of CMV, as per the recommendation of Conway and Lance (2010), we explained the construct validity through discriminant and convergent validities of the constructs, and the internal consistency of the constructs was also above the threshold of 0.7. Table I displays the values of AVE, composite reliabilities (CR), Cronbach- α , and inter-factor correlations.

Hypotheses testing

The hypotheses formulated were tested employing SEM in IBM SPSS AMOS 27. The independent variables were mean-centred for conducting moderation analysis to avoid potential multicollinearity issues. Co-worker support showed a significant association with training ($B = 0.770$, $\beta = 0.432$, $p < 0.001$) supporting Hypothesis 1. Personal interaction also showed a significant association with training ($B = 0.504$, $\beta = 0.227$, $p < 0.001$). Furthermore, the interaction effect of co-worker support and personal interaction on training was also significant ($B = 0.364$, $\beta = 0.131$, $p < 0.05$), supporting Hypothesis 2. The findings of the analysis, accompanying unstandardized path coefficients, are displayed in Figure 1.

For taking care of the non-normality of data, we conducted an alternate analysis on PROCESS macro model 1 by Hayes (2018) with 5000 random bootstraps resamples at a 95% confidence interval. Hayes PROCESS macro also aids in examining the relationship between independent and dependent variables at higher and lower levels of the moderator (personal interaction) with plus and minus one standard deviation (+1SD, mean, -1SD). The data were imputed from AMOS 27 to conduct the analysis. The results of the analysis verified the results obtained from AMOS 27. Table II displays the regression analysis results in PROCESS macro, with unstandardized path coefficients. Table III displays the bootstrap results for the regression model parameters, representing the significant moderating effect of personal interaction on the relationship between co-worker support and training, as zero is not falling between the upper and lower-level confidence interval. The results also exhibited that personal interaction moderated the relationship between independent and dependent variables, such that at a higher level of the moderator (personal interaction), the relationship between co-worker support and training is stronger and more positive. Table IV represents the confidence interval values and estimates at lower and higher levels of personal interaction as a moderator. Figure 2. displays the interaction effect of co-worker support and personal interaction on training at low and high levels of personal interaction with minus and plus one standard deviation following the recommendations of Aiken and West (1991). Thus, Hypothesis 2 is supported.

Discussion

It is considered that training is a compulsory requirement for any employee for a sustainable career prospect, but still, factors are lacking related to employees' participation in training programs. These factors are studied conceptually and empirically in this article. Co-worker support as a social support resource at the workplace plays a crucial role in driving employees for training and training transfers, leading to training success and effective job performance, confirmed by Dermol and Čater (2013) and Newman *et al.* (2011b) and the relationship between the latter and

company performance. Design/methodology/approach: The authors propose and test a model linking constructs related to training (the volume and quality of training, supervisor support, peer support, and organisational incentives. This study proposed the supportive effect and showed evidence of a positive association between co-worker support and training, revealing that when individuals get support, assurance and motivation from their co-workers, they tend to show a better approach towards participation in training interventions. We also implemented an interaction effect of personal interaction with co-worker support as to how it moderates the given relationship.

We understood that personal interaction had a moderating effect on the relationship between the independent and dependent variables. Comprehending this effect, we elaborated that when there exists a high level of personal interaction among co-workers, their motivating effect leads to a higher involvement in company-organized training interventions. In contrast, when there is a low personal interaction among co-workers, the association between co-worker support and training is weakened. Further, we discuss the implications for theory and practice based on the findings of the study.

Theoretical implications

Nowadays, research is conducted on personal, group, and organizational factors (Agarwal, 2017; Kozhakhmet *et al.*, 2019) Emerald Publishing Limited. Purpose: The purpose of this paper is to investigate the influence of firm training on the job performance of mainly semi-skilled manufacturing employees in the context of changes required to ensure the competitiveness of contemporary Chinese manufacturing. Design/methodology/approach: Data were collected using a survey with time-lagged method and from multiple sources. The sample included 348 supervisor-subordinate dyads from two Chinese manufacturing firms. PROCESS macro tool (Hayes). The results of this study highlighted the interpersonal and contextual factors that interacted to influence training, as the motivation and support by co-workers throughout and post-training opportunities are crucial for individual and organizational performance (Dermol and Čater, 2013; Renaud and Morin, 2019) and the relationship between the latter and company performance. Design/methodology/approach: The authors propose and test a model linking constructs related to training (the volume and quality of training, supervisor support, peer support, and organisational incentives. Personal interaction acts as a nourishing factor in such a scenario.

This study makes a considerable contribution to the theory. Firstly, although there are studies where the impact of training on employee performance, turnover intentions and safety awareness are studied (Marin and Roelofs, 2017; Vanhove *et al.*, 2016), the factors responsible for employees' positive outlook towards training are less

explored. This study provides an additional mechanism for conceptually and empirically analyzing the antecedents and moderators for training in the organization. Secondly, built on the Conservation of Resources Theory (Hobfoll, 1989) and consequently, not given to direct empirical testing. Indeed, it is argued that researchers have tended to avoid the problem of defining stress, choosing to study stress without reference to a clear framework. A new stress model called the model of conservation of resources is presented as an alternative. This resource-oriented model is based on the supposition that people strive to retain, protect, and build resources and that what is threatening to them is the potential or actual loss of these valued resources. Implications of the model of conservation of resources for new research directions are discussed.” (Hobfoll, 1989, this article represents the effect of co-worker support as a valuable social support resource on the training of employees. This study adds to the concept of COR Theory because there has always been an emphasis on co-worker support as a social support resource for buffering stress, reducing burnout, and lowering turnover intentions. While this study presents novel research by studying the association between a social support resource (co-worker support) and training and signifying co-worker support as a conceptually developed social support resource playing a vital role in training in an Indian context. Thirdly, this study has provided evidence of a moderator variable (personal interaction) that has its place in the organizations for knowledge sharing, customer value creation and incremental innovations (Tödtling *et al.*, 2009; Tzempelikos, 2020).

Nevertheless, in this article, personal interaction as a moderator is considered more with an informal behavioural perspective and the mechanism through which co-worker support affects training. Finally, this study provides empirical evidence on personal interaction among employees influences their participation in training and successful training transfer at the job. Coherent with the findings of Dermol and Čater (2013) and the relationship between the latter and company performance. Design/methodology/approach: The authors propose and test a model linking constructs related to training (the volume and quality of training, supervisor support, peer support, and organisational incentives, this study also analyses the association of co-worker support with the training of the employees. However, the influence of personal interaction on the relationship above is studied in an Indian context providing an original contribution. This study validates the earlier research conducted in the western context by conducting the study in a non-western context and provides new evidence for the proposed model in an Indian context.

Practical implications

Earlier studies have elaborated on the consequences of the absence of co-worker support (Daverth *et al.*, 2016;

Schaufeli *et al.*, 2008) burnout, and work engagement - the supposed antipode of burnout - can be distinguished empirically. These three concepts were measured with existing, validated multi-dimensional questionnaires. Structural equation modeling revealed that a slightly modified version of the hypothesised model that assumed three distinct yet correlated constructs - burnout, engagement, and workaholism - fitted the data best. Multiple regression analyses revealed that these three concepts retained unique hypothesised patterns of relationships with variables from five clusters representing (1. Co-worker support has been a positive motivator leading to constructive outcomes associated with it. Our results indicate that when there is support from co-workers, people tend to get motivated, and actively participate in training sessions. Hence, managers should be aware of such social support factors and should develop an environment for enhancing co-worker support. In addition, managers need to recognize the positive impact of personal interactions, since apart from sharing knowledge and ideas, it may create a sense of belongingness among co-workers leading to trust (Guo *et al.*, 2019). Managers should develop strategies for higher interpersonal interactions, either formally or informally. Groups and teams are favourable for interactions and communications and can enable a favourable climate in the work settings; managers should lead employees to form groups and participate in socialization processes.

Earlier studies have mentioned learning motivation and better career prospects for employees’ participation in training. However, this study points out a contextual factor, co-worker support as a source of social support and motivation for employees to participate in training sessions. Thus, organizations should nurture social relations among employees to benefit in the long run. Managers should also set an example by supporting their subordinates and actively motivating them to do the same.

Limitations and future study

The current study, too, has certain limitations that can be attended to, paving the way for further research. The causality of the relationships is restricted and attributable to the cross-sectional type of the data. The study is based on the responses from multiple sectors in the Indian industry; in future, industry-specific research can be conducted with the same model. The fact that co-worker support being a contextual factor may vary according to the dynamic nature of business organizations. Hence, a longitudinal study can be performed, which can also answer the causality concerns of the study.

Furthermore, this study investigated the role of co-worker support as a social support resource for training motivation. However, other supportive facets like supervisor and organizational support can also be studied. The current study tested the role of personal interaction as a moderator. However, the demographic variables (age,

gender, marital status, qualification, work experience, organizational status, and job position) can also be tested as moderators demonstrating personal characteristics affecting the connection between co-worker support and training.

Conclusion

This study aimed to understand the relationship between co-worker support and training, with the moderator role of personal interaction. A strong positive relationship was observed between co-worker support and training. While personal interaction moderated the relationship such that, with high personal interaction, the relationship between co-worker support and training was more substantial and more positive than when it was low. Hence, it is concluded that when individuals receive co-worker support, they get motivated towards training interventions leading to training effectiveness. All the apprehensions and reluctance to participate in training sessions are eradicated when more and more co-worker support and interpersonal interactions occur in the organizational setting. When employees receive support from co-workers they enthusiastically attain training sessions which effectively leads to the transfer of learned concepts. Employees learn better in a cordial work environment leading to effective performance.

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TABLE I Mean, Standard deviation, Correlations and Reliabilities

		α	CR	M	SD	1	2	3	4	5	6	7	8
1	Gender	-	-	0.27	0.44	-	-	-	-	-	-	-	-
2	Age	-	-	0.32	0.52	-0.289 **	-	-	-	-	-	-	-
3	Education	-	-	1.68	0.66	0.256 **	0.024	-	-	-	-	-	-
4	Organization status	-	-	0.35	0.48	-0.059	0.178 *	-0.145 *	-	-	-	-	-
5	Job position	-	-	1.05	0.61	-0.125	0.316 **	-0.007	-0.148 *	-	-	-	-
6	Co-worker support	0.89	0.889	5.99	0.91	0.010	0.052	0.135 *	0.026	-0.016	0.616	0.113	0.239
7	Personal interaction	0.86	0.864	5.37	1.06	-0.040	0.007	0.159 *	-0.100	0.134	0.337 **	0.447	0.153
8	Training	0.95	0.945	5.43	1.43	0.103	-0.004	0.183 **	-0.198 **	0.090	0.489 **	0.392 **	0.777

Notes: * $p < 0.05$, ** $p < 0.01$ (2-tailed). CR = Composite reliability, SD = Standard deviation, Values in bold diagonally = Average variance extracted, values below the diagonal = Inter-factor correlations, Value above the diagonal = Square of inter-factor correlations.

TABLE II Moderation results from Hayes PROCESS macro

Moderator (co-worker support)	coefficient	t-statistics	p-value	LLCI	ULCI
Co-worker support	0.770	6.267	0.000***	0.528	1.013
Personal interaction	0.504	3.405	0.002*	0.212	0.796
Co-worker support * Personal interaction	0.364	2.091	0.038*	0.021	0.708

Notes: unstandardised path coefficients, LLCI = Lower level confidence interval, ULCI = Upper level confidence interval, co-worker support * personal interaction = interaction term, * p value < 0.05 , *** p value < 0.001

Table III Bootstrap results for regression model parameters

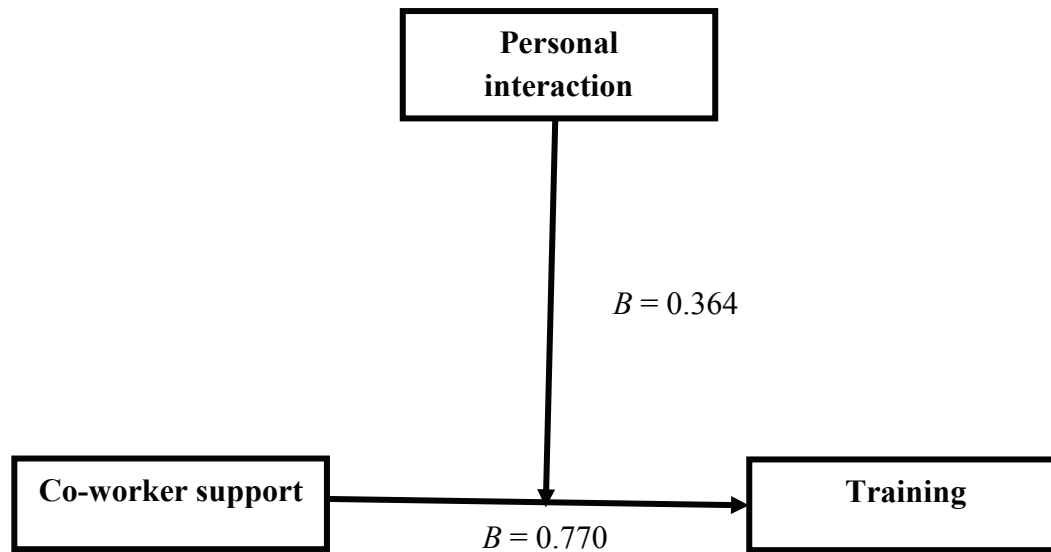
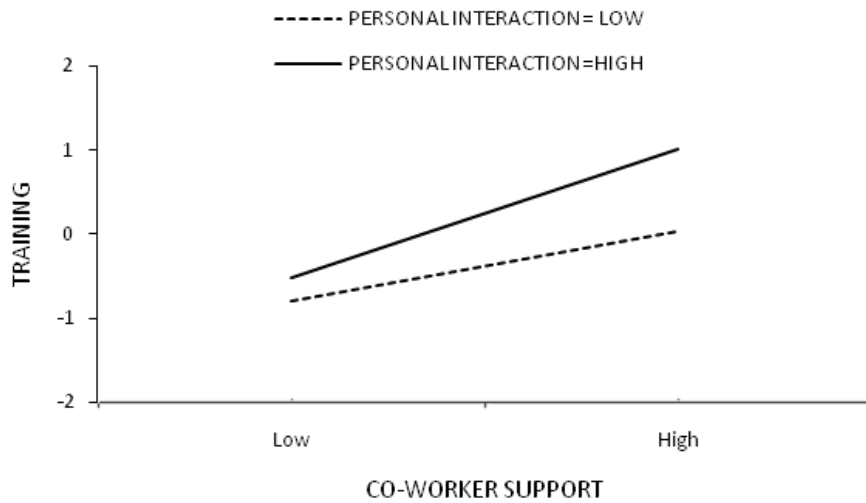
Moderator (co-worker support)	coefficient	Bootmean	BootSE	BootLLCI	BootULCI
Co-worker support	0.770	0.774	0.116	0.547	1.004
Personal interaction	0.504	0.500	0.167	0.176	0.833
Co-worker support * Personal interaction	0.364	0.365	0.165	0.044	0.706

Notes: unstandardised path coefficients, LLCI = Lower-level confidence interval, ULCI = Upper-level confidence interval, 5000 bootstrap samples at 95% CI.

Table IV Moderation result across different levels of personal interaction

Moderator (personal interaction)	Conditional indirect effect	Bootstrap SE	Bootstrap LLCI	Bootstrap ULCI
Low (-1 SD) (-.616)	0.546	0.137	0.275	0.816
Mean	0.770	0.123	0.528	1.013
High (+1 SD) (+.616)	0.995	0.186	0.629	1.361

Notes: Dependent Variable = Training, Bootstrap samples = 5000 resamples, 95% confidence interval.

**Figure 1.** Structural model with unstandardised path coefficients**Figure 2.** Moderating effect of personal interaction on training

Job Satisfaction among Employees of An Organization

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Abstract

Emerging technologies make a lot of changes in the working environment of an organization. The changes can result in positive or negative for the organization as well as its employees. And the employees play a major role in its smooth functioning. This research has focused on the behavior of employees living in rural areas and working in a small firm to know their satisfaction at their workplace. This firm has patented products which have grown over 20 years with the advancement of technology. The study has taken the Hawthorne study of Elton Mayo[7] as the reference to analyze the gap between the different aspects of emotional intelligence within the organization. The reasons for the job satisfaction and dis-satisfaction of employees have been found using discussions, correlation, and Student t test.

Keywords

Emotional Intelligence, Student t test, Job Satisfaction.

Introduction

Emotional Intelligence along with human resources can directly impact emotional satisfaction in any organization [5]. A healthy relation between the employees and managers improves the productivity and efficiency of the organization [9]. Thus, Managers have a great responsibility to develop a strong relationship with their employees and achieve the desired goals of the organization. Emotionally intelligent employees easily understand the needs of the customers as well as their managers and provide them better services [5]. Therefore, this research analyzed the relationship between emotional intelligence, job performance and emotional satisfaction among employees in a small organization of Faridkot district of Punjab. This study has taken the Hawthorne study of Elton Mayo [7] as the reference to analyze the gap between the different aspects of emotional intelligence within the organization. The findings of the discussion show that the employees are influenced by social surroundings. Also, the study of Hawthorne shows how human behavior changes with the change in social surroundings. Employee's performance is influenced by work surroundings. The study also found that social

factors are equally important as financial incentives when it comes to job performance. Continuous change in the surroundings affect the behavior of employees in one direction even if changes made are not new. It also concluded that people's work performance is dependent on social issues and job satisfaction.

This study used correlation and Student T tests to analyze the relations between the factors and found a positive relation between emotional intelligence and emotional satisfaction.

Literature review

The concept of Emotional Intelligence came into light in 1990's, before that there were several theories and studies given by Edward Thorndike of social intelligence in early 1930's, David Wechsler proposed how different components of intelligence play an important role in every person's life in 1940's, Abraham Maslow focused to develop emotional strength among people by giving theory of basic needs of people which long-windedly tells about the hierarchy in which each section is to be fulfilled. It includes psychological needs, security needs, love and belonging, esteem and self- actualization. In 1990, psychologists Peter Salovey and John Mayer² published

their article, 'Emotional Intelligence,' in the journal 'Imagination, Cognition, and Personality'. Then the concept of emotional intelligence became popular after the publication of Daniel Goleman's book 'Emotional Intelligence: Why It Can Matter More Than IQ'. Thus, it began a topic of research.

The purpose of this study is to understand the effect of emotional intelligence on the relationship between employees and managers and its effect on emotional satisfaction. Employees play a very vital role in the growth of any organization. They are the building blocks of a company. Relations between the employees affect a lot in accomplishing a task. Needs of the employees must be taken care of by the managers so that they can work effectively. According to Abraham Maslow's theory of hierarchy of needs, there are basic 5 human needs which are in hierarchical levels and needs at lower levels needed to be fulfilled first. There are many studies and research on the effect of emotional satisfaction between employees and managers by the emotional intelligence in an individual. Studies like [1] have proved the five major parameters of emotional intelligence to be considered in emotional social intelligence that includes ability to recognize, understand and manage emotions, to relate with others, to adapt to change and to solve challenges of personal and interpersonal nature, and to efficiently cope with daily demands and challenges. Also [2] De Kok has studied and concluded that people with least and most satisfied with their job are the most emotionally intelligent and have self-efficacy which is the fourth need of a human according to Abraham Maslow's theory based on factors namely well-being which includes happiness, optimism and self-esteem, self-control which includes emotion regulation, stress management and impulsivity, sociability which includes emotion management, assertiveness, and social awareness and emotionality which includes empathy, emotional perception, emotional expression and relationships. Also, global factors like Adaptability and self-motivation were taken into consideration. The study of [3] states the positive feeling that is spread in the organization when a person is more emotionally intelligent leading to a higher job satisfaction. Factors like Job satisfaction, Emotional intelligence, Positive affect, Extraversion, Introversion, Sensing, Intuition, Thinking, Feeling, Judging, Perceiving was taken into consideration. The studies like [8] took demographic factors like age, education, job tenure, gender and marital status and found that female employees are more emotionally intelligent, the age of the employees have inverse relationship with the Emotional Intelligence and as the level of education

increases the Emotional Intelligence level increases as well. This emotional intelligence was calculated based on interpersonal style, impact of emotions and thoughts on behavior, ability to judge the dynamics in the workplace, how to improve and manage the relationships. In [6] study it is concluded that there is no direct consistency between the job performance and job satisfaction relationship rather having some mediators and moderators to support the relation between them. But the meta-analysis helped to get a little better relationship between the two parameters which is two ways with having different mediators and moderators on both ways. So, most of the studies are based on the theories of five parameters of emotional intelligence, needs of human life as well as geographical factors.

Problem statement

Businesses could be small or big. Employees of small businesses consider their job to be fun and less stressful. But there are reasons for their low performance and dissatisfaction which are harmful for any small organization to work. Also a negative work environment leads to job dissatisfaction and decreased profits or increased loss which is a major concern of almost every organization [4]. To maintain a healthy working environment, efficient growth of the company with higher productivity, it is necessary to have satisfied employees. So, the major concern is to know what factors lead to this dissatisfaction and what factors contribute to their job satisfaction.

Methodology

Data and findings are formed through group discussions, questionnaires, and personal interviews with employees of an organization named, F.C. Industries of Faridkot district in Punjab (India). This is a small organization with employees of rural areas. This organization worked on machinery products used in agriculture and built machines which are more efficient than previous methods used in agriculture processes. They used digital platforms like YouTube to learn about the theory and practice using 3D vectors to demonstrate to each other in the team and then implemented it. It consists of 40 employees which includes upper, middle, and lower-level employees. Upper level of employees includes CEO, Managing Directors, and General Manager. They were involved in the group discussions as well. They could give the performance analysis of each employee over the past few years. Middle level includes sales, quality control and account managers. Lower level includes production supervisors, contractors and laborers who get distributed among the contractors according to the project size. There were several findings from the questions asked to them.

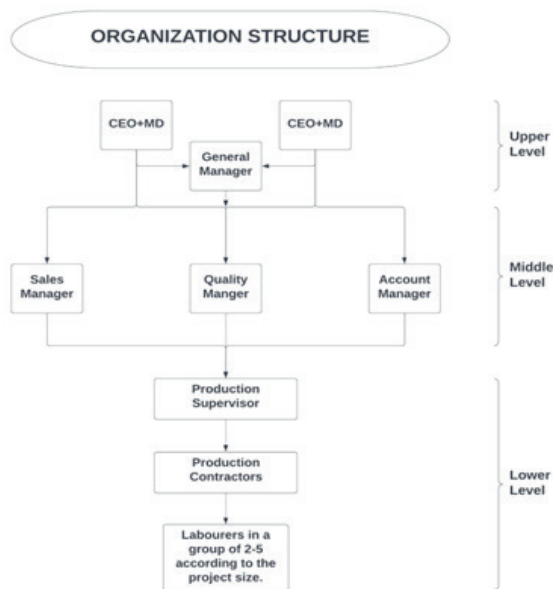


Figure 1 - Organization Structure

Discussions

Discussion method has been chosen as the first method to find the in-depth reasons and knowledge of relation between emotional satisfaction and emotional intelligence in people of small organizations. Group discussions are open-ended which include collaborative exchange of thoughts, learning and understanding an idea. From the discussions with the people of the same organization there were several findings:

1. People who take a leave of absence for a day or few, have dual feelings of happiness that they are spending time with their family and sadness that they are not with their friends.
2. There are cases when there is the need for money which are not usual spendings like Health issues, Family functions, rise in the price of grocery items, etc. which make them feel tense. Then, people tend to be much less efficient in their work. They also are afraid of scolding from their supervisors which make them feel more tense.
3. Almost every person wants to work in teams. With this they enjoy working and do satisfying work. In a group they feel relaxed as if one person has some personal tasks then rest cooperates. Because they have a feel of their supervisor and deadlines for a particular project. Alone they feel tense but in a team they feel relaxed.
4. People love meeting with their fellow colleagues every day and feel much more positive about their work. They share their problems with each other and work as if they are in a family.
5. People feel excited when they are given new work, they admit they need motivation and excitement to fulfill a task in a good manner.

6. When people face any kind of problem like money related, family issues, etc. They do not feel like working which makes them less efficient.
7. Young people tend to have more expectations from themselves and have much more exposure to the surrounding culture which affects their mindset, and they get attracted to items like bikes, mobile phones.

Social factors like booming technology and differences between the employees based on finances affect the performance. The bond with the co-workers and with the managers impacts a lot on the job satisfaction. The ability to control your emotions and work with the same motivation even if there are issues outside or inside the work helps a person to work efficiently. The workers of lower level feel much pressurized due to the difficulty in meeting the daily needs. And according to the Maslow theory, psychological needs are the fundamental needs for a human being. So, factors like resource management and uneven pay structure will impact a lot on people's lives.

Hypothesis

Alternate hypothesis

H1- Motivation has a direct impact on Job performance in an organization.

H2 - Emotional Intelligence and Psychological needs have a direct impact on Job Satisfaction in an organization.

Null hypothesis

H3 – Job Performance has a direct impact on Job Satisfaction in an organization.

Satisfaction	Dis-satisfaction
Performance	Uneven Pay Structure
Appreciation	Resource Management
Fundamental needs	Social Influence

Figure 2 - Parameters

Base questions

Based on the discussions and its findings, several questions have been made and asked from each employee

of the organization. Age and years of experience are the independent variables. Dependent variables include the parameters related to motivation of the employees, fulfillment of their requirements, appreciation of the employees, social influence, teamwork, unequal pay structure, Job satisfaction and their performance.

Data analysis

Graphs to analyze the organizational structure were computed and a correlation graph was computed which contains the score for each of the parameters or dimensions present in the questionnaire.

For hypothesis 3, linear regression between the parameters is done to know the relation between them. Each considering parameter has been included in the model. And for hypothesis 1 and 2 correlation graph is considered for parameters which are based on Emotional Intelligence. Further Student t test is performed to get better insights of the data.

Results

Based on research, discussions and surveys, there are quite different aspects seen. Questionnaire was formed based on discussion and research findings. A total of 20 people's data was collected. Among them, most of the employees were in the range of 36-40 years of age and a large group of people had at least 15 years of experience. Data can be analyzed through below images.

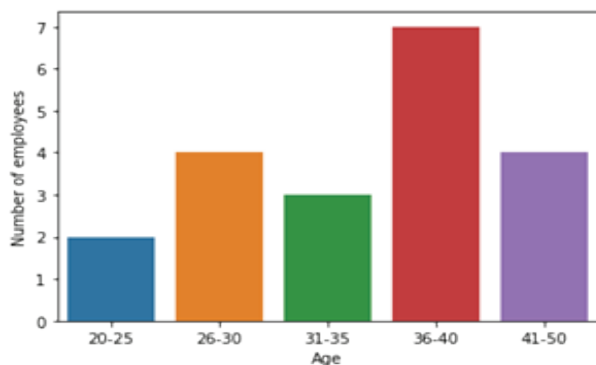


Figure 3 - Number of employees in different age groups

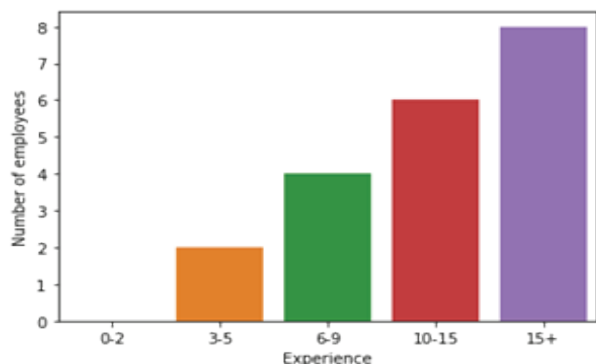


Figure 4 - Experience of employees

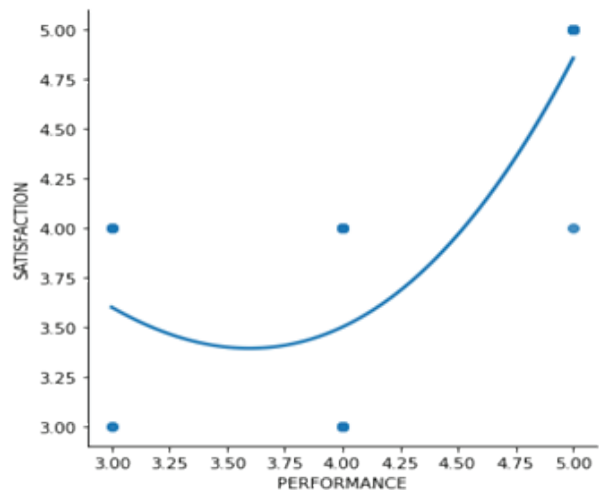


Figure 5 - Relation between employee's performance and job satisfaction

An employee's job performance and his satisfaction were found to be related to each other. A quadratic graph got plotted between them. The figure shows that the satisfaction of an employee is dependent on his performance.



Figure 6 - Correlation graph

The correlation between all the dimensions clearly shows various dependencies and relations between them. There is negative as well as positive relations.

Age: Years of experience of the employees has an extremely high positive relation with age.

Experience: Age has an extremely high positive relation with experience.

Motivation: It has a positive relation with performance, job satisfaction, teamwork, and appreciation.

Needs: It has the negative relation with the unequal pay structure, and positive relation with performance, job satisfaction and appreciation.

Appreciation: It shows positive relation with performance, job satisfaction, teamwork, needs and appreciation.

Social Influence: It shows very mild relation with all other dimensions.

Teamwork: Appreciation and performance shows positive relation with teamwork.

Uneven pay structure: It showed extremely high negative relation with needs, job satisfaction and performance.

Satisfaction: It shows positive relationship with performance, Appreciation and needs and negative with the uneven pay structure and social influence.

Performance: It has negative relation with uneven pay structure and positive relation with job satisfaction and motivation.

Student T test

Results of the T test between various parameters are as shown.

Table 1 - Results of Student t test

Parameter 1	Parameter 2	P value
Motivation	Appreciation	0.0321
	Satisfaction	0.0019
	Performance	0.0061
Satisfaction	Age	0.0334
	Needs	0.0019
	Uneven pay	0.0048
Performance	Satisfaction	0.3458

Hypothesis 1:

Through the t test we can see Motivation and Job performance has significant relation between them.

Through correlation matrix it is observed to have a positive relationship between these parameters. Thus, it can be concluded that motivation has a direct impact on performance.

Hypothesis 2:

Parameters like Age, Needs, Uneven pay, etc. showed significant relation with Satisfaction as their p value is less than 0.05 in t test where Age and needs showed positive relationship while uneven pay showed negative relation. This can be seen through correlation graphs.

Hypothesis 3 (NULL Hypothesis):

Graph between Performance and Satisfaction could not show a linear relationship. In the t test both did not have a significant relationship. Thus, it can be concluded that job performance does not directly impact satisfaction of an individual.

Conclusion

Through the analysis of various dimensions employees' performance is influenced by work surroundings and coworkers as much as by employee ability and skill.

Based on the discussion findings and data analysis of the formed dataset, we can conclude the following:

- 1) Employees need to be appreciated and given motivation on a timely basis.
- 2) Emotional intelligence directly impacts and job satisfaction of the employees.

- 3) Factors like uneven pay structure and social surroundings negatively affect the performance of an individual.

Future Research

- 1) More algorithms for better understanding of the dataset.
- 2) More discussions with employees of the organization.
- 3) Experiments can be performed to know the major and minor factors affecting the performance and satisfaction of an employee.

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We want to thank Mr. Vishal (CEO of F.C. Industries) who helped us to know about their company and their employees who patiently helped us to know about their emotions.

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Participative Management Style and Learning at Work: The Parallel Mediation Effect of Vitality and Directive Performance Management

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Abstract

The creation of an environment of learning at the workplace is seen as an indispensable facilitator of progress. In this article, we study the association between participative management style and learning at work and evaluate the mechanism by which it conveys its effect. Confirmatory factor analysis (CFA) and structural equation modelling (SEM) exhibit a significant relationship between Participative Management style and learning at the workplace. Vitality and directive performance parallel mediate the relationship. Based on the data obtained by a survey from 405 working professionals in public and private organizations in India, the study results demonstrate that participative management style is positively related to learning at work and Vitality, and directive performance mediates that relationship between participative management and learning at work. Managerial implications and future research are suggested based on the finding of the study.

Keywords

Directive performance, learning, participation, participative management, organizational learning and resource-based theory, performance, vitality

Introduction

One of the significant challenges organizations face today is identifying and enticing the talented workforce (Thunnissen et al., 2013). For having adequate stock of talent pools, organizations are required to develop proactive strategies (Mellahi & Collings, 2010; Schuler et al., 2011). The concept of Participative management gained popularity in the era of the nineteenth century and attracted researchers in recent decades (Cox et al., 2006; S. S. K. Lam et al., 2002; Salas-Vallina & Fernandez, 2017; Zhu et al., 2015). Most quantitative studies analysing the nature and impact of employee involvement and participation (EIP. Participation is a shared influence between employees and managers in making decisions (C. K. Lam et al., 2015). The scholars of HRM (Human Resource Management) have made a substantial effort to find whether participative management increase employee satisfaction and performance and the results of these different studies have shown inconsistent or inconclusive result (Cox et al., 2006; K. I. Miller & Monge, 1986; Wagner, 1994; Zhu et al., 2015). Most of the prevailing studies have focused on the impact of participative management on employee and team performance, job satisfaction, and work attitude and failed to connect the learning at the workplace (Inanc et al., 2015). By the large, these scholars' studies claimed a positive association between participative

management and learning and vitality and learning. Many governmental agencies, especially India and Western countries, have accepted participative management and vitality and directive performance to enhance learning at the workplace. However, in some Asian countries like South Korea, an authoritative management style is used, and little attention is paid to participation and innovation in the Government sector.

Thus, earlier studies have majorly focused on motivation and behaviour theories, like social exchange theory and expectancy theory, to deliver a theoretical base. However, lacking academic support on performance and learning (Driscoll, 1978; Mitchell, 1973; Tian & Zhai, 2019) a political assessment of hierarchical decision makers, best predicts overall satisfaction. The congruence between desired and perceived participation best predicts satisfaction with participation in decision making. Gamson (1968). Participative management, an HRM strategy, can make employees happy and satisfied, and it might not offer a learning opportunity. Many countries, especially western countries, have focused on participative management or participative leadership and innovation to increase the performance of their organization and also on learning (Park et al., 2016; Tian & Zhai, 2019) this study assesses how participative management and innovative culture are associated with public employees perceived organizational performance in the South Korean central

government. The study finds that both are positively related to perceived organizational performance, but that the relationship between participative management and perceived organizational performance (i.e., internal efficiency. Many employees feel energized and alive because of their relationship with their co-workers but stagnate in their careers because they are not learning. Although current research has focused on the relationship between employee participation in decision-making and performance (C. K. Lam et al., 2015; Park et al., 2016; Tian & Zhai, 2019) and examine the impact of PDM on organizational performance. Design/methodology/approach: The paper integrates the resource-based theory with organizational learning theory to develop a framework, and distinguishes PDM in which decisions are jointly made by employees and managers from employee decision-making (EDM, there has been an inadequate focus on how the participative style of leaders and managers have impacted learning at work of private and public sector employees of India. Vitality shows a sense that a person is energized (Nix et al., 1999) and enthusiastic about work (S. Miller et al., 2004).

On the other hand, the dimension of learning shows gaining and applying knowledge and skill to develop confidence and capability (Carver, 1998) faster recovery from subsequent stressors, or a consistently higher level of functioning. Psychological thriving may reflect gains in skill, knowledge, confidence, or a sense of security in personal relationships. Psychological thriving resembles other instances of growth. It probably does not depend on the occurrence of a discrete traumatic event or longer term trauma, though such events may elicit it. An important question is why some people thrive, whereas others are impaired, given the same event. A potential answer rests on the idea that differences in confidence and mastery are self-perpetuating and self-intensifying. This idea suggests a number of variables whose role in thriving is worth closer study, including personality variables such as optimism, contextual variables such as social support, and situational variables such as the coping reactions elicited by the adverse event.” (Carver, 1998. Both vitality and learning are indispensable components of thriving at work. Together, vitality and learning capture the affective and cognitive essence of personal growth experience. Even though public and private organizations have been implementing participative management style, vitality and directive performance intending to learn at the workplace, there is a dearth of empirically evaluated literature finding the relation among participative management, vitality and directive performance to enhance learning at work. This study examines how participative management style, vitality, and directive performance enhance the learning of employees in public and also private sector organizations in India. The motive of this study is to examine participative management style and learning at

work relation which is parallelly mediated by the vitality and directive performance, which has not been empirically tested before in the Indian context.

Organizations are made up of several individuals and groups of people, and they might have different experiences, opinions, expertise and perspective. To have a focused discussion, we confined our research to public and private sector organizations in North India.

According to organizational learning theory, interaction among individuals from different knowledge and experience helps the organization to innovate and augment knowledge (Cohen & Ledford, 1994). An organization engages their managers and employees in collective learning to boost knowledge synergies, productivity and performance (Peteraf & Barney, 2003; Teece, 2014). Participative management provides an opportunity for the interaction of knowledge and collective learning to both employees and managers and helps an organization to learn and grow. As per the Resource-based theory (RBT), an organization is made up of many resources it requires to harvest and trade goods and services (Barney, 2000). organisations have to use these resources to sustain themselves in the market and get a competitive advantage over others (Peteraf & Barney, 2003; Tian & Zhai, 2019) its challenge is to keep its arguments logically consistent and clear, despite the risk of their becoming entangled, due to competing and possibly conflicting theoretical influences. We argue, in this paper, that to meet this challenge, it is essential to understand the limits to the domain of RBT. Unless RBT is understood as a resource-level and efficiency-oriented analytical tool, its contribution cannot be understood and appreciated fully. Incorporating aspects of economic theory that fall outside this domain will not increase its power and will only add to the confusion. Continued efforts to increase the analytic precision of RBT and to elaborate its economic logic, however, are worthwhile pursuits. To these aims, then, we provide a sharper definition of competitive advantage, linking this term to value creation and to demand side concerns. Similarly, we provide an economically meaningful definition of value and more precise definitions of critical resources and of economic rents. This allows us to trace a clearer trail of logic, consistent with both the management and the economics perspectives, leading from critical resources to the generation of rents. Copyright © 2003 John Wiley & Sons, Ltd.”, The purpose of this paper is to relate participative decision-making (PDM).

For the sake of the study, we have integrated the RBT (Resource-based theory) with organizational learning theory to advance a theoretical framework of association between participative management style and performance and test the hypothesis on data collected. The article originates with a literature review on participative management style, vitality, directive performance, and learning in public as well as private organizations. Next, it

discusses issues related to participation, vitality, directive performance and learning at work. Seven hypotheses have been tested. The key finding shows the positive relationship between participative management style and learning at work. In the end, this article has a discussion, conclusion and implication for management leaders.

Theoretical background and development of hypotheses

Participative management may be defined as employees having the opportunity to participate in organizational decision-making (K. I. Miller & Monge, 1986; Probst, 2005). For a more focused discussion, we have confined the study to the public and private sector organizations in India. We have linked resource-based theory (RBT) and organizational learning theory to discuss the participative management effect on employee learning at work. This study explores the relationship among participative management style, vitality, directive performance, and learning at work. According to propositions, the hypotheses are proposed.

Participative management style and learning at work

The concept of participative management or employee involvement or participative leadership developed in the nineteenth century and has become the attention of researchers in topical decades (Cox et al., 2006; S. S. K. Lam et al., 2002; Salas-Vallina & Fernandez, 2017). Participative decision making and employee performance in different cultures: The moderating effects of allocentrism/idiocentrism and efficacy” Most quantitative studies analysing the nature and impact of employee involvement and participation (EIP. Participative management, the leadership style of management, allows the supervisor to encourage his or her subordinate to share some extent of obligation in the workplace (Sauer, 2011; Somech, 2003). Participative management facilitates the involvement of subordinates in the managerial process by or through inspiration, support & influence, and resource provision. In this style of management, consultation is preferred instead of direction (Amabile et al., 2004), along with consensus focusing and exhibiting behaviours that permit followers to survive themselves (Wageman, 2001). Research conducted on Chinese employees discloses that newer employees with brief tenure reply more progressively to participative management style by revealing a more level of commitment (Huang et al., 2006) and that participative management significantly influences the work-related performance of a non-managerial employees through causing a greater level of trust (Huang et al., 2010).

Learning is amalgamated within the day-to-day solving of different problems (Kaufman, 2001), and the motive and way of learning massively stem from the objectives of work itself, naturally rising because of the challenges and demands of the work and interaction with people at the

place of work. Study on workplace learning has markable emphasized the significance of learning through interaction and cooperation with co-workers and networks (Poell & Van der Krogt, 2010). Research on the learning of teams and leadership (Ortega et al., 2013) has concluded that the leader's behaviour plays an important role in change. In this direction, change is a thing that is not exclusively initiated by the senior level of management but by leaders of all levels. Moreover, a leadership style oriented toward change seems to have a pivotal part in the learning of team members (Ortega et al., 2013). Scholars Human resource management has done notable work to find how and in which manner participative management helps to advance the performance and job satisfaction of the employee and produced unconvincing or even contradictory findings (Cox et al., 2006; K. I. Miller & Monge, 1986; Salas-Vallina & Fernandez, 2017) affective, and contingency models of the effects of participation in decision making on employees' satisfaction and productivity. Contingency models received no support. Results from field studies provided some support for cognitive models, and strong support for affective models linking participative climate with worker satisfaction. Methodological variations such as research setting and type of participant were important moderators in subgroup analyses. We discuss the implications of such variations for task complexity.” Most quantitative studies analysing the nature and impact of employee involvement and participation (EIP. In finding the effect of direct participation on learning, the author has focused on three key dimensions: informal learning, training receipt and quality of training (Inanc et al., 2015).

Studies related to participation, e.g. (Easterby-Smith et al., 2000; Sverke et al., 2008), have shown participative management style is among the vital rationalizations of positive organizational change. Participative management has been seen as strengthening learning because it brings people together who have different knowledge, experience and skill (Kitzmiller et al., 2010) such as health information technology (HIT).

Research confirms that direct participation and learning have significant and positive relations (Inanc et al., 2015). Different forms of participation of employees have distinct Effects on the specific type of learning. However, it is shown in research that the participation of the employee in decision-making and learning depends to some extent on the workplace setting technology level and the employee's skill level (Felstead et al., 2010; Inanc et al., 2015). Although, there are limited studies that have established positive relation between Participative and learning (Inanc et al., 2015; Valleala et al., 2015) frequently involving modification of existing procedures. The case study reported here examined change processes and learning in a health care organization. The organizational change in question occurred in the emergency clinic of a Finnish central hospital where a new action model for

shift-specific nursing supervision was being introduced. The aim of this study was to investigate some of the employee participation and learning opportunities amid this organizational change. The data collection was ethnographically informed, and the data consisted of audio-recorded and observed meetings, observations of the new action model, and field interviews which were analyzed qualitatively. The change appeared to occur in four phases: preparation, planning, discussion, and implementation. Structures (e.g. regular meetings open to the entire staff. Based on organizational learning theory and resource-based theory, we might suppose Participative management to engender learning at the workplace and thus, we hypothesize:

Hypothesis 1: Participative Management Style has a positive direct effect on Learning at Work.

Participative management style and vitality

Thriving can be conceptualized as a psychological state in which a person experience vitality (affective dimension) as well as learning (cognitive dimension) at place of work (Spreitzer, G.2005). Thriving at work, as performance and individual factor related to sustainability have gained much attention since decades in the field of organizational behaviour (Ghulam Abid, 2019). Research shows that if basic need of employees is satisfied, they experience vigour (vitality) and learning at workplace (Long Chen, 2020). And vitality at workplace may stir positive emotions that can lead to enhance performance (Fredrickson, 2001). Taking together, vitality and learning experienced by employee at workplace expected to have resources and desired knowledge to deal with everyday work task. Therefore, thriving at work has found to have positive impact on task performance (e.g., Paterson, Luthans, & Jeung, 2014; M. Lance Frazier, 2018). Research claims that thriving at work comprises of vitality and learning is positively associated with job performance (Carmeli, 2009; Gerbasi, Porath, Parker, Spreitzer, & Cross, 2015; Niessen, Sonnentag, & Sach, 2012; Porath et al., 2012; Tummers, Steijn, Nevicka, & Heerema, 2016).

Hypothesis 2: Participative Management Style has a positive direct effect on Vitality.

Mediating role of vitality

Vitality can be defined as the sense of aliveness and energy, and on the other hand, learning is acquiring and implementing new and enhanced skills in the organizational setting. This vitality and learning collectively lead to thriving at work. Thriving at work is made up of a combined sense of vitality as well as learning at work, which helps in progressing and moving forward in one's career development (Spreitzer et al., 2005). Learning at the workplace is a continual improvement of tasks (Porath et al., 2012). This craving for learning new things can foster internal motivation that shapes confidence, generates legitimacy to break the status quo

and make an effort for new things (Carmeli et al., 2009). If employees experience vitality at the place of work, they experience more positive emotions and are more likely to have the motivation and energy to indulge in innovative activities (Carmeli et al., 2009) and provide the employee with the capacity to grow and develop (Nilsson, 2015). Thus,

Hypothesis 3: Vitality has a positive direct effect on Learning at Work.

Zest is possibly a crucial element of informal learning as it augments employees' capacity for learning at the workplace (Raymond A. Noe, 2013). As per the broaden and build theory (Fredrickson, 2001), positive emotions like (zest vitality) widen the intellectual, physical and social resources of a person. In turn, these resources stimulate the person to search for and explore novel experiences and information (Fredrickson, 2003; Quinn, Spreitzer, & Lam, 2012, Raymond A. Noe, 2013). Moreover, vitality and Zest are interrelated; vitality refers to an individual who leads a life full of enthusiasm and energy and is related to problem-solving, idea generation, and creative behaviour (Kark & Carmeli, 2009). For informal learning, these enthusiastic and Zest emotions are necessary. Thus, we can say, Zest allows an individual to be engrossed in informal learning (Raymond A. Noe, 2013). Fun activities incorporate a wide range of activities encouraged by the organization to boost well-being and delight at work like an outing with peers, celebration at the office for achievements and rewards (Ford, McLaughlin & Newstrom, 2003; Karl, Peluchette, Hall, & Harland, 2005).

Fun engenders positive emotions that enable healthier relationships and diminish learning anxiety. Because there are searching for expertise and asking questions in informal learning, people prefer to learn from others with whom they have good relations. However, fun at work is likely to enhance positive emotions, which produces greater vigour and upsurges in resiliency and optimism of an individual required to engross in other endeavours like informal learning (Fredrickson, 2001). Employees always do not want to learn, but fun activities engender enjoyment, and this Zest and enjoyment promote creativity Fredrickson & Cohn, 2008) (Panksepp, 1998).

Encouraging fun creative activities could encourage informal learning to help employees engender ideas and solve job-related glitches (Michael J. Tews, 2016). Thus, once employees start thinking creatively about issues related to work and start focusing on the solving problem, then they indulge in informal learning (Michael J. Tews, 2016).

Hypothesis 4: Participative Management Style has a positive indirect effect on Learning at Work through Vitality.

Mediating role of directive performance

Learning can be defined as individuals or groups of persons acquiring, understanding, reorganizing, altering or assimilating a bunch of information, feeling and skills. This is also essential to the methods in which individuals give meaning to the personal and shared lives of an organization (Marsick & Watkins, 2015). It is found in the research that members of a team working together and having a greater level of collective team diversity, expertise, and identification can stir team learning and increase adaptive performance (Van Der Vegt & Bunderson, 2005). Research shows that team learning is positively associated with the performance of employees and the organization (Sun et al., 2017; Van Der Vegt & Bunderson, 2005). Although there are limited studies that have established a positive relationship between learning and enabling performance (Tian & Zhai, 2019), based on RBT and Organizational learning theory (Barney, 2000; Tian & Zhai, 2019), we might suppose directive performance engenders learning at work.

Studies related to participation, e.g. (Easterby-Smith et al., 2000; Sverke et al., 2008), have shown participative management style is among the vital rationalizations of positive organizational change. Participative management has been seen as strengthening learning because it brings people together who have different knowledge, experience and skill (Kitzmiller et al., 2010). Research confirms that direct participation and learning have significant and positive relations (Inanc et al., 2015). Different forms of participation of employees have distinct Effects on the specific type of learning. However, it is shown in research that the participation of the employee in decision-making and learning depends to some extent on the workplace setting technology level and employees skill level (Felstead et al., 2010; Inanc et al., 2015). Although, there are limited studies that have established positive relations between Participative learning (Inanc et al., 2015; Valleala et al., 2015). Based on social exchange theory (Blau, 2017), we might suppose Participative management to engender learning at the workplace and thus, we hypothesize:

Hypothesis 5: Directive performance has a positive direct effect on Learning at work.

Hypothesis 6: Participative Management Style has a positive indirect effect on Learning at Work through Directive Performance.

Parallel mediating role of vitality and directive performance

We argued that vitality and directive performance are positively associated with learning at work based on the above discussion. Further, authors have claimed that participative management studies have a direct and positive association with learning at work. When all of the hypotheses are considered together, we believe that

vitality and directive performance will likely mediate the link between participative management style and learning.

Hypothesis 7: Participative Management Style has a positive indirect effect on Learning at work through parallel mediation of vitality and Directive performance.

METHOD

Participants and procedure

By understanding the need for employee development, training emerges as a pivotal HR management function. The data for the current study were gathered from employees working in Indian organizations, mainly public and private sector manufacturing and service provider companies. Respondents were full-time employees working in these organizations. Researchers have strongly recommended that data collection be done from diverse samples to obtain variable responses and generalizability of the results (Agarwal & Gupta, 2018; Tomarken & Serlin, 1986). The survey questionnaire consisted of a cover letter summarising the objective of the research and ensured using the data entirely for the research purpose, and participants' anonymity was maintained.

A self-reported questionnaire, a structured and sincerely planned data collection method, was employed in quantitative research (Malhotra, 1999). Out of the 720 questionnaires sent as a Google form via email and other online mediums, data 405 was collected, showing a 56.25 per cent response rate. The sample collected fulfilled the conditions recommended by (Hair, JF Jr, Black, W.C., Babin, B.J. and Anderson, 2010). The sample size should be about five to ten times the total number of observations tested under the study. The questionnaire consisted of the items on the demographic profiles of the respondents and scales for measuring the latent constructs. Among the respondents, 136 (33.6 %) were females, and 269 (64.4 %) were males. In terms of age of the respondent category wise 340 (83.9 %) were in the category of 21-35 years of age, 45 (11.1 %) were in the category of 36-50 years of age, and 20 (4.93 %) were in the category of 51-65 years of age. In terms of respondents' organization status, 186 (45.9%) were working in a private organization, and 219 (54.1%) were working in a public organization. In terms of Job Position, 60 (14.8 %) were at a junior level position, 187 (46.2 %) were at a middle or intermediate level position and, 158 (39 %) were at a senior level position (see Table 1).

Measures

Manager's use of participative management style

The Manager's use of a Participative Management style was Measured with a scale of four Items developed and validated (Kim, 2002). Sample items are "Within the last two years, managers in my department have attempted to allow employees to improve our work process" and "Managers in my department have made an effort to increase employee involvement in decision making."

The seven-point Likert used for this study ranges from (1=strongly disagree to 7=strongly agree). The (alpha coefficient) internal consistency for the Manager's use of the Participative management style was **0.921**.

Vitality

Vitality has been Measured with a scale of Ten Items developed and validated by (Porath et al., 2012). A sample Item for Vitality is "I feel vital and alive" And "I feel alert and awake" The seven-point Likert used for this study ranges from (1=strongly disagree to 7=strongly agree). The Internal consistency (alpha coefficient) of this scale was recorded at 0.916 for this study.

Directive performance

Directive Performance Management, a sub-scale (a two-item scale) developed and validated by (Franco-Santos & Doherty, 2017) results are still contested. Our study addresses this phenomenon in the Higher Education sector. We specifically investigate the association between performance management and the perceived well-being of academic staff. Our research finds that the application of a directive performance management approach, underpinned by agency theory ideas as evidenced by a high reliance on performance measures and targets, is negatively related to academics' well-being (i.e. the more it is used, the worse people feel, has been taken to measure performance. A sample item for directive performance is "My organisation monitors performance using certain performance indicators.", "My organisation establishes clear performance goals to distinguish between good and poor performance.", and "My institution provides constant opportunities for learning and development". The Likert scale with a seven-point response scale was taken in this study ("strongly disagree" =1, "strongly agree" =7), and higher scores indicated higher performance. The Internal consistency (alpha coefficient) of this scale was recorded at 0.901 for this study.

Learning at work

Learning a sub-scale (a Nine-item scale) developed and validated by (Porath et al., 2012) has been taken to measure learning. A sample item for learning is "I am experiencing considerable personal growth", "I enjoy seeing how my views have progressed", and "I have not grown much recently". The Likert scale with a seven-point response scale was taken in this study ("strongly disagree" =1, "strongly agree" =7), and higher scores indicated higher learning. This scale's internal consistency (alpha coefficient) was recorded at **0.955** for this study.

Control variables

Gender, age, education, and work experience were added as control variables as prior studies have indicated that such gender differences influence the networking competency of working professionals (Forret & Dougherty, 2004). Gender was labelled as a dummy (0= female and 1 = male).

Common method bias

Harman's single-factor test was employed to assess and check for common method bias, as the data for the studied variables were collected from the same source. Unrotated factor analyses were tested in SPSS software version 27.0. The maximum variance explained by a single factor was 44.6 %, which is lower than the recommended criterion of 50% (Podsakoff et al., 2003). Findings demonstrated that common method bias (CMB) was not an issue in our research. These results are then checked against a correlation matrix to determine whether any of the correlations are greater than 0.9 (Pavlou et al., 2007). All correlations below the threshold value (see Table 2) confirm the findings that common method bias was not an issue in the existing investigation.

Results

Descriptive statistics

Table 2, demonstrated the descriptive statistics, such as mean, standard deviation, inter-item correlation, square of correlation among variables and average variance extracted. It has been shown that there is a significant correlation between participative management style and learning at work ($r = 0.538$, $p < 0.01$), participative management and vitality ($r = 0.474$, $p < 0.01$), participative management and directive performance ($r = 0.493$, $p < 0.01$), vitality and directive performance ($r = 0.350$, $p < 0.01$), and directive performance and learning ($r = 0.463$, $p < 0.01$). All four study variables' mean and standard and deviation ranged from (Mean: 5.30 to 6.01) and (SD; 0.92 to 1.28) respectively. Table 2 also showed AVE (Average variance extracted) values bold diagonally ranged from 0.72 to 0.75. These values are greater than 0.50 (Fornell & Larcker, 1981) in addition to the known problems related to sample size and power, is that it may indicate an increasing correspondence between the hypothesized model and the observed data as both the measurement properties and the relationship between constructs decline. Further, and contrary to common assertion, the risk of making a Type II error can be substantial even when the sample size is large. Moreover, the present testing methods are unable to assess a model's explanatory power. To overcome these problems, the authors develop and apply a testing system based on measures of shared variance within the structural model, measurement model, and overall model." (Fornell & Larcker, 1981 to prove the convergent validity.

Measurement model results

We framed a four-factor measurement model. The alpha coefficients, CR (Composite reliability), factor loadings (standardized), and t-value are described in table 3. The alpha values for all considered variables vary from 0.86 to 0.96. The acceptable alpha reliability criterion is on and above 0.70 (Hussain et al., 2019) medical equipment, distance from the hospital, and physical infrastructure influenced patient satisfaction at public hospitals in

Southern Punjab, Pakistan. An exploratory research technique was used. We distributed 700 questionnaires through a random method, and 579 provided proper responses. A confirmatory factor analysis (CFA). The factor loading (standardized) for all 22 items ranged from 0.78 to 0.93. As these values are more than 0.50, they also exhibit convergent validity (Asif et al., 2019) administrative quality (AQ). The t-values for all 22 items are larger than the cutoff criterion of 1.96 (Asif et al., 2019) administrative quality (AQ, indicating that our model is significant. Similarly, the composite reliability is more than 0.60 (Bagozzi & Yi, 1988) critiqued, and illustrated. An overall program for model evaluation is proposed based upon an interpretation of converging and diverging evidence. Model assessment is considered to be a complex process mixing statistical criteria with philosophical, historical, and theoretical elements. Inevitably the process entails some attempt at a reconciliation between so-called objective and subjective norms. © 1988 Academy of Marketing Science.”(Bagozzi & Yi, 1988, ranging from 0.88 to 0.92.

Confirmatory factor analysis

A model fit was measured and analyzed using confirmatory factor analysis. Before performing mediation analysis, CFA (Confirmatory factor analysis) is widely carried out to test the model fit (Credé & Harms, 2015). The four latent factors participative management style, vitality, directive performance, and learning at work model fitted the data well with values (χ^2 (200, N=405) = 482.210, p-value < 0.01, CFI (Comparative Fit Index) = 0.996, GFI (Goodness of Fit Index) = 0.996, RMSEA (Root Mean Square Error of Approximation) = 0.059, SRMR (Standardized Root Mean Square Residual) = 0.049, TLI (Tucker-Lewis Index) = 0.996, IFI (Incremental Fit Measures) = 0.996 (table 4) recommended by (Hooper et al., 2008) guidelines are presented on their use. The paper also provides reporting strategies of these indices and concludes with a discussion on the future of fit indices. © Academic Conferences Ltd.”,(See Table 4, Model Fit Measures). We compared the baseline measurement model with the other five models (one-factor, two-factor, and three-factor). Firstly, for the model with the three-factor model, we clubbed participative management style and vitality into one factor. For another model with three factors, we clubbed participative management style and directive performance into one factor. In the third model with three-factor, we clubbed vitality and directive performance in one factor. Likewise, for the model with two-factor, we clubbed participative management style, vitality and directive performance in one factor. Finally, in the model with one-factor, all the variables participative management style, vitality, directive performance, and learning at work were clubbed into one factor. As shown in Table 5 (Confirmatory Factor analysis Results), the comparison measurement model of our studied variables was better fit than all the nested models.

Hypothesis testing

We employed PROCESS macro (Hayes, 2013) conversational discussion of the fundamentals of mediation, moderation, and conditional process analysis, this book has been fully revised with 50% new content, including sections on working with multicategorical antecedent variables, the use of PROCESS version 3 for SPSS and SAS for model estimation, and annotated PROCESS v3 outputs. Using the principles of ordinary least squares regression, Andrew F. Hayes carefully explains procedures for testing hypotheses about the conditions under and the mechanisms by which causal effects operate, as well as the moderation of such mechanisms. Hayes shows how to estimate and interpret direct, indirect, and conditional effects; probe and visualize interactions; test questions about moderated mediation; and report different types of analyses. ; Part I. Fundamentals. Introduction ; Fundamentals of linear regression analysis -- Part II. Mediation analysis. The simple mediation model ; Casual steps, confounding, and casual order ; More than one mediator ; Mediation analysis with a multicategorical antecedent -- Part III. Moderation analysis. Fundamentals of moderation analysis ; Extending the fundamental principles of moderation analysis ; Some myths and additional extensions of moderation analysis ; Multicategorical focal antecedents and moderators -- Part IV. Conditional process analysis. Fundamentals of conditional process analysis ; Further examples of conditional process analysis ; Conditional process analysis with a multicategorical antecedent -- Part V. Miscellanea. Miscellaneous topics and some frequently asked questions -- Appendices. A. Using PROCESS ; B. Constructing and customizing models in PROCESS ; C. Monte Carlo confidence intervals in SPSS and SAS.”,(Hayes, 2013 for evaluating the hypothesis of the study, which revolved around the parallel mediation between participative management style and learning at work through vitality and directive performance. Three important conditions were required for this method to work. First, there must be a robust association between the independent and dependent variables. Second, the predictor variables must have a significant link with both the mediators, who must likewise have a positive and significant relationship with the outcome variable. Third, the indirect impact of mediators’ variables should be considered at the same time. Model 4 of the Hayes PROCESS macro was employed to test these three relationships. The results were also tested with 5000 bootstrapped samples at a 95% confidence interval. The analysis of Hypothesis 1 reflected a direct effect of participative management style on learning at work, which was found to be significant ($\beta = 0.133$, $p < 0.01$), therefore, H1 was accepted.

The results revealed that participative management style is positively associated with mediating variables of the study, i.e., vitality ($\beta = .328$, $p < 0.01$) and directive

performance ($\beta = .488$, $p < 0.01$). Moreover, vitality is also found to be positively associated with learning at work ($\beta = 0.568$, $p < 0.01$), and directive performance was also found to be positively related to learning at work ($\beta = 0.126$, $p < 0.01$).

Consequently, we determined that all purposed hypotheses were supported. Furthermore, vitality ($\beta = 0.263$, $SE = 0.035$, $LLCI = 0.195$, $ULCI = 0.337$) and directive performance ($\beta = 0.086$, $SE = 0.022$, $LLCI = 0.044$, $ULCI = 0.131$) also mediated the association separately. Hence, H4 and H6 are also supported. Lastly, Hypothesis 7 stated that vitality and directive performance mediated the relationship between participative management style and learning at work. To investigate Hypothesis 7, the total indirect effect of participative management style on learning at work was investigated and obtained significant results ($\beta = 0.350$, $SE = .034$, $LLCI = 0.284$, $ULCI = 0.420$). Accordingly, our findings proved Hypothesis 7 to be true. Therefore, vitality and directive performance both mediated the association between participative management style and learning at work; however, this parallel mediation was partial (see Table 7).

Discussion

The current research investigates the association between participative management style and learning at work and found that vitality and directive performance play a dominant role as mediators. Based on survey data obtained from 405 respondents', it was found that participative management style was related positively to learning and vitality and directive performance mediating the relationship. Participative management style and learning have a positive effect on the diversely measured performance of employees in public and private organizations in India. Participative management, like teamwork and employee involvement, enhances the performance of the organization in the public sector (A. Kim et al., 2016; C. K. Lam et al., 2015; Park et al., 2016). It was found in our study that directive performance enhances the learning at work of private as well as public sector employees, whereas vitality has a positive effect on learning. Many scholars have found the differences in culture and its effect on the participation and performance relationship; there is little study on how participative management and vitality and directive performance affect learning at work in the public and private sector in India.

Another pivotal research question is whether vitality and directive performance positively mediate the relationship between participative management style and learning at work. In addition to that, the participative management style directly affects learning at work, and vitality and directive performance parallelly mediate the relationship between these two.

Theoretical contribution

Earlier research majorly investigated the participative management impact on the performance and job satisfaction of an individual employee and has not

focused much on the organization's overall performance. This paper integrates RBT with organizational learning theory to develop a framework engaging supervisors and employees in collective learning through participative management to increase the learning of employees as well as of the organization. The framework recommends that the fiasco or triumph of participation is reliant on whether or not it offers opportunities for supervisors or managers and employees to involve in collective learning at work. This is a noteworthy contribution the study makes to the literature. Participative management offers employees to have their say in decision-making, whereas, in employee participation in decision-making, the decisions are completely in the hand of employees. This paper supports participative management to enhance learning as well as performance which is of the utmost requirement for organizational success and profitability by or through strategic planning. This contribution also adds value to the literature.

Managerial implication

The findings of the current study show that participative management plays a pivotal role in enabling the learning at work of the employee in an organization through vitality and directive performance. This study adds to the literature about participative management style and performance and learning. To increase the learning of employees, managers need to be encouraged to use a more participative management style, like sharing juniors with a larger chance to have a say in the decision and to bring their ideas out. It is not prudent for enterprises to endorse such behaviour of leaders without taking into account junior's trust. Organizations also need to encourage their managers or supervisors to consult with junior or subordinate-level employees regularly. However, a participative management style leads to improve performance. If employees have a lucid understanding of their tasks, roles and duties in achieving the strategic plan of the department or organization have an enhanced level of learning. Thus, practitioners and researchers in the field of management have also focused on some other employee involvement practices that could provide greater involvement of employees in making decisions, i.e., autonomy and delegation that empowers employees to share more authority and responsibility in decision-making. When the management empowers employees to make decisions and implementation with less supervisory intervention, this leads to the development of skills and abilities of employees to manage their workplace, and this may improve performance. Managers and supervisors need not only to transfer the power of management to employees in making decisions, but they should also empower and give autonomy to subordinates to take decisions related to activities of the organization without the interference of the supervisor. It is difficult to implement all the suggestions to implement without the commitment of the organizational leader.

Limitation and future research

The data has been collected from public and private sector employees of India; after analysing the data, we show a positive effect of participative management style on learning at work through parallel mediator vitality and directive performance. The cross-sectional research design has been used in this study; thus, this design is not sufficient to determine the causal relationship between variables. As there might be another variable also that shares associations with given variables. Hence, further studies are suggested to establish and identify such a relationship between these variables. This study is conducted on public and private sector employees in India; therefore, its result may not be generalized for employees working in organizations that have varied cultures. In this study, the participative management style was substitution and the existence of representatives of employees in the different boards in an organization. It is dubious if the finding of the present study applies to the participation of employees at the bottom level or lower level. Research in future may examine the data validity on participative management style at lower-level employees. Another limitation of this study is that in this research, the data at one moment in time have been collected; it has become hard to argue whether the variable causal research has been studied or not. This study doesn't give a comprehensive description of all mediators of the affiliation between participative management and its work consequences.

Conclusion

Earlier studies have an emphasis on the role of participation in motivating workers, job satisfaction and performance and innovation and claimed that the more participation of workers and employees in decision-making, the better. The claims had not paid attention to the role of participative management style and vitality in involving managers as well as employees to enhance learning. In this study, we integrate participative management style, vitality, directive performance, and learning. Despite the limitations, this study supports the existence of a parallel mediating pathway between participative management style and learning at work. Thus, the participative management style enhances learning through the effect of vitality and also mediates through directive performance and sequentially mediates the effect of both vitality and directive performance. Integrating organizational learning theory with RBT (resource-based theory), this paper suggests that if decisions are taken jointly by management and employees can lead to enhance organizational as well as individual learning. Organizations need to design a Participative management style as an approach to involve employees and management people in learning and influence the valuable knowledge and education of duo both employees as well as managers and superiors to increase the learning of an organization with the help of vitality and directive performance employees. Moreover,

the result provides evidence that if a participative management style is adopted and has vitality and directive performance, it increases learning at work.

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Table 1 Demographic characteristics of the respondents

Demographic Characteristics	N	Frequency (%)
Gender		
Male	269	66.4
Female	136	33.6
Total	405	100.00
Age (years)		
21-35	379	93.6
36-50	25	6.2
51-65	1	.2
Total	405	100.00
Education		
Diploma	13	3.2
Graduate	104	25.7
Post Graduate	249	61.5
PhD.	39	9.6
Total	405	100.00
Job Position		
Senior Level	158	39.0
Middle level	187	46.2
Junior level	60	14.8
Total	405	100.00
Experience		
1-10 years	381	94.1
11-20 years	17	4.2
More than 20 years	7	1.7
Total	405	100.00
Organization status		
Private	186	45.9
Public	219	54.1
Total	405	100.00

Table 2 Descriptive Statistics

		Mean	S.D.	C.R.	Correlations									
Sn	Factors				1	2	3	4	5	6	7	8	9	
1	Age	.07	.259	---	---									
2	Education	1.78	.657	---	.059	---								
3	Job position	.76	.693	---	.200*	-.027	---							
4	Experience	.08	.325	---	.732**	-.058	.214**	---						
5	Organization status	.54	.499	---	.008	-.104*	.172**	-.042	---					
6	Income	1.66	1.403	---	.151**	.177**	.197**	.112*	-.129**	---				
7	Participative management	5.20	1.386	9.21	-.020	-.096	.124*	-.030	.121*	.061	.712	0.223	0.243	0.289
8	Vitality	5.54	.961	9.16	.043	-.087	.113*	.019	.001	.057	.474**	.584	0.122	0.498
9	Directive	5.39	1.37	9.01	-.004	-.123	.108*	-.001	.132**	.022	.493**	.350**	.740	0.214
10	Learning	5.79	.983	9.55	.022	-.096	.163**	.002	.068	.007	.538**	.706**	.463**	.664

Table 3 Measurement model results

Variable	No. of items	Alpha coefficient	Items' short name	Factor Loadings	Standard Error	t-value	Composite Reliability
PMS	4	0.921	PMS1	0.804			0.889
			PMS 2	0.867	0.037	29.416***	
			PMS 3	0.848	0.035	29.968***	
			PMS 4	0.856	0.036	29.166***	
VITALITY	7	0.916	Vital 1	0.831			0.826
			Vital 2	0.465	0.044	12.629***	
			Vital 3	0.883	0.032	33.752***	
			Vital 4	0.891	0.029	36.872***	
			Vital 5	0.906	0.028	38.316***	
			Vital 6	0.833	0.034	29.717***	
			Vital 7	0.300	0.048	7.511***	
Directive	2	0.901	Directive 1	0.829			0.892
			Directive 2	0.890	0.055	19.671***	
Learning at work	9	0.55	Learn 1	0.789			0.948
			Learn 2	0.880	0.025	44.291***	
			Learn 3	0.826	0.032	32.292***	
			Learn 4	0.828	0.031	34.149***	
			Learn 5	0.823	0.034	30.985***	
			Learn 6	0.792	0.034	29.162***	
			Learn 7	0.700	0.033	26.780***	
			Learn 8	0.845	0.034	31.563***	
			Learn 9	0.839	0.032	33.604***	

Table 4 Baseline Model Fit measures

Model Fit Indices	Value	Cutoff	Observations
χ^2/df	2.41	<3	Yes
SRMR	0.049	<0.08	Yes
Incremental Fit Measures	0.996	>0.95	Yes
CFI	0.996	>0.95	Yes
GFI	0.995	>0.95	Yes

Table 5 Results of Confirmatory Factor Analysis

Models	X ²	df	X ² /df	CFI	RM-SEA	SRMR	GFI	IFI	TLI
Baseline model	482.210	200.00	2.41	0.996	0.059	0.049	0.995	0.996	0.996

3-Factor model (PM + VITAL)	1630.467	206.00	7.91	0.982	0.131	0.087	0.983	0.982	0.979
3- Factor model (PM + Direct)	947.728	206.00	4.60	0.990	0.094	0.062	0.990	0.990	0.989
3-Factor model (Direct+ Vital)	1214.730	206.00	5.89	0.987	0.110	0.072	0.987	0.987	0.985
2-Factor model (PM+Direct+Vital)	2002.085	208.00	9.62	0.977	0.146	0.093	0.979	0.977	0.974
1-factor model	2818.749	209.00	13.48	0.966	0.176	0.103	0.971	0.966	0.963

Table 6 Bootstrapping results for indirect effects

			95% CI (Bias-Corrected)		Result
Path	Indirect estimate	S.E.	Lower limit Confidence Interval	Upper limit Confidence Interval	
PMS→ VITAL→ LEARN	.263	0.035	.195	.337	
PMS → DIRECTIVE→ LEARN	.086	0.022	.044	.131	
	.350	0.034	.284	.420	Supported

Table 7: Summary of Parallel mediation model

	Consequent								
	M1 (vitality)			M2 (directive)			Y (learn)		
Antecedent	coefficient	Standard Error	p	coefficient	Standard Error	p	coefficient	Standard Error	P
X (PMS)	.328	.030	p < 0.01	.488	.042	p < 0.01	.133	.028	p < 0.01
M1 (Vitality)	---	---	---	---	---	---	.568	.038	p < 0.01
M2 (Directive)	---	---	---	---	---	---	.126	.027	p < 0.01
Constant	3.832	.163	p < 0.01	2.85	.231	p < 0.01	1.274	.198	p < 0.01
	R ² = 0.225 F (1,403) = 117.05, p < 0.01			R ² = 0.242 F (1,403) = 129.30, p < 0.01			R ² = 0.574 F (3,401) = 180.64, p < 0.01		

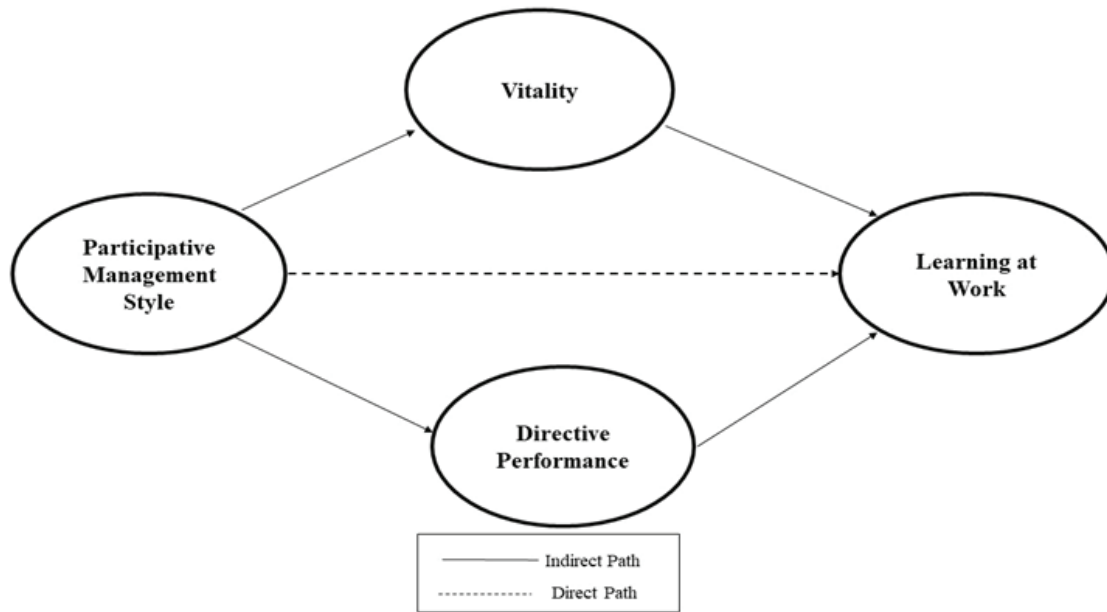


Figure 1: Hypothesized Model

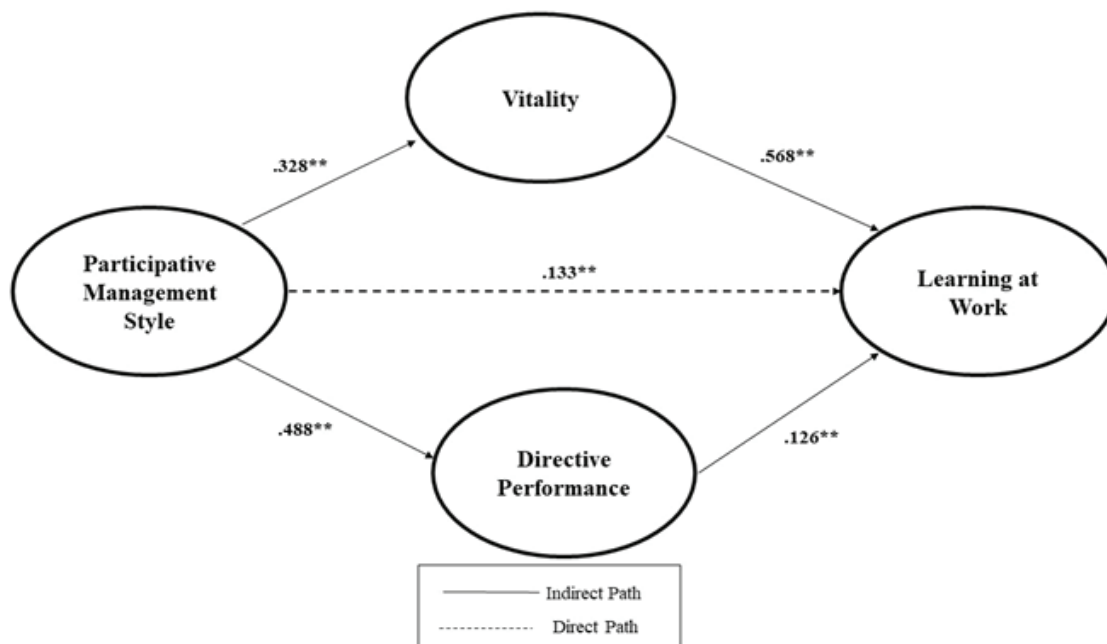


Figure 2: Representing direct and indirect with path coefficients (standardized) of parallel mediation.

Perception and Attitude of Health Professionals toward Marketing and Promotional Activities of Pharmaceutical Industry

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Abstract

Marketing strategy and promotional activities refers to all those activities performed by the pharmaceutical industry to establish and sustain their business. The unique trait in this activity is that the consumer or the patient, who pays for the product or the one who needs the product to treat certain health condition and the customer by means of whom the business is carried out are different so there need to be a check and balance between these parties to ensure the sustainability of industry and quality of life of each patient(consumer). In Nepal the number of the pharmaceutical industry is growing exponentially in compared to that of last few decades. Resulting in humongous number of brands competing in each therapeutic segment. This study tends to explore, the current situation of research being carried out in the field to access the multifaceted relation between pharmaceutical industry, medical practitioners and patient in this highly competitive environment. This study compares various articles published in last 10 years to find out whether the pharmaceutical market is driven by innovation or marketing, especially in developing country and in country with lower GDP like Nepal.

Keywords

Pharmaceutical industry, Perception, Attitude, Promotion, Marketing, Competitive, Sustainability, health professionals.

Introduction

Health care industry primarily comprise of medical personal and trained professionals who provide treatment, diagnosis, prevention or rehabilitation of medical conditions. Such service may be provided through product or service.

These products needed for healthcare industry is provided by pharmaceutical industry in form of equipment or consumable goods. They help in either treatment or improvement of quality of life of patients. Pharmaceutical industry today is one if the fastest growing and profitable industry. Pharmaceutical industry allocates more than the 20% of their annual budget for marketing and promotional activities. This amount is distributed in various ways from industry to the members of the supply channel or to the practicing physician/medical personnel under various headings. It was estimated that 84% of pharmaceutical marketing effort is directed towards physician because from manufacturer pint of view physician are the key decision makers, the gatekeeper to drug sales. This activity in some case litters the healthcare system and may negatively affect the treatment, quality of life of patient or the cost of overall treatment. Herein central issue in the debate is where this industry has been primarily driven by innovation or marketing. Therefore a strict check and

balance is mandatory in this sector. Every member in this ecosystem should be aware about the medical ethics. The pharmaceutical industry itself must focus on science, innovation and in ethical way to their brand promotion of a generic prescription. The structural relationship between the manufacturer and the supply chain, between the manufacturer and prescriber, involves something more like reciprocal access to guarded resources (Lakeoff2006). Though the pharmaceutical industry has international nature. The structure of pharmaceutical market differs from country to country because it has national character. Prescription drug promotion practices that involve giving financial grants and value able items to doctors and retailers are common in Nepal (Subedi 2001; GAPN 2007; Thapa 2007). The government of Nepal, Department of Drug Administration (DDA), has developed and released Guideline on ethical Promotion of medicine- 2007, with the objective to enhance ethical promotion of medicine to support and encourage the improvement of health care through the rational use of medicine and discourage the unethical practice. The guideline however, couldn't properly be implemented due to conflict of interest among the various stakeholders.

With different global issues like climate change, pollution: disease pattern, their effect on human system, gene and

disease themselves are being intense and more lethal. In other hand with advancement in tools, technology of treatment and innovation in medical field health care practitioners' need to be updated about 'pros and cons' of using a particular therapy and most effective and economic way of treatment. Drug promotion refer to all the informational and persuasive activities by manufactures or distributors, that leads to encourage the prescriptions, supply, purchase, use of medication. Drug promotion has been advocated so that healthcare practitioner has access to information they need about medication and that medication are prescribed and used for the welfare and benefit of patients.

Literature review

Lexchin (1993) has tried to analyze the effect of three types of interaction between physician and pharmaceutical industry (company funded clinical trials, company-sponsored continuing medical education, CME), and information for physician supplied by pharmaceutical detailers on orientation and quality of clinical trials, content of CME courses and physicians prescribing behavior. Similarly other researcher Acemoglu et al. (2007) have conducted the research to study the commercial source of information which are considered to be of greater influence than scientific sources on practitioners prescribing behavior in under developed countries. In other study conducted in Libya, Alsageer and Kowalksi (2012) have carried investigation to examine the frequency of pharmaceutical company interaction with doctors. In case of Nepal there are very few articles that have been published in related field. In one of them P.R Napit (2016) have found the significant relationship between variables like gifts, details, sample, bonus, monetary incentives, trips and tour with the rationality of prescription.

Methodology

The search for the literature was confined to research papers published during the year 2013-2022 on topics related to perception and attitude of health care practitioners i.e., physician and pharmacist towards promotional and marketing strategy or tools used by pharmaceutical industry. The study specially focusses on paper published online on different journals with study area primarily focused in developing and least developed countries during mentioned time. The key words used for the search are perception, attitude, influence, pharmaceutical industry, promotional tools, marketing strategy, health care practitioners, physician, pharmacist. Since the literature on pharmaceutical industry is very vast, only few with specific keywords and content were selected. Articles published before 2013, articles those with study areas as developed countries were excluded.

Findings

Drug promotion

Marketing and promotional activities are essential and indispensable part of the pharmaceutical industry. Every year each pharmaceutical company worldwide invest a lot of resources in varied form for generating revenue and maximize the profit. By simultaneously creating profits for the manufacturer and playing the role of an information dissemination tool, drug promotion, when done within ethical boundaries is an effective boundary is an effective method at achieving all the aforementioned objectives. The dilemma arises when this tool is modified for creating unilateral benefits and profit takes an upper hand over patient care. It is known that pharmaceutical industry has been one of the most important players in improving the global healthcare landscape and this has been made possible by the huge revenue generated by drug sales.

Promotional tools

To a lay person, the concept of drug promotion is likely to be limited to the image of the company representative patiently waiting in out patient department to meet the practitioner, and rightly so. Direct marketing of drug by medical representative remains the mainstay of drug promotion across the industry, globally. According to the literature considered in study at very basic level, the medical representative is placed with the responsibility of updating the practitioner's knowledge about the latest drug launch from company and reminding other brands available in market by using promotional literatures i.e., brochures, calendars, pamphlets and flip- charts. The task of medical representative being largely commercially oriented, there is very little or no exchange of scientific information in the areas where the studies were conducted.

Most practitioners believed that their prescription is not influenced by the visit of medical representative. Whereas other various study showed that increased interaction between physician and medical representative increased the probability of particular brand to be prescribed. In studies, physician expressed that the frequency of visit of medical representative and their attitude affected the chance of particular brand to be prescribed. Physician considered medical representative to be efficient and convenient information resources and they are also willing to meet them and accept their gifts.

Seeing all these responsibility and sensitive nature of job, in 1988 World Health Assembly adopted the World Health Organization (WHO), Ethical Criteria for medicinal Drug Promotion which recommends that the medical representative should have an appropriate educational back-ground and be trained with necessary medical and technical knowledge and integrity to present information on drug in accurate, unbiased, and responsible manner.

As per the literature collected the most well accepted gifts are drug sample, stationary and most of the doctors are comfortable to receive medical books as gifts.

Promotional literature is another key technique employed

by the pharmaceutical industry for drug promotion that may include both the print and electronic advertisement. The promotional literature in pharmaceutical industry is mainly targeted towards physician but gradually nowadays company are increasing trend of promoting their products directly to the consumer(patients) or through dispensers/ pharmacist.

Sponsorship of Continuing Educational Program (CME), tour, conference registration, or other recreational programs are the frequent activity that are being conducted by pharmaceutical company for doctors. Most of the practitioner readily accept these offers. Although doctors are the flagbearers of work ethics, acceptance of these offers may create feeling of reciprocity and repay the gesture with support in the form of drug prescriptions.

Company sponsored clinical trials are other approach that pharmaceutical industry has towards health care professionals but in case of developing and least developed country such activities are not as much pronounced.

Major seven relevant study that met the study criteria were studied and their highlights with significant finding are listed in following table:

Author and Year	Population/ Study Area	Sample	Findings
1.SMH Kabir, Suharni Maulan, Noor hazilah Abd Manaf, Zaireena Wan Nasir (2001)	Attitude of physician and patients towards pharmaceutical promotion. -Malaysia	6 Physician 6 Pharmacist	Physician showed positive attitude towards promotional activity. The interaction with sales representative is highly demanded in form of scientific knowledge and sample of medicine. Patients has negative attitudes towards promotional activities. Two-third of patients were confused about relation of physician with pharmacists.
2. Dawit Kumilachew Yimenu, Chilot Abiyu Demeke, et al... (2021)	Health professional's exposure, attitude and acceptance of drug promotion -Ethiopia	105 health professionals. 81 Pharmacist 24 Doctors	33.3% of participants were known about ethics and effect of promotional activities 50% of participants agreed that information provided by sales representative can be trusted 81% of participants preferred drug samples/ stationary as appropriate gift 76.5% of doctors preferred conferences registration 79% participated doctors preferred textbooks

3.Micheline Khazzka (2019)	Influence of pharmaceutical marketing activity on Physician prescribing pattern. -Lebanon	Physicians 282	Marketing strategy are correlated to physicians prescribing behavior Major tool physician agreed to be mostly motivated by are visit of medical representative, drug samples. Samples are used to treat patients. Gift acceptance is considered as non-ethical practice There is relationship between physicians' prescription pattern their age, gender and the location of practice.
4.Noha M. Zaki (2014)	Pharmacist and Physician perception and exposure towards drug promotion -Saudi	Physician and pharmacist Physician (n= 250)	Significantly more pharmacist (32%) than physician (23%) was educated about drug promotion Experience was significantly associated with awareness about drug promotion Conference registration and drug sample were the most appropriated promotional gift Comparatively more pharmacist (75%) perceived promotional activity as source of drug information than physician (65%)
5.Karrar Ehsan Ali, et al.... (2022)	Attitude and acceptability towards medical promotional tools and influence on physician Jordan & Iraq	Physician (801)	Visit by medical representative, followed by distribution of sample were two most common promotional tool 48% of physician reported that they would accept the promotional marketing tool 39.6% physician reported that medical representative has negative attitude towards their competitors 69.9% physician reported that they would change their practice after participating in conference or meeting.

6. Mus-tafa Ali alssageer et al.. (2013)	Perception of physician on benefits, ethical issue and their interaction with pharmaceutical company. Libyan	Practicing Physician (1000)	86% reported that they had been given printed material, 79% reported of simple gifts, 73% reported of stationary, 69% reported of drug sample at least once in last 12 months Three major perceived benefits reported by doctors were receiving new information about product (94%), invitation to conferences (35.4%), receipt of gifts (21.7%), Of 608 respondents 25.3% totally disapproved of gifts, while other 25% approved, and other 50% would accept in some cases.
7. Prabhat Ranjan Napit (2016)	Promotional effort of pharmaceutical company on prescribing pattern of Antibiotics Nepal	Physician (n=225)	There is no significant relationship between qualification of doctors and patient compliance There is significant relationship between promotional efforts towards qualification of doctors and price of antibiotics. There is significant relationship between influence of detailing, gifts, monetary incentives, trip and tour on prescribing pattern.

Conclusion

This study attempts to provide relationship of dependent variables as detailing, gifts, samples, bonus, monetary incentives, trip and tours on prescribing pattern or dispensing pattern of physician and pharmacist respectively in case of least developed and developing countries. The finding of this study has significant implication for pharmaceutical industry to implement the cost effective and most relevant marketing strategy. The finding also provides an insight into the characteristics and practices of marketing hence it can also be helpful for the policy makers to regulated the sector as drug promotion is essential and indispensable part of the pharmaceutical industry where each drug company invest a lot of resources for their sustainability and profitability. When balanced pharmaceutical industry marketing can play important role of information provider to healthcare practitioners and create great revenue to company. The dilemma arises when the tool is modified for creating unilateral benefits and profit take upper hand over patient care over patient care.

The path ahead lies in taking the middle ground of supporting industry promotion but insuring ensuring that the practices strictly adhere to the numerous guidelines laid down by government.

Competing Interest

There is no competing interest to declare.

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Individual and Group-Based Idea Generation: Review and Future Direction

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Abstract

Employees frequently exchange ideas during meetings and work sessions to come up with original, innovative solutions to problems and to develop ideas for potential future innovations. Organizations' literature keeps highlighting how important it is for their staff to be more innovative and creative. However, there is still some room for improvement in the literature. The purpose of this article is to review key publications recognized by the ABDC (Australian Business Deans Council) that address the role of individuals and groups in idea generation as part of the overall organisational innovation process. Firstly, this paper reviews the trend in the literature on idea generation. Second, this paper reviews the distribution of idea generation literature journal-wise and year-wise. Lastly, this paper identifies the different purposes for which those studies considered idea generation as an important factor for becoming successful during times of global competition.

Keywords

Idea generation, Creative, Creative mind, Innovation

Introduction

The 21st century's more dynamic and competitive market conditions are forcing businesses to create new products and services more regularly and successfully, which is spurring an increase in research interest in the area. Innovation, which is the successful application of fresh, sensible ideas, begins with creativity. Additionally, innovation is crucial for the long-term success of businesses. No company that continues to provide the same products and services, in the same way, will long survive since the business world is rarely static and the speed of change looks to be constantly accelerating. The need for greater innovation, which is described as the deliberate creation and introduction of potentially beneficial new ideas, goods, services, and working methods into roles, groups, organisations, and society, is a global issue and one that can give a substantial advantage (Birdi et al., 2016). But to take advantage of such chances, it was necessary to have skilled and flexible staff, a powerful and creative mindset namely an idea generation mindset, and fundamental change to the individual and group perspective to approach problems. Organizations must constantly enhance their current offerings by developing new goods and services to better satisfy the shifting needs of their clients. Idea generation as defined Emich and Vincent (2020) "is a divergent, expansive process where individuals or teams come up with as many potential solutions or ideas as possible." A continuously

demanding environment created opportunities for several businesses and started opening up their innovation processes to ideas and proposals from diverse parties outside of their organisational bounds, such as their suppliers, consumers, and even competitors, to meet this demand for constant innovation. Schawlow said that the most successful scientists are frequently not the most gifted; rather, they are those who are simply driven by curiosity (as cite by Amabile (1997). The idea generation stage of the creative process requires developing fresh mental connections to produce original ideas; curiosity may be helpful. As Idea generation defined by Nevo et al. (2020) involves "individuals producing new and potentially valuable ideas (e.g., possible solutions to work-related problems). Idea generation reflects efforts to create potentially useful, albeit often rudimentary and vague, ideas. Generated ideas are rudimentary and lack detail but contain enough information to allow assessment of their merit." Continuous improvements in digital technology, particularly those connected to Web 2.0, have allowed businesses to expand the scope of their innovation projects beyond their immediate network through crowdsourcing innovation-related tasks (Boons & Stam, 2019), which emerged as an important concept in idea generation literature.

This study focuses on several literary works that have been published in ABDC-listed publications. This study looks at articles from various literary genres to determine

innovative outcomes after idea generation in various organisations. The limitations of the study and the possibility for additional research are also described.

Research Questions

A component of this study is the following research question:

1. What are the current trends in the literature on idea generation published by several reputable journals?
2. What is the literature's journal-wise distribution?
3. How can idea generation, which is heavily emphasised in the papers that were chosen, assist companies to grow and innovate so that they can adapt to ongoing change and persevere?

Literature review

The traditional brainstorming process suggested by Alex Osborn is the most well-known framework for idea generation. Idea generation is a creative process that results in a fresh concept (the “thinking of new things”) to resolve an issue that may not be adequately structured and then produce new value through collaboration and dissemination. The novelty of the idea is probably more significant than other factors like viability or utility, which become increasingly crucial in the elaboration and championing phase (Resch & Kock, 2021). The external environment as well as internal elements have an impact on creativity. As a result, creativity should be at its highest when an individual is working in an environment that is designed to foster creativity and is intrinsically driven, has strong domain expertise, and has high creative thinking skills. Idea generation results in idea transformation, which calls for the blending of traits like talent, tenacity, and flexibility, as well as professional abilities and competencies. This activates the trial-and-error learning mechanisms that are the cornerstones of any innovation's success. Typically, this entails adjustments and mistakes from which lessons are learned (Presenza et al., 2017). Because the idea-generation stage of the creative process entails discovering novel mental pathways to generate original thoughts, curiosity might be beneficial. The proof for idea linking's conceptual distinction from brainstorming comes from the fact that it increases creativity beyond what can be achieved by individual brainstorming. Brainstorming entails coming up with a variety of ideas while reserving judgement on which ones are the best. Although idea connecting also involves the development of many ideas, its conceptual differentiator is the flow from one thought to the next, as components of earlier ideas help to inspire later ideas. Early thoughts are therefore crucial to the idea-generation process when using idea linkage. People produce more original final ideas when they use elements of earlier ideas as input during future idea production. Beyond the benefits of the process of experiencing distinct curiosities, idea linkage increases creativity since it encourages people to make a special

cognitive investment in idea development. Idea linking enhances creative performance beyond the currently available brainstorming intervention and that idea linking is not a process that occurs automatically when people participate in creative tasks. By refraining from passing judgement while participants generate a huge number of ideas and ultimately choose one to develop further, brainstorming teaches people to detach from initial thoughts. Early ideas are only suggestions when using idea connecting, but they are crucial to the development of later ideas because they provide information for them (Hagtvedt et al., 2019).

Crowd sourcing and idea generation

Management decision-making, problem-solving, and opportunity exploitation are supported by crowdsourcing. The crowd (contributors or solvers) comes up with ideas and may also evaluate and rank potential solutions to issues (Camacho et al., 2019). Members of the crowd may also suggest one best alternative. For enterprises, the unique characteristics of crowdsourcing technologies and processes can lead to significant time and cost savings as well as a variety of other advantages. Crowdsourcing is also used by businesses as a participatory management technique, giving clients, partners, and staff members a chance to contribute (for example, through collaborative design or the presentation of alternate solutions to issues). The phrase “crowdsourcing” is used to refer to a variety of tools, strategies, and ideas that deal with the process of delegating tasks, including the search for ideas, to a large and sometimes unknowable crowd that is typically located outside of the business (Chiu et al., 2014). An open call is one form of crowdsourcing, which is defined as the process of outsourcing a task to a ‘crowd,’ rather than to a designated agent (an organisation, informal or formal team, or individual). When firms open up their innovation processes, few people will contribute the worthwhile thoughts and ideas that they are looking for as inputs (Boons & Stam, 2019). One can anticipate that a person's ability to give worthwhile thoughts and recommendations to open innovation projects will also likely depend on their unique qualities, such as their knowledge background. Organizations do not regard ideas as valuable contributions if they do not comprehend how they will apply to and be useful to them. In the final phases of the idea generation process, when people formulate a solution strategy and attempt to generate innovative ideas “by constructing a creative solution,” it has been argued that unrelated views are vital. Crowd innovation competitions focus on the diversity of participants' abilities, experiences, and viewpoints, which enable them to more effectively address challenges (Özaygen & Balagué, 2018).

The Componential Theory of Creativity

When someone is intrinsically motivated, has strong domain expertise, and has high creative thinking skills, their creativity should be at its best. This should happen when they are working in an environment that is designed to foster creativity. The Componential Theory of Creativity assumes that all people with normal abilities may create at least moderately creative work in some context, on occasion, and that the social environment (the workplace setting) can affect both the intensity and frequency of creative activity. Expertise, the ability to think creatively, and intrinsic task drive are the three primary elements of individual (or small team) creativity that the theory highlights as being essential for creativity in any particular sector. Expertise can be viewed “as the set of cognitive pathways that may be followed for solving a given problem or doing a given task—the problem solver’s network of possible wanderings.” Creative Thinking gives a creative performance that has that “something extra.” If the necessary skill is there, performance will be “technically good” or “sufficient” or “acceptable,” presuming that a person has some reason to carry out a task. Task motivation is a key factor in determining what a person does. Extrinsic motivation is the desire to achieve a goal that is unrelated to the work itself, such as receiving a promised reward, meeting a deadline, or succeeding in a contest. Intrinsic motivation is the desire to be deeply interested in and involved in the work, as well as driven by curiosity, enjoyment, or a personal sense of challenge (Amabile, 1997).

Individual idea generation

At its core, creativity is just the generation of original, useful ideas in any area of human endeavour, including science, the arts, education, business, and daily life. The concepts must be original—different from what has already been done—but they cannot just be outlandish; they must be pertinent to the issue or opportunity being offered. Intrinsic motivation is a function of an individual’s personality. The satisfaction and sense of challenge in their profession are stronger motivators for some people than for others (Amabile, 1997). The depth and breadth of a person’s knowledge base can affect how they come up with fresh ideas. Knowledge breadth and depth could both have favourable and unfavourable consequences on the production of such new ideas (Resch & Kock, 2021). Improving idea creation in the fuzzy front end (Before beginning the official product development process, here is where possibilities are found, and concepts are created.) of the development cycle is one method managers attempt to increase new product development success (Zahay et al., 2018). Notably, openness in the organizational environment is the source of creativity. However, if the organisational environment does not support an openness type of creativity, open people might occasionally also come up with terrible ideas (Boons & Stam, 2019).

Idea connecting enhances creativity in ways that go beyond the effects of Entrepreneurs’ ability to generate innovative and helpful ideas is crucial to their ability to succeed in business (Amabile, 2000). Entrepreneurs can find new chances for business growth, develop innovations like new products or services, and tackle daily administrative and strategic challenges with creativity. In addition, entrepreneurs might monitor how well they sleep to consistently come up with new ideas. Entrepreneurs should visit health experts if they have significant sleep issues after discovering sleep problems, such as through devices that monitor sleep, or they could improve their sleep efficiency by using validated therapies. They could, for instance, turn on calming music or refrain from engaging in stimulating activities right before night. In addition, yoga and mindfulness help healthy adults and elderly people sleep better. Additionally, to retain a high degree of creativity and maintain a competitive advantage, business advisors could advise owner-managers to think about including individuals of varied ages on their executive boards (Weinberger et al., 2018).

Creativity is a stable personality attribute that one is born with and does not significantly alter throughout a person’s lifetime. Creativity determines the idea-generation capacity of the individual. Moreover, innovations produced as a result of idea generation impact entire cultures or economies. But not all inventive ideas result in new products. Creativity as idea generation is examined as the initial phase in innovation processes that ultimately result in inventive outputs like new or enhanced products, services, or processes in innovation management and across multiple models of innovation. Individual idea production is frequently the first step in the innovation process, with idea execution at the team or organisational level coming later (Weinberger et al., 2018).

The process of coming up with a fresh and practical idea is what we refer to as the idea generation phase. Creators produce a variety of ideas through an associative variation process before choosing one. The creator ends this step by choosing one unique idea that they believe to be more valuable, useful, or promising than the others. This is different from brainstorming, which aims to produce a large number of original ideas that might or might not be valuable. According to the adage “necessity is the mother of invention,” resource limitations may encourage idea generation while vast resources are required to develop and put into practice ideas (Perry-Smith & Mannucci, 2017).

Creating a creative solution essentially involves rearranging and integrating the ideas in the solvers’ pre-existing schemas. Individuals who require (just) relevant viewpoints recombine concepts from inside or across domain-related schemas to come up with more incremental thoughts and insights. The more original discoveries, however, come from the recombinations

and integrations of schemas from the issue domain and schemas from unrelated domains. For any business, having a fantastic product as opposed to an average one can be the difference between success and failure, but this is especially true for fledgling businesses whose existence depends on bringing cutting-edge products to market. Therefore, having innovative individuals on the teams responsible for developing a company's products is crucial. Having access to fresh, diverse information from potential users and other outside sources is also necessary for idea generation. To generate ideas effectively, it's important to not only employ the most imaginative individuals but also to connect them with others who can offer insightful conversation. There is a strong correlation between the personality trait of openness to experience and innovative conduct and results when it comes to selecting innovators. Open people are more creative because they value other viewpoints, are better at recombining ideas, and come up with unorthodox solutions. Amabile (1997) highlighted a person's social environment can have a significant impact on their level of intrinsic motivation at any given time, which can then have a significant impact on their creativity. Furthermore, long or frequent awake periods that interrupt sleep are likely to disturb incubation processes, which could impede the creation of creative ideas. As a result, we anticipate that getting enough sleep will positively impact individual inventiveness the following day (Weinberger et al., 2018).

The shift in attitudes was mostly related to how people regarded the ideation stage of the innovation process: they thought there was no time to generate new ideas, thought they had little capacity to do so, and thought it was not their responsibility to do so (Annosi et al., 2022). Just using IT can influence how ideas are generated. Additionally, case-based reasoning methods can assist generate fresh and helpful ideas while somewhat making up for a lack of originality. Additionally, some aspects of technology design can inspire users and foster their creativity. The ability to condition people to think more or less creatively depending on the messages and stimuli they encounter is among other significant findings. The degree of creativity may also be impacted by exposure to other people's ideas (Nevo et al., 2020). Before the product development stage, customer involvement in information provision (CIP) is primarily useful for incorporating specific client needs into idea generation and the conceptual development of components and parts. More specifically, customer involvement in coproduction (CIC) supports concept creation, value comprehension, product development, and testing during the product development stage in addition to idea generating and screening during the early idea stage (Y. C. Chen et al., 2021). Front-line staff members develop ideas by drawing on their experience with customers, products, and practices. They create their ideas as well as adapt and amplify those

initially presented by management using these three sorts of information (Karlsson & Skålén, 2015). Associative subconscious processes that are at the core of this phase can be triggered by social interaction, which aids in the development of ideas. Interaction with weak ties is more advantageous during idea generation because weak ties are more likely to share fresh viewpoints and concepts, and interaction with strong ties is more advantageous during idea elaboration because strong ties are more likely to offer helpful criticism and encouragement (Mannucci & Perry-Smith, 2022). According to creativity studies, the likelihood of having a creative thought grows when one is exposed to more potentially relevant ideas (Amabile et al., 2014).

When evaluating whether to pursue an idea further after it has been well developed, creators should be more critical of their work. This may not be the case when a concept is still in its early stages. Additionally, innovators should exercise caution when attributing all of an idea's success to the idea itself, even when it does succeed. Instead of concentrating on market success, companies can gain from looking for signs of underlying quality across ideas. However, managers might benefit from doing more idea generating at work because it might assist them to avoid making mistakes while evaluating innovative ideas (Berg, 2016). Changes in emotion, attitude, or amount of motivation can also have an impact on how ideas are generated (Wang & Nickerson, 2019).

Strong internal motivation, cognitive flexibility, and a lack of external stressors are the main factors that improve idea generation. The later stages of innovation through employee idea generation are positively connected with the openness behaviours of leaders. When their bosses were thought to be encouraging them to investigate and experiment with new methods of doing things, employees performed better in terms of idea generation and later on in terms of how much they advocated and executed ideas (Mascareño et al., 2021). The amount of productive time employees spend with their spouses after work may be negatively impacted by creative behaviours that result in the development of new ideas at work (such as problem identification, information searching, and idea generation), since they consume so many cognitive resources and leave few for the home domain (Harrison & Wagner, 2016). The skills needed for better idea generation are different from those for better idea implementation, hence the most inventive employees aren't always the most creative. Interestingly, however, the quantity of real-time ideas provided and how well concepts were argued were positively correlated with participants' contextual knowledge. This makes sense because having a better understanding of an organization's requirements and operating procedures can aid a person in crafting a stronger defence and provide them with a focused area to concentrate on when coming up with new ideas (Birdi et

al., 2016). Higher levels of openness boost performance in creating innovative ideas for the business. Being more open to outside sources can increase individual attentiveness to market or technology opportunities and give access to a greater diversity of knowledge (Salter et al., 2015).

The ability to actively, often, and consistently produce both radical and incremental ideas is known as ambidextrous idea generation. In the context of this study, ambidextrous idea creation is to be interpreted as a capability that enables organisations to actively develop high levels of both types of innovations concurrently rather than as a capability that balances incremental and radical ideas (e.g., at a low or medium level). In addition to being an engineering task, idea generation is also a management task that necessitates defining and directing ideation. Defining the direction and appropriate measures is a crucial aspect of this endeavour. In the idea-generation stage, managers should make it a point to actively produce both incremental and radical concepts. Managers can use a variety of customer analysis tools, like surveys, the empathic-design approach, or the probe-and-learn process, to foster customer orientation to achieve this kind of ambidexterity, but they should also keep an open mind to other sources of ideas, like technology and competitors (Gurtner & Reinhardt, 2016).

Online idea generation can result in the social disembodiment of ideas, which means that ideas can separate from their creators and discussions about ideas might change their content from what was initially intended. This may cause misconceptions or the misapplication of concepts. The comments provided by the idea authors in online concept discussions can aid in preventing this occurrence by better articulating the ideas themselves (Zhu et al., 2019). Activities that involve the creation of fresh ideas for improvements, the discovery of novel working procedures, techniques, or tools, or the formulation of novel solutions to issues are examples of idea generating activities (Bos-Nehles et al., 2017; Janssen, 2000).

The potential to enhance idea generation and quality, particularly in internal idea campaigns for businesses (Gamber et al., 2022). AI can aid human innovators in producing more new ideas faster and with higher quality (Garbuio & Lin, 2021). Domain expertise and personality attributes may limit the impact of cognitive stimulation on the effectiveness of idea creation afterwards (B. Chen & Althuizen, 2022).

Raised collective aspirations and a concentrated emphasis on pertinent duties are more likely to arise among employees in a unit with a more ambitious idea generation target, which aids them in their ability to increase the quantity of ideas submitted. Stretch goals boost both engagement (submitting numerous ideas) and participation (submitting one suggestion), while participation is more positively impacted than engagement

(Ahmadi et al., 2022). The three process characteristics that affect the generation process are the number of ideas generated, the variance in the quality of the ideas that are generated, and the average quality of the ideas that are generated. The quality of the best ideas, rather than the quantity of chances found, determines the success of idea generation in innovation; the extremes, not the averages or the typical, are crucial (Wooten & Ulrich, 2017).

Team idea generation

For a variety of reasons, teams offer a reasonable setting for businesses to complete creative work. The divergent searching (concept generating) and convergent narrowing (idea selection) step necessary for the creative process are made possible. Communication and connection with a wide range of people improve creativity by enabling access to a bigger and more diverse knowledge base. Additionally, teams' access to a variety of information enables the creative recombination of information that is important for innovation. The quality of creative ideas developed and chosen for execution will probably be impacted by concentrating on one aspect of the creative process over the other, particularly in terms of originality. The inherent variety in idea development enhances a team's capacity to develop original solutions to issues. Contrarily, teams cannot expect to choose novel solutions for implementation without spending an appropriate amount of time in idea generation because they won't have any novel solutions from which to choose. Simply spending more time during the idea generation process is insufficient to select a higher-quality idea. Team members focus on idea generation or idea selection because of the regulatory focus linked with their affect, and they act on this focus in their teams depending on how activated their affective states are. Even when grouped with those who were experiencing activated promotion-focused affect, members who were feeling activated prevention-focused affect championed idea development and actively attempted to move their teams toward concept selection (Emich & Vincent, 2020).

Norm will probably limit creativity and idea expression when tasks call for groups to discuss contentious diversity issues (Goncalo et al., 2015). To prevent making mistakes when analysing innovative ideas, managers may benefit from increasing their idea generation activities at work.

When a group's relationships in OPEN groups are primarily focused on bridging, interactions become oriented on idea creation since bridging linkages do not alone produce the variety of external inputs that openness affords. For instance, when groups are open, participants are more likely to formulate their inquiries or thoughts so that a variety of listeners may comprehend them and respond, boosting the possibility of fortuitous and different contributions (van Osch & Bulgurcu, 2020). Only when self-efficacy was strong was cognitive team diversity significantly (and positively) connected to

individual creativity, and only at high levels of team transformational leadership was cognitive team diversity positively associated to team member creativity (Anderson et al., 2014).

The participants' idea generation could be enhanced by giving them the right incentives (Toubia, 2006). Idea generation in groups may reduce the impact of individual idea generation (Bhagwatwar et al., 2018). To produce truly original ideas, one must think in a varied, adaptable, and non-judgmental manner during the idea generation stage. As a result, without being unduly concerned with idea evaluation, group members are inspired to freely trade ideas and create new associations for the group task. The team's attention can be directed onto more promising, viable directions by expressing some concern about low-quality ideas, even while a certain amount of prohibitive voice is beneficial in achieving these aims (Liang et al., 2019). Diverse groups often do worse on creative activities than homogenous ones, despite the expectation that they will supply more diversified input (Harvey, 2014).

Research methodology

The research approach used to accomplish the various goals of this work is described in more detail below.

Objectives

This paper seeks to:

- A. Study the trends of idea generation literature in various important journals.
- B. Recognize the distribution of idea generation literature by year and journal.
- C. To thoroughly examine the literature's positive benefits of idea generation, which enables one to conclude that idea generation can encourage innovation to deal with a dynamic environment.

Research design

The current research employs a method for looking for papers on idea generation in reputed journals. A few procedures were used for the literature search. The data came from studies that were already published.

Search strategy

The term "Idea generation" was used to conduct a computerised literature search. Literature was looked for in the Scopus database. 3396 documents about idea generation were found in the initial search. Scopus discovered 1585 articles on idea generation in social science, business management, and accounting.

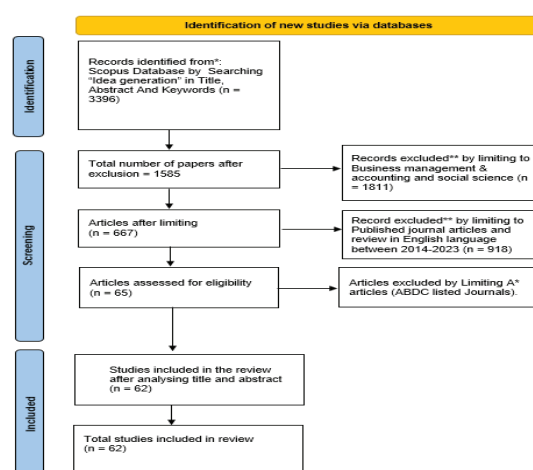
Selection criteria

Using the title and keywords fields, the articles that were relevant to this review were extracted. A search string was made to select journal articles and reviews in the English language that were published between 2014 and 2023 until January in the fields of business management

& accounting and social science. The last search, which was limited to published publications, produced 667 outcomes. 65 research articles from journals on the A* (ABDC list) were also taken into consideration for additional analysis.

Selection of papers for inclusion

Looking at the article's title, keywords and abstract allowed us to select the Business Management & Accounting and Social Science articles that concentrated on idea generation. Figure 1 displays the 62 articles included in the analysis to help readers understand the pattern and distribution of papers from the top journals year after year. The PRISMA Statement was created to aid authors in more effectively publishing systematic reviews and meta-analyses (Moher et al., 2009; Pahlevan-Sharif et al., 2019).

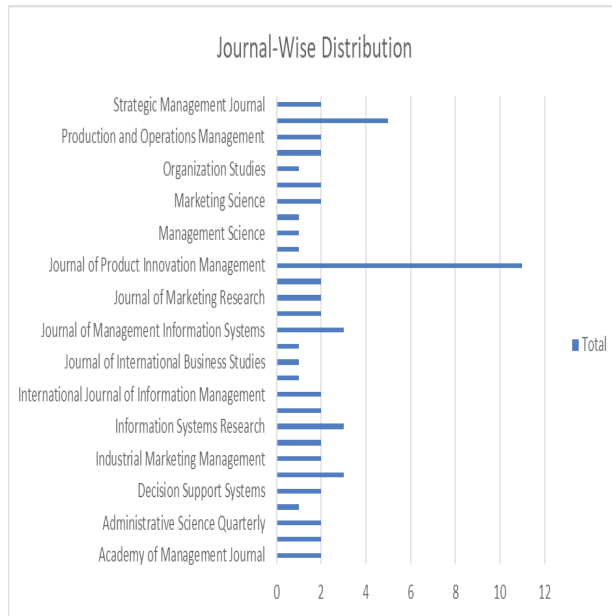


Results

The 62 papers that had been sorted were examined for further investigation, and their journal- and year-specific distributions are shown in a graphical representation with more explanation.

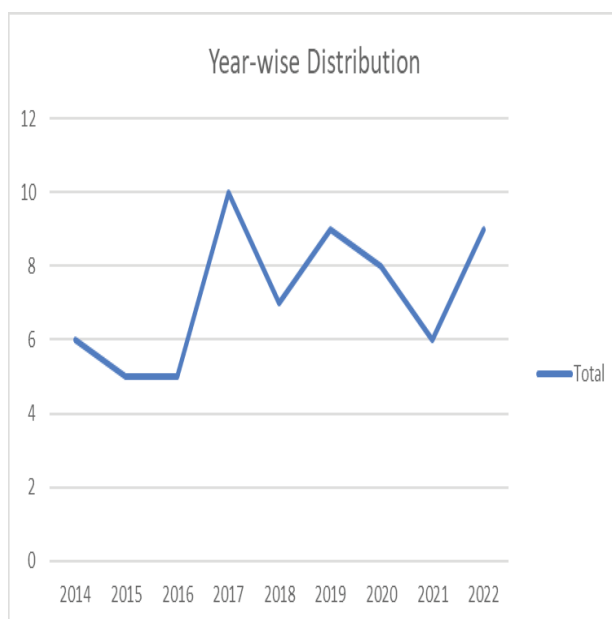
Journal wise distribution of the papers

The chosen literature was then examined using Microsoft Excel to help understand how the papers were distributed among the chosen publications. 29 journals are among the literature that was chosen. The distribution of papers across different journals is shown in Figure 2. The number of papers in each highly regarded journal is displayed in a bar graph. The picture shows that the Journal of Production Innovation Management published the most publications during the time period under consideration, 11 in total. Eight journals, in comparison, have each published one paper. The journal with the second-highest number of publications is research policy.



Year wise distribution of the literature

The chosen literature was then examined using Microsoft Excel to help understand the distribution of papers by year wise. The analysis shows the trend and the distribution of publications by year in the management and social science journals in Figure 3. According to the data, the year with the most papers published was 2017, with a total of 10. The years with the fewest papers published were 2015 and 2016, with only five publications each. When describing the pattern of publications published during the time, it was noted that there were 10 papers published in 2017, up from 6 papers in 2014. Most papers were published in 2017, although the same rate of growth was not able to continue for several years. But still, we can say there is consistency in the literature on idea generation.



Discussion

Through a review of the literature, this study analyses and examines how creative ideas are generated. It also gives a general overview of the elements that affect the development of creative ideas to provide readers with a clearer image of the state of the field today. The findings of this research could be utilized to direct businesses and people who have a role or interest in the development of creative ideas on how to acquire ideas successfully and efficiently. Academics that are interested in undertaking further study in this field can use the review to learn about research trends and gaps in the literature. The importance and necessity of idea generation in the setting of organisations are supported by several empirical studies. The research was gathered from 29 reputable journals. This analysis found considerable consistency in the publication of articles on idea generation, with 39 papers appearing between 2018 and 2022 as opposed to just 10 papers in 2017. This suggests that there has been enough consistent literature on idea generation in respected journals to answer our first question. However, it is apparent that as industry 4.0 innovation advances, the publication of idea generation in highly regarded A* (ABDC listed) journals is noticeably much less than it ought to be. The organisation may be investing more in idea promotion and idea sustainability than idea generation, which could be the cause (Ayoub et al., 2021, 2023; Mascareño et al., 2021). There are only one and two published publications across 25 journals. This study clearly shows that idea generation publication has relevance in producing innovative products and services for organizations. Although some qualitative investigations were undertaken, the majority of studies used a quantitative research design. Even though using a mixed-methods approach can improve the resilience and dependability of data, little mixed-methods research is currently being done.

To address our second research question or the journal-wise distribution of the literature, the year-wise and journal-wise distributions (Figures 2 and 3) show an uneven trend. Journal of Production Innovation Management and research policy are the journals that can be used for publishing papers regarding idea generation. The third question's answer is expanded using a list of reviews from papers published in reputable journals. This study addressed how idea generation initiatives could help the organisation in later phases. The value of idea generation was emphasized in the literature from a variety of aspects. (Ayoub et al., 2021, 2023; Kornish & Hutchison-Krupat, 2017). If ideas are not generated in sizable numbers then the organization faces difficulty in subsequent steps (idea promotion, idea realization and idea sustainability) (Mascareño et al., 2021; van Assen & Caniëls, 2022).

Additionally, coming up with ideas encourages creativity. The management team can establish a strategic plan for the research and development of innovative products by matching the desired goals with the suggested actions for each period. The examination of publications from the selected journals, as reported in the study's resilience section, demonstrates that idea generation can assist businesses in adapting to changing conditions and recovering from difficult situations through ongoing innovation.

Conclusion

The literature has a consistent trend toward publication in ABDC-recognized journals, as this review paper demonstrates. Like this, an increasing number of articles in reputable journals should have applications to guide future research. When the data are broken down by year, a mildly varying pattern is visible from 2018 through 2022. Additionally, numerous management publications and innovation journals publish studies on idea generation that highlight its importance, necessity, and favourable outcomes. The outcomes and the success of the idea generating exercises point to the need for HR to implement more effective idea generation educational initiatives to support employees and businesses in being innovative and regaining their composure during this stressful time of fast change.

Implications

More and more educative programs are required to plan and execute to generate the idea. The literature's discussion of idea generation focuses on how it affects employees and organisational innovation. To boost innovative performance, ensure employee innovative behaviour, and provide customers with innovative products and services, HR professionals and top management officials must elevate the idea generation program and activities within their firms. To make the interventions more useful for addressing the practical problems that organization members experience, academicians and practitioners should collaborate and use more applicable research methods in the area of innovation. Moreover, Brainstorming sessions should be conducted following the requirement and proper rewards and compensation should be given to employees. Because employees' domain knowledge and task intrinsic motivation are crucial for the creative idea and further process of innovation. HR managers may support employees by providing necessary educational programs, specific time off the job training, and social support to create curiosity, generate novel ideas, improve resilience, improve their well-being, upgrade their skills and ultimately augment their innovative performances to benefit the employees in accepting the environmental change and performing efficiently under the new normal.

Limitation and future direction

Over ten years were spent on this study (2014-2023). As a result, further research on the subject using more literary sources is feasible. Business management, accounting, and social science are the main topics of contemporary study. It may also be understood by focusing on a variety of topics that could help businesses and employees deal with challenging situations by developing new ideas and cutting-edge products and services to improve their performance in the face of rapidly evolving technology.

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The Effort of the Trade Union to Improve Labor Relations of Manufacturing Industries in Nepal

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Abstract

A trade union is for the unionized voice of workers for the betterment of the working environment and facilities for an employee in the organization. After the establishment of democracy in 1950 in Nepal, workers of different sectors formed trade unions for collective bargaining with the management for better facilities and benefits. The study was conducted by contacting some workers and review of existing literatures so far available. The study focused on trade union effort to improve labor relations, wages, fringe benefits, leave payment of overtime, job security, health and welfare, etc. in different periods. Some open questionnaire was asked with older employees to reveal their experiences. The study found the labor unions become the full-fledged political activity and damaging industrial activity which led the laborers to go abroad to work for the livelihood. .

Keywords

Labor relations, manufacturing industries

Introduction

It is well said that union is power, if there is a union in the organization the workers will be powerful. In Nepal also after the democratic change of 1950, the freedom of association allowed the opportunities for many voluntary organizations in the country and the workers, too, felt the need to be united under one umbrella to fight against the exploitation of the management and the government (Pokhrel, 2017). The trade union is a group of permanent or temporary workers who came together to defend and advance their rights at work and to elevate their social position. Trade unions are autonomous, membership-based associations of workers that advocate for and engage in collective bargaining on behalf of the working class.

Trade unions are autonomous, membership-based associations of workers that advocate for and engage in collective bargaining on behalf of the working class. They offer guidance to their members who are having issues at work, speak on their behalf when interacting with employers, and negotiate better pay and working conditions. Additionally, unions support members' educational and learning opportunities, advance equal opportunity at work, combat discrimination, and aid to guarantee a healthy and safe working environment. Unions also make sure that their members' legal rights are upheld. Numerous unions offer their members services including welfare benefits, private legal counsel, and financial support. A trade union refers to an organization or group of workers who are united in order to articulate and attain some interest including protection of the

trade's integrity, achievement of better remuneration package, good working condition and safety among others (Griswold, 2010).

Industrial relations can be defined as the relationships between employees and the employers within an organizational setting. The industrial relations are basically the interactions between the employers, employees and the government and the associations through which interactions are mediated (Shrestha, 2012).

Trade unions have the power to promote social and economic justice, as well as equality, parity, and fairness not only at work but also, and perhaps more significantly, in society at large. According to standard economic theory, union raise wages and management responds by increasing the capital intensity of work place and quality of its work force, which increase the productivity of the labor (Medoff, 1984)

The role of the union is to minimize the feeling of helplessness when it comes to job insecurity; employees feel more secure because of the power and negotiating position in aiding them to retain their jobs (Greenhalgh, 1984).

Trade unions are essentially designed to supply a countervailing force on behalf of employees in the conduct of employment relation (Sheth, 1993).

Statement of problem

Union is responsible for developing harmonious relationship in the organization among employee, employer and government. In Nepal it is seen that there is no good industrial relation in the organizations where

trade union is already existing. The focus of the study is to identify the role of trade union in developing good industrial relation in the organization.

Objectives of the study

The main objectives of the study is

- To identify influence of unionism on industrial relation.
- To investigate the efforts of trade union improving industrial relation.
- To investigate whether the trade union, represent the interest of its members or not.
- To investigate the efforts made by trade union to improve the performance of workers in the organization.

Research questions

- Does trade unionism have any impact on industrial relation?
- What efforts are made by trade union to improve industrial relation?
- Does a labor union only exist to represent the interests of its members?
- What effort have unions made to improve the performance of the workers in an organization?

Limitation of the study

The study has a few drawbacks. The entire analysis is based on the trade union's efforts to enhance the working environment and employee relations in the company. Employees of the manufacturing industries in Nepal's Kathmandu Valley participated in the survey. Only people who have been active in a union for a few years are chosen to participate in the survey. The investigation was carried out for a brief length of time.

Materials and methods

The study is based on descriptive analysis and focuses on explaining the function of unions in raising wages, securing jobs, providing time off, and paying overtime, all of which are crucial for enhancing labor relations in the workplace. An open ended unstructured questioner survey was utilized to gather information about the workforce in Nepal's manufacturing industries. Only workers who had been union members for at least the previous three years were chosen.

Before beginning the interview, the individual respondent provided written consent. To guarantee the validity and reliability of research instruments, the instruments have already undergone pre-testing.

Review of literature

Joe A. Stone in 2014 conducted the research on the topic "unionization and cost of production compensation: compensation, productivity and factors used effect"

Michael Schuster in 1983 conducted the research on the topic "impact of union management cooperation on productivity and employment" using descriptive method and scientific research design, concluded that

There is positive effect of trade union activities on industrial relation. Trade union effort is necessary for better relation between employee and employer, superior and subordinates.

Discussion and analysis.

An essential part of the workplace is played by unions. The ability to resolve workplace concerns by speaking out for employees and serving as a bargaining representative during negotiations is one of the main duties. Union tries to raise employees' "wages" The rights and wellbeing of union members are the primary concerns of unions.

Union tries to raise employees' "wages"

The rights and wellbeing of union members are the primary concerns of unions. Their primary goal is to establish the right to work through consistent advocacy with governmental and non-governmental organizations. Additionally, labor unions play a key role in the political transformation of the nation by supporting labor-friendly parties.

Worker union initiatives workplace safety

Job security has always been a major advantage of belonging to a union because unions frequently collaborate with employers to keep jobs, especially during difficult times when a layoff may be unavoidable. In the event of a workplace issue that could result in discipline, unions shield employees from arbitrary employer measures and offer them legal help.

The employer should not discriminate the employees on the basis of religion, age, sex, language or any political activities (Aimala M, 2005).

Efforts by the union to raise employee leave

In the majority of the private industries, it is quite challenging for employees to obtain leave, even for just one or two days. The majority of the time, the industry's top brass believes that allowing its employees to take time off could lower the productivity of their output, which would negatively impact their profit margin. The worker's union is crucial in protecting them from such situations.

Waves of labor relation in the country

Table 1: The wave of labor relation

Wave	Period	Character
First wave	1947~1960	Conflict between labor and capital. Labor movement was directed for labor right as well as democratic system of the country.

Second wave	1961~1990	Political Parties were banned and labor movement were restricted. However, a couple of labor related acts were enacted. These are: However, in such a harsh industrial relations climate, a couple of labor-related acts were enacted such as the National Directives Act (1961), the Patent, Design and Trade Mark Act (1965), Bonus Act (1974), Foreign Employment Act (1985), and other laws and regulations related to labor and industrial relations (Nepal Law Commission, 2018).
Third wave	1991–2006	The restoration of democracy in the early 1990s led the way toward a formulation of industrial relations rules in the country (Parajuli et al., 2015). The enactment of the Labor Act (1992), the Children Act (1992), the Trade Union Act (1992), and the Industrial Enterprises Act (1992) were the major historical legal frameworks enacted in the history of IR systems in Nepal (Nepal Law Commission, 2018). The politicized trade unions flourished during this period. Globalization impact led the import of foreign products and national industries could not sustain. So foreign employment practices increased.
Fourth wave	2007–present	Rise of intervention to the union system by the political cadre. Domination of labor unions by political cadre and disguised laborers could not increase the industrial activities. Industries disappeared one after another and laborers become compelled to migrate them to abroad for work. This became most damaging period for laborers due to the compulsion to go abroad for works.

Conclusion

Most of workers, according to the poll, believed that labor unions had promoted the expansion of facilities and the establishment of workers' rights. Both the establishment of the system of fringe benefits and the increase in worker pay have been heavily influenced by unions. A key motivator for workers, and one that the labor unions support, is the availability of leave. From an economic standpoint, compensating diligent workers for overtime is advantageous. Worker overtime is a potential source of additional revenue. The overtime payout benefits temporary workers more than it does permanent employees. The labor organization also pushed for the provision of hygienic facilities, infrastructure, and safe drinking water at work to improve working conditions. The management oversees the first aid kit box, life insurance, and assistance with employee care.

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A Feasibility Study of Moving Bed Biofilm Reactor at Guheshwori Wastewater Treatment Plant

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Abstract

Improvement of waste water systems are urgently needed in Kathmandu Valley, Nepal because it is currently suffering from the lack of proper functioning sewage systems and discharge of untreated waste water in the holy Bagmati River and its tributaries. The major study shows that biological processes based on biofilms have been shown to provide satisfactory solutions for the removal of organic components and nitrogen from wastewater, further its investigate the feasibility of using a Moving Bed Biofilm Reactor (MBBR) technology at the Guheshwori Waste Water Treatment Plant (GWWTP) Kathmandu. A lab-scale single-staged aerobic batch MBBR was designed and fabricated. According to the findings, both of the treatments, with and without media had similar BOD removal of 89.68% and 88.97% respectively at RT of 72h. The treatment with media had a comparatively greater COD % removal of 96.84 at 72h than the treatment without media. Treatment without media had complete ammonia-nitrogen removal at RT of 20h and afterward. While for the treatment with media, the highest percentage removal was observed as 99.20% at 24h. Significant phosphate removal of 92.98% was observed for treatment with media at 24h whereas the treatment without media couldn't achieve significant phosphate removal. In comparison to Activated Sludge Process (ASP), MBBR can efficiently remove BOD, COD, ammonia-nitrogen, and phosphate from municipal wastewater with a smaller tank capacity. The removal efficiencies obtained during this investigation suggest that MBBR is a feasible option for wastewater treatment at GWWTP.

Rationale

The research was carried out to determine if MBBR technology can effectively remove pollutants in wastewater at the GWWTP. The activated sludge system at Guheshwori is the only operational wastewater treatment facility out of five as of January 2003 (Green et al., 2003). A study conducted by Shrestha et al. in 2005 found that the outlet values of different parameters of wastewater were high and failed to meet the discharge standards set by the Ministry of Forest and Environment. (Shrestha et al., 2005). MBBR has been shown to remove chemical oxygen demand, ammonia-nitrogen concentration, and organic loading more efficiently than other biological treatments (Cao & Zhao, 2012) the authors offer the

comparison experiment between MBBR and activated sludge process (ASP). Furthermore, biofilm-based biological methods have been demonstrated to effectively remove organic pollutants and nitrogen from wastewater while avoiding some of the disadvantages of activated sludge processes such as the requirement for settling tanks, large reactors, and biomass recycling. MBBR is a cutting-edge and innovative wastewater treatment system that has several advantages over competing systems, including no sludge bulking, foaming, poor sludge settling, or carrier clogging. Due to greater surface area provided by the media for microbial growth, MBBR is a cost-effective solution for wastewater treatment in developing countries such as Nepal.

Objectives

The primary objective of this research is to study the feasibility of MBBR at GWWTP and specifically to identify the characteristics of wastewater at GWWTP and analyze how the physicochemical parameters of wastewater change after treatment in the MBBR. The scope of the study is to show that MBBR is feasible option for the treatment of municipal wastewater as it has several benefits over traditional technologies and can be a good economical approach for a developing nation like Nepal. The limitation of the study is that long-term operational performance under continuous operating conditions of lab scale MBBR could not be achieved.

Methodology

Study Area

Location of study is Guheshwori Wastewater Treatment Plant, northeastern part of Kathmandu Metropolitan City, ward No.8 at the Bank of Bagmati river. Coordinates on the earth is 27°42'45.3"N 85°21'25.6"E. elevation: 1403 m. and footprint: 5.0 ha.

Comparison between treatment with and without media

The treatment of municipal wastewater with and without media was carried out to have a comparative analysis between MBBR and ASP. The treatment with media would resemble an MBBR while treatment without media would act like an ASP. Hence, this comparison between treatment with and without media would provide an aid to check the feasibility of MBBR at GWWTP as the existing biological treatment unit has an ASP. Both treatments were conducted in similar operating conditions.

Depicts the comparison between the treatment of MWW with and without media for the removal of ammonia-nitrogen, COD, BOD, and phosphate. The MWW treatment without media had complete ammonia-nitrogen removal at RT of 20h and afterward, while for the treatment with media, the highest % removal was observed as 99.20% at 24h. The treatment with media had slightly greater removal till RT of 1h which was surpassed by the treatment without media right after RT of 1h. COD removal increased with an increase in RT for both treatments. However, MWW treatment with media had a comparatively greater % removal of 96.84 at 72h than treatment without media which had a removal of 92.22% at 72h. Similarly, BOD removal also increased with an increase in RT for both treatment with and without media and had similar removal efficiencies of 89.68 and 88.97% respectively. The treatment with media had significant phosphate removal of 92.98% at 24h. Until 24h, the phosphate removal increased with the increase in RT which then drastically decreased at RT of 48 and 72h. On the other hand, the treatment without media couldn't achieve significant phosphate removal as there were many fluctuations in the phosphate concentrations during the treatment at different RTs.

Conclusion

Both of the treatments, with and without media had similar BOD removals of 89.68% and 88.97% respectively at RT of 72h.

The treatment with media had faster and higher COD removal than the treatment without media, with 96.84% removal at 72h RT.

The treatment without media had faster and complete ammonia-nitrogen removal, but the treatment with media also had high ammonia-nitrogen removal efficiency of 99.20% at 24h RT.

For phosphate removal, the treatment with media had far better performance than that without media.

The removal efficiencies of BOD, COD, ammonia-nitrogen, and phosphate discovered during this study indicate that MBBR can be used for wastewater treatment at GWWTP

Recommendations

Wastewater treatment under continuous operating conditions of MBBR could be carried which would be more reliable for the real-life treatment approach.

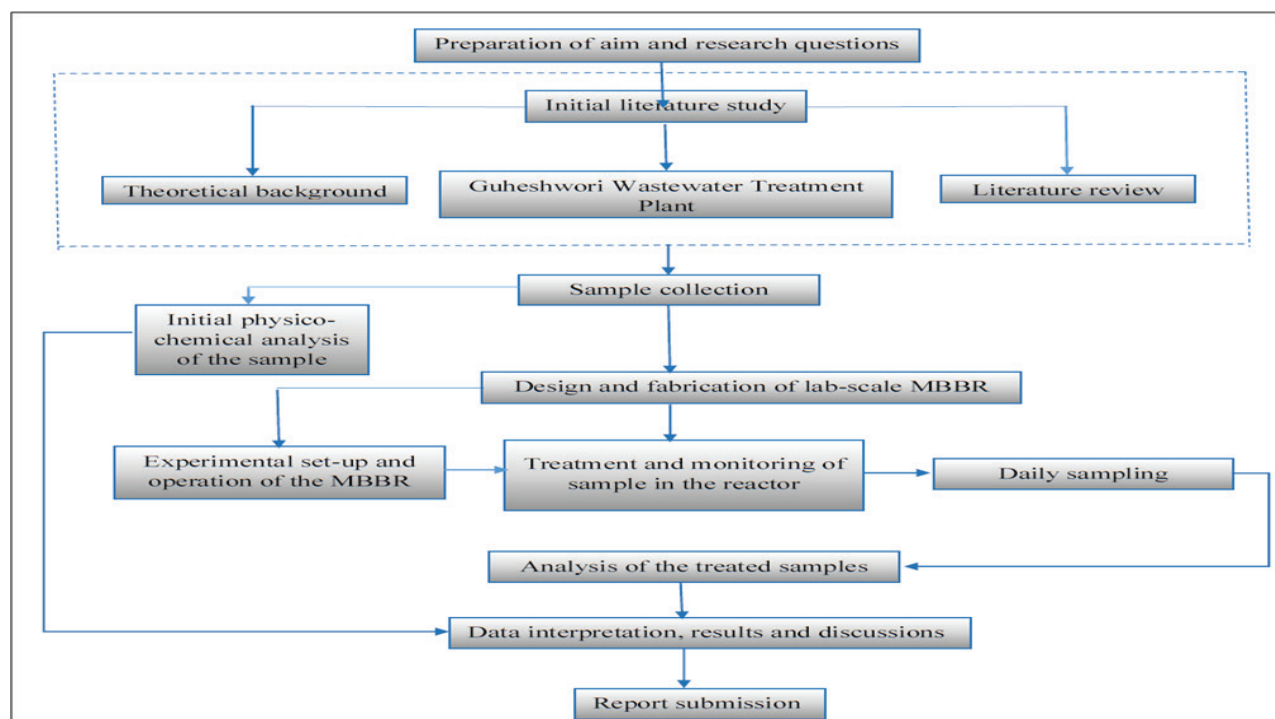
Various combined treatment methods for the effective removal of recalcitrant and other micro pollutants other than BOD, COD, ammonia-nitrogen, and phosphate could be studied.

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Annex

Table 1: Overall Methodology



Treatment Efficiency of GWWTP:

Table 2: Treatment performance of GWWTP (Thapa et al., 2019)

Parameters	Removal efficiency during pre-monsoon	Removal efficiency during monsoon
Ammonia-Nitrogen (NH ₄ -N)	12.67%	29.11%
Phosphate (PO ₄ ³⁻)	47.61%	55.60%
Biological Oxygen Demand (BOD ₅)	76.13%	76.18%
Chemical Oxygen Demand (COD)	76.12%	78.51%

Results and Discussion:

Physicochemical characteristics of Wastewater at GWWTP:

Table 3: Physic-chemical characteristics of influent wastewater at GWWTP

Parameters	Unit	Results	Thapa et al., 2019	Shrestha et al., 2005
Temperature	°C	26.0	25.33	24.15
pH	-	6.88	7.32	6.9
Electrical Conductivity (EC)	μS/cm	720	1010.22	-
Total Solids (TS)	mg/L	696	-	-
Total Dissolved Solids (TDS)	mg/L	520	-	-
Total Suspended Solids (TSS)	mg/L	180	268.73	-
Turbidity	NTU	82.33	-	-
Ammonia-Nitrogen (NH ₄ -N)	mg/L	29.925	75.57	27.8
Phosphate (PO ₄ ³⁻)	mg/L	4.78	18.03	2.95
Biological Oxygen Demand (BOD ₅)	mg/L	280	281.33	182.79
Chemical Oxygen Demand (COD)	mg/L	535	996.37	351.53
BOD/COD	-	0.5	0.28	0.52

Removal during the initiation phase:

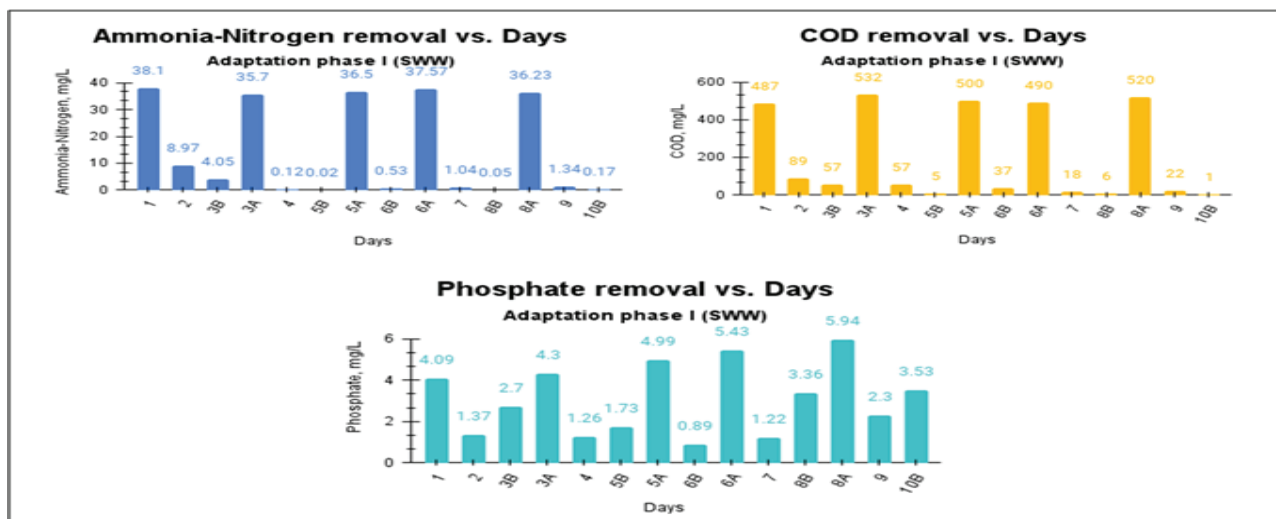


Figure 1: Removal during adaptation phase I: a) Ammonia-nitrogen removal b) COD removal c) Phosphate removal

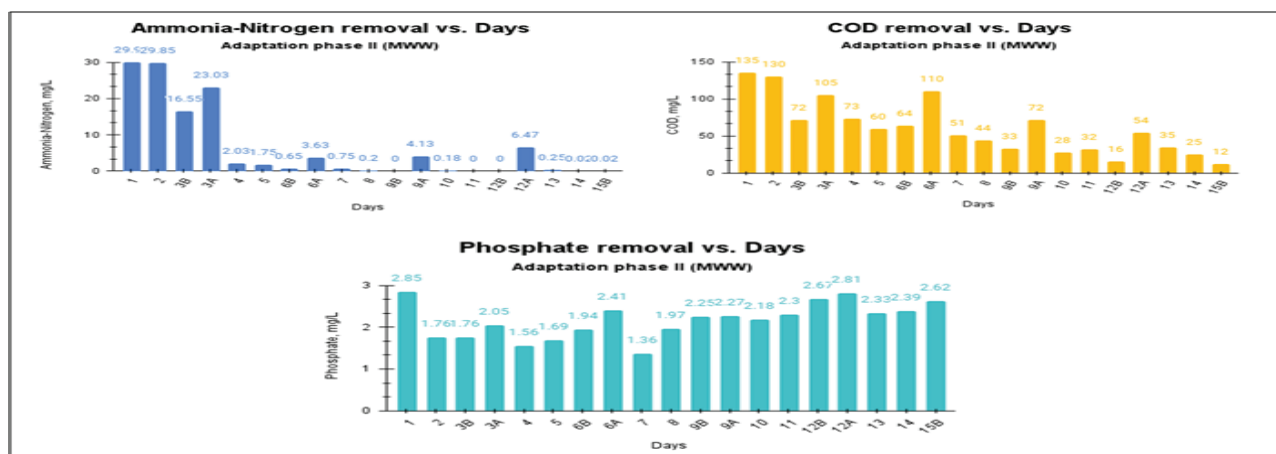


Figure 2: Removal during adaptation phase II: a) Ammonia-nitrogen removal b) COD removal c) Phosphate removal

Table 4: Removal efficiencies at different feedings for adaptation phase I and phase II

Number of feeds	Retention Time, RT (h)	NH ₄ -N removal (%)		COD removal (%)		Phosphate removal (%)	
		Phase I	Phase II	Phase I	Phase II	Phase I	Phase II
1st Feed	24	76.45	0.16	81.72	3.7	66.5	38.25
	48	89.37	44.65	88.3	46.67	33.99	38.25
2nd Feed	24	99.66	91.16	89.29	30.48	70.69	23.9
	48	99.94	92.4	99.06	42.86	59.77	17.56
	72	-	97.18	-	39.05	-	5.37
3rd Feed	24	98.55	79.33	92.6	53.64	82.16	43.57
	48	-	94.5	-	60	-	18.26
	72	-	100	-	70	-	6.64
4th Feed	24	97.23	95.64	96.33	61.11	77.53	3.96
	48	99.87	100	98.78	55.56	38.12	-1.32
	72	-	100	-	77.78	-	-17.62
5th Feed	24	96.3	96.14	95.77	35.16	61.28	17.08
	48	99.53	99.69	99.81	53.7	40.57	14.95
	72	-	99.69	-	77.78	-	6.76

An Evaluation of the Public Transportation System of Kathmandu Metropolitan City

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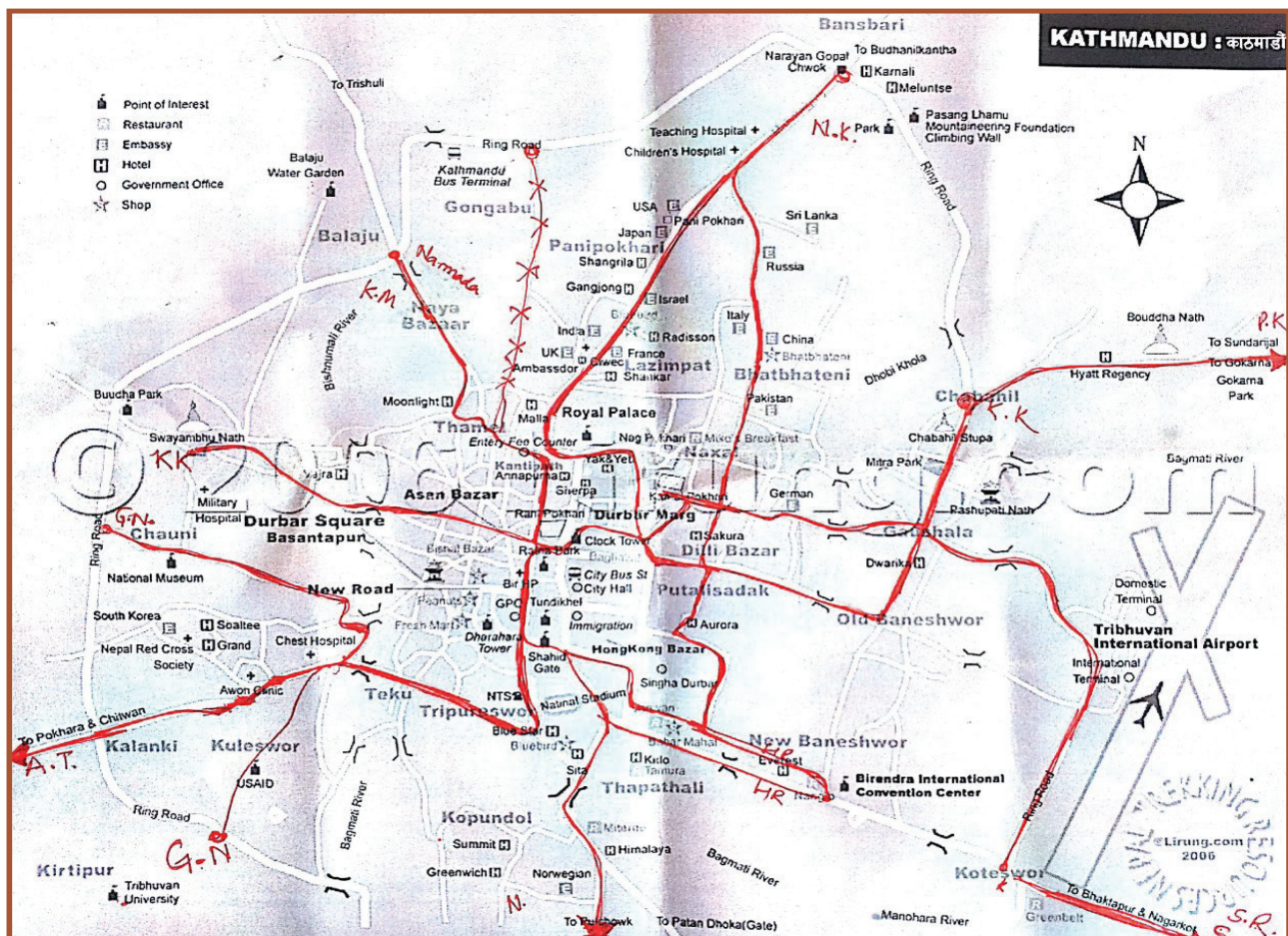
Abstract

The study intends to study the progress made so far in public transportation in the Kathmandu metropolitan city. The data is gathered through personal meetings and telephone interviews with the chiefs of ward officers. All 32 wards are taken as population and one-third are randomly selected on the issues of what a smart city needs for its population. The method adopted is the use of an observation sheet about transportation and verification of this with the citizens of concerned wards who use public transportation. The most popular public transportation (public bus and micro) is focused on the issues. From the study it is revealed that municipalities have to be very aware of the schedule, conditions, the behavior of the transportation members, provisions to women, old and disadvantaged, and vehicle condition, and etc.

Keywords

Smart city, public transportation, transportation facilities, and services.

Introduction



Background

The metro area population of Kathmandu in 2022 was **1,521,000**, a **3.33% increase** from 2021. In one meeting President Bidya Devi Bhandari has said that to manage the roads of Kathmandu Valley, public transport should be made orderly and dignified (RSS, 2023 Feb 06, 20:14, Kathmandu). She said “One of the problems that we all experience daily is traffic jams. We are facing the problem of traffic jams daily due to more vehicles than the capacity of the road, the inadequacy of public transport, and lack of efficient traffic management”, President Bhandari said, “It is not enough to widen the road to solve this problem. , giving preference to large vehicles over small vehicles, public transport should be organized and decent.” “The use of electric vehicles should be emphasized to prevent the harmful effects of air pollution on human health and to develop a self-sufficient economy while minimizing business losses”, President Bhandari said, “For this, public institutions including government offices, local levels, schools, and universities, hospitals should use electric vehicles. Use should be prioritized.”

One national daily Himalayan News Service

Published: 04:00 pm Aug 04, 2019 wrote With the growing population density of the Valley, commuting in public vehicles to reach one’s destination has become an unpleasant experience filled with discomfort for commuters. While problems like over-crowded public vehicles, lack of proper operating schedule and bus stops, uncomfortable rides and untimely services among others continue to plague the Capital’s public transportation system, ensuring safe, timely and quality public transportation facilities for Valley’s citizens has become the need of the hour.

Public transportation

There are many buses, minibuses and micro buses available at Ratnapark (Old Bus Park) which depart to different destinations in the valley. Three wheelers run by battery are also available for Kathmandu commuters.



Figure 1: Crowd inside micro bus

The municipality authorities are in mood to make it smart city. A smart city is a concept in urban planning and development, describing a city that is equipped with “smart” technology to make life easier and more efficient.

It is used alongside several terms (like “intelligent city”, “information city”, “digital city”, “ubiquitous city”, “smart community”, “creative city”, “sustainable city”, or “robotic city”) [1–3] and it has no clear and singular cross-disciplinary definition [4]. Its various aspects outline the idea that a smart city contributes to a sustainable and safe way of life for all its citizens [5,6] and has minimal negative impact on the environment. Many “smart” technologies can be applied in a wide range of areas, from infrastructure to transportation, healthcare, energy generation, etc.

The main goal of a smart city is to optimise city functions and promote economic growth while also improving the quality of life for citizens by using smart technologies and data analysis. The main goal of this article is to review the literature available about the problems of the Kathmandu based on selected criteria.

Method and material

The method adopted is enquiries with the municipality heads of and administrative officers of Kathmandu municipality.

This article also reviews the articles and reports to see how Kathmandu is utilizing its resources related to transportation services.

This article evaluates the following ingredients of the city.

- Overcrowding
- Special provisions
- Personal insecurity
- Consideration of needs of women as transport users
- Improve service in public transport
- Promotion of women in transport sector
- Other studies

The main issue of public transportation system

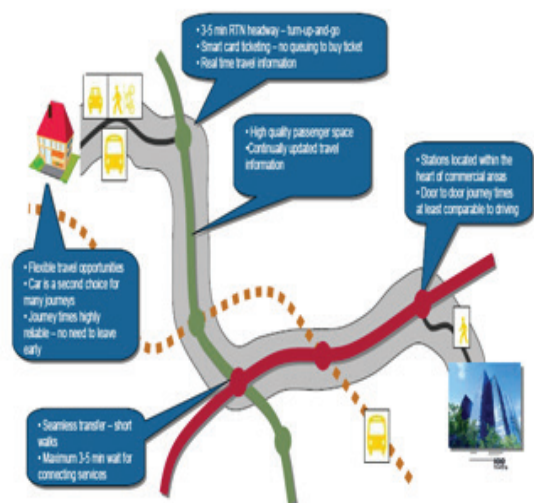


Figure 2: Main issue of public transportation (Reference: ARC, 2009)

Public transport quality

Table 1: Major quality of transportation recommended to compare cities

Uptake public transport	Travel mode
	Passenger kilometer travelled
Travel efficiency	Public transport patronage
	Speed of journey
	Travel time
	Vehicle fuel consumption
	Reliability departure and arrival time
Accessible	Catchment area time
	Catchment area distance
Affordability	Cost of travel
Travel experience	Road safety
	Personal security
	Comfort

Source: Framework for urban transportation benchmarking (2011)[8]

Result

The result discusses on the issues of transportation use, transportation preference, major problems.

Transport use

The survey was conducted at different times of day from 6am until 9 pm during several consecutive work days. In the Kathmandu valley public transport provision starts around 4.30am and stops after 9pm with less than 25% plying after 8pm. After this time, those without their own means of transport either use taxis or are provided with work transport⁴. The peak hours of 8.30-11am and 5-7pm were heavily dominated by people travelling for work or education⁵. In total 40% men and 36% women surveyed stated their main reason for travelling was 'work'. Most people stated that their journey times were between 15 and 30 minutes⁶ and 90% of journeys were under one hour.

Transport preferences

16% of men and 26% of women surveyed say they have no choice but to take the particular public transport they were using because this was the only form of transport plying the particular route of those remaining with choice (84% of men and 74% of women), the main criteria for preference irrespective of gender, is speed (journey time). [7]

Frequency of the service was the next most important criterion after speed. The majority of survey participants demonstrated application of

these two preference criteria by mostly choosing to travel on blue micro buses, known as 'nilo'. As well as being manoeuvrable and fast 'racing each other' (young woman), they also have the advantage of being able to access narrow streets, can take short cuts through gullies and can take passengers closer to their destinations. The cramped conditions, overcrowding and risks which include unpredictable change of routes if insufficient passengers get on, refusal to complete routes at night and reckless driving are all 'accepted as part of 'nilo experience' (young man). In the qualitative study, women suggested that men were more adept at taking micros as they 'have more push power' to manage the overcrowding. [7]

Others were prepared to wait longer for greater comfort; these were people who were in less hurry ('I leave home early so I can have this choice', journalist), tall people ('the crouching when you are tall in a micro is unbearable' (middle aged man)), older people, ('I have to sit and micros are too crowded' (elderly man)). These people prefer Jumbos (larger mini buses with more head room) or thulo (literally 'big') buses. Having said this, Nepal Yatayat (technically a thulo bus) was often cited as the worst example of public transport. Despite its larger size, it has a reputation for pickpockets and harassment, especially in the early evening. This public perception feeds into further feelings of insecurity and one route in particular is notorious and avoided where possible. Tempos are preferred by many travellers particularly those with concerns about safety. This is because they have a limited top speed (around 30mph), drivers do not permit overloading as it makes the vehicle unstable, they are considered easier to get on and off and the seating arrangement where passengers face each other is 'friendly' and 'we feel secure'. The researchers own participant observations noted that tempos often carried more women than men and women they spoke to felt safe and noted the benefit of having more personal space. Many of the tempos are driven by women and some passengers commented that women are safer drivers. Some felt tempos were 'more airy' and a few, especially young people, preferred these based on their environmental friendliness. However, because of their association with safety and slowness, other young people commented that they were 'not cool' and 'I would never travel on one- I would rather walk than be seen by friends on one'. Tempo drivers do not recognize student discount which is a further disincentive for use. Men are more likely than women to have the use of a family owned vehicle; bicycle, motorbike or car. However, the ownership of small scooters (known as 'scooties') among women is increasing fast. Study participants highlighted the advantages of independence, quicker journey times and not having to take overcrowded public transport as key reasons to opt for this. A woman who now has her own 'scooty' said, 'Before I used buses...buses are so dirty, my

clothes got dirty. I got to the office in a bad mood, hot and bothered, tired... it was very unpleasant'. Street/market vendors (men or women) who need to transport large bundles or boxes of goods told us that they travel early in the morning to avoid crowds and to ensure drivers will take them. [7]

If they try at other times the drivers will refuse to take them. They pay extra for the loads. Sometimes they collaborate together to hire transport. Others avoid public transport altogether and either sleep at their point of sale or rent cheap accommodation nearby. People told us about situations where they feel they have no alternative but to get taxis; when they are late for work, when accompanying children, with shopping bags, availing health services, at night and, since the strict drink –drive laws, if they have been drinking alcohol (men and women). Taxis are regarded as expensive and a last resort for many. Despite the legal requirement to use meters, they rarely do so, making negotiation of fares an irritation some prefer to avoid. Some women shared that they would never take a taxi alone and would rather take a tempo or bus. Some young women we spoke to have clubbed together to pay for a regular known taxi to transport them collectively to college each day after one of them had had three bad experiences of harassment on the bus. [7]

Major problems



Figure3: Transportation at busy time.

'In a whole year I have never got a seat on the micro coming to work '. Over 70% men and 80% women participating in the quantitative study noted overcrowding as their main problem using public transport. From qualitative discussions it clearly emerged as the worst and most universal problem. People describe the situation as 'survival of the fittest'. Drivers and conductors, which operate in a competitive private sector environment, cram passengers onto transport to maximise profits. This results in discomfort and encroachment of personal space women were twice as likely to mention personal insecurity than men (30% compared to 16%)⁸. Men and women noted they felt the most insecure in overcrowded situations (37% and 54% respectively) which matched the level of their feelings of insecurity after dark. [7]

Personal insecurity included fear of pickpockets, personal abuse as well as various forms of sexual harassment (but mostly what was referred to as 'inappropriate touching'). The biggest difference between insecurity felt by women and men was in the age groups 19-35 years and, in particular, women aged 19-25 years who were nine times as likely as men of the same age group to identify personal insecurity as a concern⁹. 43% of women aged 19-25 years noted insecurity as a problem and the spike (15-30% higher) compared to other age groups is entirely due to fear and experience of inappropriate touching. The data indicates that there is parity in the sense of insecurity among men and women over the age of 35 years where fear of inappropriate touching is largely removed and fear of pickpockets and personal abuse remain. [7]

37% of women mentioning insecurity as an issue had directly experienced inappropriate touching during the last year compared to 6% of men who were concerned about insecurity. When the question is asked of the whole survey universe, 26% of women aged between 19 -35 years stated they had directly experienced inappropriate touching on public transport during the last year and 16.5% said they had experienced it in the last month. 3.4% of men of all ages stated they experienced inappropriate touching. [7]

Both men and women felt most insecure after 8pm, which is when public transport more or less ceases. After dark women told us that they would always try to take a bus which already had other women on board. Men and women mentioned fear of drunkards and drug addicts on buses at night. Early morning, while less of a risk is still regarded as insecure. [7]

Personal safety while waiting for buses and walking to/ from bus stops is as important as safety on the vehicle and for many surveyed rank as times when they feel 'least secure'. Men and women note that the lack of street lighting, the enclosed foot bridges and places where there are few people about as the most insecure. Superstitions associated with ghosts particularly at the riverside are rife among both men and women. People point to known insecure 'hotspots' and felt that these could be addressed by random police/security guard patrols, solar powered/battery powered lighting and dismantling of the advertising hoardings and footbridge walls. The police included in the study concurred that their limited resources would be better deployed by attention to hotspots rather than spreading thinly and trying to provide security everywhere.

Police are often regarded as 'part of the problem'. People cited their tendency to blame the victim by suggesting

that their behaviour¹³ and dress provoke harassment. 'You don't want to get into the police system.... They ask embarrassing questions, turn up at your home so everyone wonders what's up and waste your time', one journalist told us. Young men noted that they get harassed by police while waiting for late buses. [7]

Reckless driving and fear of accidents Speeding, swerving and sudden braking were mentioned by many (18%) study participants as concerns especially in relation to the behaviour of micro bus drivers. Women surveyed were slightly more likely to mention discomfort and poor driving compared to men. Many noted the way the buses race each other and compete to get passengers compound the risks. Both men and women queried the young age of some drivers and their lack of experience, e.g. 'are they really capable of driving public transport?' (man) and 'young drivers are reckless' (woman). Tempos are considered unstable and many indicated that they had hit their heads badly or sustained other injuries riding tempos which hit potholes. Getting on and off the bus which any way is regarded as problematic at peak times is further exacerbated by drivers not stopping fully or rushing to start off before passengers have got on fully Travelling with children Travelling with young children was noted as a major problem by women, although this too is experienced by men in the same circumstances. A number of stories suggest that people choose not to travel with young children,

Especially at peak times which in turn constrains choice of day care, pre-schools and timing of travel. Some women told us that they do not think the bus environment is safe for small children, fearing for their wellbeing and health. 'I take a taxi to take my child to day care and then continue the journey by micro on my own' (woman teacher) People told us that sometimes they are refused travel when they have children and luggage with them. [7]

Travel concerns for less able This study was not set up to look into the special problems and concerns of transport users with disabilities but through the course of the study researchers did meet and talk with persons with disabilities. They noted special problems with using public transport, some of which are obvious in terms of access to the vehicle (high steps, pushing) travelling in the vehicle (difficulties standing, fellow passengers not offering reserved seats, insufficient bars to hold on to). But we also heard that sometimes they are denied access because they travel with a subsidy card or because they take too long to board. One woman shared how she was frequently turned away from trying to board a bus or the buses simply refused to stop. [7]

Fares are fixed and no correlation was found in the survey

data between employment and the raising of concerns about costs. 14% of transport users¹⁵ surveyed noted fares as a concern and qualitative discussions with low or unskilled workers¹⁶ indicated that they expect to pay about 20-40% of their income on public transport. Several told us that they walk in order to save money which often seemed to be in the region of Rps 50-100 per day. Many of the participants in the study discussions said that they had been forced to move nearer their workplaces to reduce transport costs. Many of the men waged workers used bicycles and so transport costs for women workers tended to be higher.

Although some felt that the transport prices were too high, most were more concerned about fare abuses. Despite published fixed prices, they felt at the mercy of conductors who 'decide a price based on what you look like and if they know you'. We also heard that some conductors will claim they are going in the direction required only to get fares and then they dump the passengers at the point where the route diverges. Many noted that the extensive use of fake student ID cards and abuse of other discount cards¹⁷ makes matters worse. As well as being the cause of many of the disagreements on the bus, people recognise that this abuse reduces transport operators profits and contributes to their practice of 'stuffing passengers'. 'Nearly all the fights on buses are around the validity of ID'. But even bona fide users of student cards experience harassment. For example after 7pm conductors refuse to recognise the student discount and charge full price. Transport operators told the study that the money lost per bus due to the use of fake ID cards amounts to Rps 20,000 per month¹⁸. With increased profits they suggested they could alleviate overcrowding by introducing more vehicles. [7]

Discussion

Overcrowding (75% ; 70% women , 80% men), 2. Personal insecurity (26%; 33% women, 16% men) and 3. Reckless driving and fear of accidents (17%; 18% women, 16% men) [7]

Actions municipality taking

The Kathmandu Sustainable Urban Transportation Project (KSUTP), funded by ADB and GEF, is already doing some of this work. KSUTP is also working on creating central and peripheral transport hubs around Kathmandu Valley so that transfer of passengers becomes easy and systematised.

Table 2: transportation problems and remedial actions taking by the government

Recommendation	Action
Overcrowding	
Revise design standards for all newly registered public transport buses	Develop new standards to maximise safe standing space and full height head room. Introduce compliance through safety examinations
Special provisions	
Drop 'women reserved seats' and replace with priority seats for pregnant women, elderly, persons with disabilities and those less able to stand	Develop new 'priority seat' regulations which include standard signage.
Personal insecurity	
Mount 'Safer transport for All' campaign	Develop key safety messages (based on this study and Code of Practice) and communication strategy. Use media to promote the new campaign with consideration of different target audiences (providers, users)
Introduce more rigorous public transport driving test and entry qualifications	DOTM accelerate action to introduce new proficiency tests which include safety and security concerns of passengers. Provide safety and security training to drivers based on Code of Practice
Personal security and good conduct education in schools	Develop interactive package of education materials to highlight ways to keep secure and act as responsible 'bystanders'. include in official curriculum Deliver education in secondary schools
Make footbridges safer	Remove all advertising hoardings on footbridges and replace solid footbridge walls with railings
Provide street lighting in insecure hotspots	Identify insecure hotspots through public consultation Find private sector sponsorship to provide vandal proof solar or battery powered lighting in insecure hotspots.
Monitor insecure hotspots	Introduce App/SMS based system for reporting insecurity related to commuting. (NB NOT a police number) Undertake regular facilities safety audits. Make public the findings re insecure 'hotspots'. Deploy visible policing and other measures to reduce insecurity in these hotspots Design simple ID system for passengers to be able to quote e.g. when reporting hotspots, concerns. Require all public transport to display the ID inside the bus on ceiling so it is always visible. Require public transport operators to declare exact times of last buses and display these at bus stops. Display routes, types and frequency of transport available on different routes Work with others to ensure the new legal provisions have sufficient teeth to bring criminals to justice Identify and fund support organisations. Publicise their role.
Introduce unique easily remembered ID numbers for all public transport	
Provide more scheduling information	
Support new legislation efforts to ensure adequate redress for serious cases of sexual harassment on public transport	
Establish and support independent victim support organisations for men and women to act as intermediaries in serious cases.	
Consideration of needs of women as transport users	
Include women participation in transport planning and design	Identify key categories of women public transport users (students, young mothers with children, working women of different ages, elderly women, street vendors, women with disabilities etc) and form an official consultative committee. Hold annual consultations on different elements of transport planning

Collect gender disaggregated data on public transport use to monitor changing trends	Identify basic commuter information data required for transport planning Develop an annual survey instrument to collect basic information. Collect commuter information for transport planning on annual basis
Improve service in public transport	
Conduct regular transport satisfactions surveys	Design survey to cover cost, timeliness, comfort, security, respect etc Administer survey to 500 users at least every three years. Develop league tables of providers based on survey findings. Make results public and engage media in public discussion on changes. Highlight good practice in media.
Promotion of women in transport sector	
Promote women in the transport sector	Ensure legislation, entry requirements etc do not constrain women's participation as providers of transport services. Publicise role models
Other studies	
Commission and respond to study on public transport users with disabilities	Identify consultants and provide study ToR. Review and act on study recommendations

Conclusion

Conclusively, public transportation system in Kathmandu is not good. The government of levels, central, provincial and local level must give high priority to this direction.

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The Role of Forensic Accounting in Reducing Financial Corruption and Frauds: A Study in Nepal

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Abstract

The study is designed to review the role of Forensic Accounting to take corrective and preventive actions against fraud and embezzlement of funds. So, the objective of the study is to analyze the existing accounting practices and find weaknesses and search for better accounting practices to prevent and correct fraud. Accounting reports require a high level of validity and reliability. The method adopted is the comparative study of the processes followed by existing accounting practices and forensic accounting practices found elsewhere. A preliminary investigation has disclosed many precautionary measures not taken by the existing accounting system.

Keywords

Forensic accounting. Accounting reports, reliability and validity of accounting practices.

Introduction

Kautilya famous economist is credited with creating forensic accounting. In his book Arthashastra, for the first time, Kautilya describes fraudulent method techniques and offers 40 techniques with a focus on fraud and corruption. Birbal has also used the forensic accounting system for the investigation of fraud. The scientific methods and procedures for the investigation of financial crime, such as fraud and corruption, are known as the forensic accounting system. Opportunities for forensic accountants are expanding quickly; they work with insurance firms, banks, police departments, governments, and other organizations in addition to engaging in public practice. This article will look at its definition, nature, activities, services offered, core knowledge, and personal skills to better understand forensic accounting as a branch of the accountancy profession. Yes, forensic accounting has a future as a distinct field.

Fraud and misappropriation increase day-to-day, so the need arises to study a special type of fraud detection method. Forensic accounting belongs to use in the court of public discussion and debate. Identification, interpretation, and communication of economic transactions and reporting events are known as forensic accounting. Forensic accounting develops for the rapid increase in financial frauds and white color crime. Financial crime affects economic development in primary two ways, microeconomics crime affects individual and business financial activities. Microeconomic crime affects local, national, and international economic development. Individuals and businesses can affect crime in their

day-to-day financial activities. It's dependent upon the activities of community, national, and international levels. Forensic accounting means the evidence suitable for use in the law of court, and it is to those standards and potential outcomes that forensic accountants have work. It is the scientific and systematic way to investigate economic crime as much as it is concerned with a court of law. Forensic accounting is the application of accounting, auditing, and investigation use of accounting principles, concepts, theories, fact rules, and regulations for the legal document.

Forensic accounting is an umbrella consisting of accounting, auditing, investigative, skills, and knowledge belonging to the law of courts evidence, the highest level of confidence, legal documents of the least scientific way core knowledge of the General Acceptance Accounting Principle(GAAP), standards, and applicable.

For a long time, the main issue and problem of corruption have been focused on the political agenda in Nepal. It is recognized as one of the least chief causes of Nepal's underdevelopment. The most corruption in Nepali bureaucracy, politicians, union leaders, higher-level officers, and the business sector are seriously involved, this is a great challenge to the campaign of modern Nepal, (Upadhaya, 2003)

According to Kaskin and Ozturk (2013), forensic accounting is defined as a science that differs from traditional accounting which leads to getting accounting facts thought using procedures and audit method that deals with legal problems and financial attributes.

In 1946, Maurice Peloubet, an accountant from New York, published the first article entitled "Forensic Accounting:

The steps in forensic accounting are as follows:

1. Consult with the client;
2. Check for financial conflicts of interest;
3. Initial investigations
4. Develop the action
5. Gather the necessary proof.
6. Conduct the investigation
7. Evaluate the information and communicate it through reports.

Forensic accountant

Forensic accountants are investigative auditors for forensic auditors. They are who do forensic accounting or people invested in the forensic accounting system. Forensic accountants to become who is given training in an investigation related to fraud in various real situations.

The function of a forensic accountant

Criminal investigation of financial evidence

Litigation supports how and why fraud does.

Detection of the fraud

Solve the partnership and shareholders' dispute

Settlement of the misappropriation cause

Settlement of the insurance claim

Settlement of the motor vehicle accident causes.

In light of the rapid growth of the market economy, there is a need to model accounting behavior and the combination of accounting rules, regulations, and law. Currently, due to this serious issue and in addition to the dangerous effects of corruption at all levels, this research is trying to contribute by selecting one of the mechanisms that can limit financial corruption, through fraud and money manipulation detection techniques by using the method of forensic accounting. To achieve this goal, the current study is divided into four sections.

The first section is dedicated to the definition of the methodology of the study.

The second is to provide a theoretical background on forensic accounting, its objectives, then justifications, then the concept and types of financial corruption and its effects.

The third section was the practical side.

The fourth and final section contains the conclusions and recommendations.

1.2 Statement of problems

Accounting has been termed the language of business; however, this cannot be the language of business because it does not ensure the facts and correct results by using

the traditional approach that enough provisions and ethical standards are not maintained while practicing it. Principles and concepts applied for required a report correctly in accounting practices to make the accounting report trusty. In the current time serious corruption and fraud have been taken both public, and private sectors of financial activities. A recent survey undertaken by different professional organizations like KPMG in 2021, has indicated that Fraud is a serious case of business risk and should be high on the agenda everywhere. So, planning makes for the investigation, and prevention of corruption and fraud taking steps to reduce its impact on the business makes good sense. It is because forensic accounting has the responsibility, and accountability to provide justice to large stakeholders in the company and corporations and business organizations in the case of government. Forensic accounting systems used effort in this direction through different tools and techniques is desirable and justifiable.

Many kinds of the literature surveyed indicated that fraud and corruption have been the major problems that effective internal control-guided accounting systems must address.

These articles' endeavors are directed at this issue.

1.3 Objectives of the study

The main objective of this study is to examine the role of forensic Accounting in Reducing Financial Corruption and Fraud in Nepal. The specific objectives are:

1. To ascertain the effect of fraud investigation on the reduction of corruption and fraud by the listed organization of Nepal.
2. To determine the effect of litigation support on fraud rate management by listed public and private organizations of Nepal.

1.4 Literature review

Raskin and Ozturk (2013), described forensic accounting as a branch of accounting that differs from conservative accounting and traditional accounting and intends to get accounting facts through processes and audit methodologies that address legal issues and financial factors/accounting context.

According to Hao (2012), forensic accounting results from the interaction of the legal system and the accounting environment.

Due to a lack of demand for their resources and curriculum, the teaching sector is still only available at universities in developed nations, greatly like with their experimental research (Hao, 2010).

Forensic accounting is a legal tool in mine and addresses issues with criminal activity, value preservation, and demand Renzhonu, 2012).

So, the forensic accounting system is the process of integrating accounting, auditing, and research skill, it deals also with the presentation of accounting concepts

and techniques to legal problems. It required reporting, where accountability of the fund is established and the report is considered as evidence in the court of law or administrative proceeding.

Forensic accounting systems apply the process of interpreting, summarizing, and communicating financial issues, and information.

This study is also given the opinion of Dhar and Saker (2010) who used forensic accounting to apply investigative accounting techniques to help explore fraud audit managers of forensic science and accounting.

Skousen and wright (2008 & 2009) indicate that is a concern in the way of detecting accounting fraud, forensic accounting auditing, obedience, carefulness, and risk assessment, exposure of financial misrepresentation, and financial statement fraud by accounting.

Reasons for misrepresentations of monetary figures

Various researchers have indicated some explanations for the misrepresentation of financial figures.

1. Ineffective internal controls

Internal controls are methods and practices used to guarantee the accuracy of accounting and financial data. Fraud chances are created by weak internal controls, including insufficient job separation, a lack of monitoring, and actual documentation procedures. According to the (Association of Certified Fraud Examination) ACFE's Report to the Nation 2020, a lack of internal controls accounted for 32% of all occupational frauds, whereas major of already-existing internal controls and a lack of management review each accounted for 18% of the overall occupational frauds investigated from January 2018 to September 2019.

2. A lower level of character

Upper management and the board of directors are regarded as having a character at the top if they uphold moral principles and act with honesty and integrity. A company's susceptibility to fraud is increased by a negative tone at the top. Poor tone at the top was responsible for 22% of all financial statement fraud, according to the ACFE's Report to the Nations 2020, while it was responsible for 10% of all occupational frauds reported from January 2018 to September 2019.

3. A lack of accounting regulations

The way that items on the financial statements are documented is referred to as accounting policies. Employees may have the potential to manipulate figures if accounting procedures are poor or inadequate. When a worker is under pressure, they are considering committing fraud. Examples of things that act as inducements for fraud include.

Rationalization against the bad financial practices

Studies have indicated how authorities rationalize the bad practices, which are described here.

1. "I was mistreated by them"

When someone has resentment toward their boss or employer, they could think that committing fraud is a good method to exact revenge.

2. "Upper management is engaging in it, too"

An individual might emulate those more senior in the company hierarchy if the top isn't setting the right example.

4. "There is no other way to fix this."

Someone can think that if they don't commit fraud, they could lose everything (like their job).

Wolf and Hermanson (2004) added a fourth variable "Capability" to the fraud triangle and introduced the Fraud Diamond model. They believed that many frauds would not have occurred without the right person with the right capabilities to implement the details of the fraud.

Crowe Horwath's Fraud Pentagon model added two more factors "Competence" and "Arrogance" to the three factors of the Fraud triangle.

Methodology

This research is based on a theoretical analysis of the role of the forensic accountant in solving financial problems of the corporate world, it used secondary data which is collected from various literature on forensic accounting published in different journals and books.

Result and discussion

Table 1. Corruption classification according to career level

Types	Career Level	Methods used
Casual	Junior staff opportunist	embezzlement, bribery, favoritism, discrimination
Regular	Public officials, politicians, representatives of donors, administrative elites, businessmen, mediators	Bribes, commissions, complicity, looting, and public acquisition of property, special privileges, gifts, and bribes.

Comprehensive	administrative elites, politicians, businessmen, higher staff categories	widespread looting of public funds through fake transactions, transfer of public property to private

Source: Author, 2022

Corruption Impact on Economic Aspects
In addition to the serious social damage caused by corruption among community members within the scope of everyday life (not least fostering a spirit of despair and frustration resulting from the sense of injustice and inequity), the economic effects of corruption are subversive, summarized by Gray, Hellman, and Ryterman (2004) as follows:

- A. Reducing growth rates and preventing direct investments.
- B. Reducing and misusing the resources of the state.
- C. Low economic efficiencies and poor distribution of national wealth.
- D. Low efficiency in money investment, and weakening the level of infrastructure quality.
- E. Increasing the external debt and weakening the state's ability to repay its debts.
- F. The high cost of services and capital formation due to the addition of bonuses paid as commission for the corrupter.

Theoretical framework

3.1 Forensic Accounting

3.1.1 Meaning and concept of forensic accounting:

A unique form of research connected to fraud is essential since forensic fraud and misappropriation are on the rise daily. To be utilized in a public forum for discussion and debate, forensic technologies assist in fraud investigations. Forensic accounting is the identification, analysis, and disclosure of the evidence of economic transactions and reporting events. Accounting, auditing, and inquiry are also combined using it.

Justification to Use and Develop Forensic Accounting

The common use of fraudulent accounting data as a reason for utilizing forensic accounting.

For rising nations, this tendency resulted in significant losses, which affected both state revenues and economic growth. The accounting statements prepared by auditors for the companies benefiting from this situation in Nepal may be the most significant illustration of this, where the auditor prepares a statement of current account and balance sheet by the company's desire to show losses that they use for tax evasion purposes or to show a few profits to compete for local tenders (Hao, 2010). Ineffectiveness and a lack of accounting and legal regulations in problem-solving.

Aside from the fact that traditional accounting procedures do not contribute to detecting and identifying financial corruption cases because they concentrate more on the form than the information, laws addressing financial and administrative corruption are characterized by weaknesses and stereotypes, making it impossible for them to respond to the aggravation of these dangerous phenomena (Renzhou, 2011).

- **Weakness in traditional auditing.** The limitations of conventional auditing.

The evidence provided by the internal auditor is still limited and unable to identify corruption and financial deviations, primarily because they lack administrative autonomy, as evidenced by Wenzhou (2011) and Hao (2010). They also illustrate how many audit procedures fail to diagnose financial obstacles.

The lack of professional organizations that could offer forensic accounting consultation. Compared to industrialized nations, most emerging nations lack a specialized agency that might offer forensic accounting servitor to legal authorities. Due to the shortage, financial corruption may become more of a concern, and court decisions may not be as objective (Renzhou, 2011).

Forensic Accounting in Nepal

Financial fraud, corruption, and scams all entered into our social and professional lives with the growth of the business. It's quite difficult to evaluate modern financial frauds with a quick look since they are so well-organized, complex, and neatly mixed with the facts. To expose them an integrated approach is needed to expose them and produce the evidence needed to prove liability in the eyes of the listing is a comprehensive strategy.

There are three common types of fraud:

Financial statement frauds are:

- A. **Artificial financial reporting prepared:** It is the form of fraud that happens the least frequently, accounting for only 10% of all fraud instances globally. But it causes such significant losses within businesses, it is the most expensive. This sort of fraud involves: manipulating, falsifying, and changing financial statements and accounting records; misrepresenting or omitting figures; applying accounting principles, and concepts incorrectly; and purposefully making incorrect, false, or misplaced exposés.
- B. **Misappropriation of Assets:** This kind of fraud happens the most frequently, accounting for about 60% of all fraud schemes globally. It is, nevertheless, the most affordable deception. This type of fraud involves Internal and external performers' robbery of tangible assets like cash, inventory, and services; Sales of confidential information; Inappropriate client payments.

C. **Corruption:** It is the most frequently occurring type of fraud and constitutes 30% of all fraud that has been uncovered worldwide. This type of fraud involves:

- Bribery and corruption schemes such as kickbacks and selling business organizations
- Making or receiving inappropriate payments
- Offering bribes to public or private officials
- Aiding and abetting fraud by others

Conclusions

Financial frauds and other white-collar crimes are more common in our daily life. All types of fraud are prevalent in today's social and corporate life.

We, therefore, require an integrated. Therefore, we require an integrated method of forensic accounting, which combines accounting, auditing, and investigative competence and focuses on detecting and preventing frauds to detect all of this fraud and of gathering evidence, and using it to help resolve disputes is called forensic accounting.

In Nepal, this facility is still in its early stages. We must use forensic accounting to prevent significant dishonors like Capital Merchant Banking, Nepal Share markets and banks, insurance companies, Tax Fixation Commission, Nepal Oil Corporation, Tele-communication, electricity authority, and others. Forensic accounting Nepal does not use forensic accounting prevention of fraud and corruption.

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Study of Residents' Psychological States During COVID-19 Epidemic Period

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Abstract

During COVID-19 epidemic period, the government has taken strict prevention and control measures in China. Residents are at home for a long time, which is easy to cause all kinds of negative mental states. Through an ongoing social survey of two months, this paper studies the changes of residents' psychological states with increasing of the home isolation duration, and analyzes the psychological problems as well as their causes that occurred at different stages, which involve the fear of infection, lack of necessities, difficulty of accessing health care, loss of income, impacts on children's learning and all kinds of new family conflicts, etc. On this basis, the effective psychological adjustment measures and suggestions for constructing a physical-cyberspace integrated community micro-ecosystem are proposed by this study.

Covid-19 and Digital Transformation of Society

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Abstract

The Covid-19 pandemic has accelerated digital transformation around the world. Since the last three years, people have relied on digital connections for work, education, health care, daily commercial transactions, and essential social interactions. Inevitably, people's relationship with technology is becoming increasingly dependent as larger segments of the population will be more active in using digital connections to be connected in a "tele-everything" world. As a result, the way people communicate and interact is changing and the world is becoming more and more borderless. Consequently, people are not only required to be familiar with technology, but must also be equipped with digital literacy, regardless of age. Hence, leaders in the organizations have a very crucial role in directing employees to be digitally literate to be able to navigate the digital space effectively, understand the implications of their actions, and protect them from cyber threats.

Keywords

Cyber Threats, Digital Literacy, Digital Transformation, Role of Leadership, "Tele-Everything" World

Introduction

The Covid-19 pandemic is our most recent disrupter in the way we remain connected to each other in our 'work, rest and play'. It has forced us into finding new ways to remain in work, in pursuing our education, in maintaining our leisure activities and in resuming our normal lives as we had known it. Hence it has accelerated the adoption of digital interventions at all levels of work and social life to transform our world as we know it.

In the workplace, digital transformation will never end [8] because since its creation the world has been constantly changing. Therefore, anyone who wants to sustain must be willing to continue to evolve and adapt. Obviously, this will cause radical changes to the organization's operational activities and employees' work lives, especially after the occurrence of the Covid-19 pandemic in early 2020. Everyone, regardless of age, type of work and work location, must be willing to get out of their comfort zone and adapt to a much more competitive condition in the digital era.

Experts say that by 2030 new technologies will shape the work environment with increased partnership between humans and machines. Automation and artificial intelligence (AI) will have far-reaching impacts on traditional business models and will contribute to productivity thereby changing the nature of work and the workplace itself. Machines will be able to perform many tasks performed by humans, complement the work done by humans, and even perform some tasks that are beyond

human capabilities. As a result, some jobs will decline, others will grow, and many more will change.

A study conducted by McKinsey in 2018 revealed that there are certain categories of work activities that are easier to automate than others, which account for approximately half of the activities carried out by people in all sectors [27]. They include physical activities in highly predictable and structured environments, as well as data collection and data processing. While the least vulnerable category includes managing others, providing expertise, and interacting with stakeholders.

This study is in line with the report of the Future of Jobs made by the World Economic Forum in 2018 and 2022 [49;50]. The results show that the ratio of total work time spent by humans and machines has changed drastically from 2018 to 2022. Before the pandemic (2018) as much as 71% of work was still done by humans, but after the pandemic 58% of work was done by machines. This means that in the next 10 years most workers will be working side by side with rapidly evolving machines or being completely replaced by machines.

Nevertheless, the COVID-19 pandemic has not only dramatically impacted the day-to-day functioning of organizational, but also the day-to-day activities of people in their efforts to become more digitally mature. If we took the period 2020-2022 inclusive, i.e., the last three years, many in developing and developed economies have shifted from direct face-to-face interaction to increasingly on digital connections or 'virtual interaction' for work,

education, health care, daily commercial transactions, and essential social engagements. Inevitably, people's relationship with technology is increasing as larger segments of the population become more active in using digital connections within a "tele-everything" world.

As a result, a digital ecosystem is emerging, the way people communicate and interact is changing and the world is becoming more and more borderless. Consequently, people are not only required to become familiar with technology, but must also be equipped with digital literacy, regardless of age. The reason is that currently the digital world is deluged with information, analogous to "having to drink water from a gushing hosepipe", with information flooding in from various social media platforms, such as Facebook, TikTok, YouTube, Twitter, Instagram, Telegram, WhatsApp, and many more.

To this we must also add the new menace on the metaphorical 'digital street' of internet hoaxers and scammers and the abundance of hoax information they corrupt the internet and social media with, and the fake applications they seduce us all with and exploit gullible internet users who unwittingly part with their invaluable confidential personal data so that these digital criminals or cyber troopers can drain the unsuspecting victims of their savings and even steal their identity to commit further crimes by proxy!

These conditions portray that digital transformation creates huge challenges, for organizations, employees, as well as society. Therefore, this article examines what should political and organizational leaders do to make their employees irreplaceable by machines and what should political leaders do so that people are not easily fooled by fake news or tempted by scammers. Therefore, the scope of this review paper revolves around barriers of digital transformation, requirements of digital transformation, leadership, and digital transformation, as well as digital literacy and digital transformation.

Literature review

Requirements of digital transformation: technology and actor

Digital transformation is a matter of survival for modern organizations [18;40]. In more globalized societies and economies, the pace of change appears constant, unrelenting as competition and access to technology increase. It seems that the more ubiquitous digital technologies are, the more industries will be affected [17].

Digital transformation is defined as actor-driven organizational transformation triggered by the adoption of technology-driven digital disruptions [33]. In a simple word, it should include both technology and actor. This definition is derived from a systematic review of 58 peer-reviewed studies covering various aspects of digital transformation and published between 2001 and

2019. In this finding, technology covers (1) pace of change and time to market, (2) technology capability and integration, (3) consumer and other stakeholder interface, (4) distributed value creation and capture, and (5) market environment and rules of competition. Whereas actor consist of (1) transformative leadership, (2) managerial and organizational capabilities, (3) company culture, and (4) work environment.

To achieve successful digital transformation, changes must occur at various levels within the organization [33], including an adaptation of the core business [20], the exchange of resources and capabilities [7;53], the reconfiguration of processes and structures [37], adjustments in leadership [13;41], and the implementation of a vivid digital culture [25].

Barriers of digital transformation

Companies have spent trillions of dollars every year to carry out digital transformation, but digital transformation still has a high failure rate of around 90% which inevitably has a negative impact on company operations and intentions to innovate further [36].

This is because the barriers reported in the literature are mostly associated with technology. For example, insufficient and unreliable data, absence of benchmarks and reference architecture, complexity in integrating systems, low maturity levels of technology, cybersecurity threats, and unsuitable infrastructure [35]. Whereas other researchers identified a lack of an effective strategy and technology disruption (the notion that new technology replaces older technology) is the highest-ranking technology challenge for digital transformation [26].

Meanwhile, other technological factors emphasize the diffusion of digital technologies as an enabler for transformation [23], such as big data, mobile, cloud computing or search-based applications [51]. Likewise with the research by Hess et al. [16] which revealed that digital transformation is related to the changes digital technologies can bring about in a company's business model, which result in changes to products or organizational structures or process automation.

However, based on a review of several articles discussing the critical success factors of digital transformation grouped into technology and actor, it was found almost even distribution of papers, namely 33% are technology-centric, 34% are actor-centric, and 33% of papers cover both technology and actor [27]. On the technology-centric side, it was found that understanding the implications of digital technologies on the consumer interface and market environment are highly active research streams. Meanwhile, understanding the pace of change in times of digital transformation and its direct impact on incumbents is so far comparably understudied [27].

On the actor-centric side, it is revealed that it is very dominant focus on leadership and capabilities in a digital

context, while on the contrary corporate culture and work environment have so far received less recognition [27]. This finding is certainly very contrary to the studies of Hess et al. [16] which highlight the role of actors (e.g., managers) in promoting transformation processes, while facing the challenge of simultaneously balancing the exploration and exploitation of resources.

The results of research done by Bailie and Chinn [2] and Lammers et al. [22] reveal that the barriers to digital transformation are managerial and cultural in nature because digital transformation should be viewed as part of the growing development of complex adaptive systems. These conditions include the fear of job loss and lack of skills [46] as it was found that more than 50 percent of companies lack the digital competencies necessary to successfully implement digital transformation [6].

Furthermore, even though all preparations have been well planned, the biggest barrier usually revolves around the readiness to replace employees [27]. However, it should be noted that digitally mature organizations need employees who can think critically for the benefit of the organization rather than employees who only possess hard and in-depth technical skills [18].

Findings from critical reviews on a number of peer-reviewed articles discussing the success factors for digital transformation (grouped into technology-, actor-, or technology-and-actor-centric) reveal that even though these barriers are very real and should be managed at various levels, it turns out that there is still some ambiguity in the results of this report regarding which barriers should be overcome first as well as serious contradictions for research in the organizational change domain [27].

Leadership and digital transformation

Digital transformation doesn't start with just adding new software here and new apps there. Digital technology should begin with strong and agile leadership to drive cultural change across the enterprise; and strategies that can instill agility, adaptability, and creativity into organizations [29;52].

This is because digital transformation requires a new mindset and a new approach to management that is more open, agile, collaborative, and experimental [43] (Swink, 2006). This condition certainly requires a team of people with sufficient cognitive diversity to deal with the complexities of the transformation [34;38].

Because effective digital transformation is an organizational-wide change effort [18;19], it is common for leaders to focus on skills – the lack thereof and their development [3]. It may be possible that leaders were caught in this trap of focusing too much on the skill set of their employees [46]. Likewise, it is common for leaders to overemphasize organizational outcomes as a way of dealing with organizational change [5]. This makes leaders focus too much on the technical aspects of change rather

than on the more holistic or adaptive work that needs to be accomplished to make the desired changes [14].

Therefore, digital transformation needs to be matched by skilled employees and executives to unleash their transformative power [33]. Thus, digital transformation requires both technology and actor. That's why leaders need to not only look at the tension of physical and digital systems, but of the tension of pervasive mindsets already embedded in the organization's culture [17].

In addition, it should also be noted that although top management is concerned and ready for digital transformation, many are unsure about how they should change, as well as what strategy and when to implement the technology [17].

Digital literacy and digital transformation

Employees' digital literacy is described as skills, knowledge and abilities of a person or social group used while interacting with digital technologies [21]. These skills are beyond traditional literacy perception limited purely to the ability to read, write, and use printed texts in various contexts [24].

These competencies are required for navigating a fragmented and complex information ecosystem [12]. Several researchers classify digital literacy into clusters, and one of them is what Heitin [15] did: (a) discovering and consuming digital content; (b) create digital content; (c) communicate or share digital content. The literature describes the digital literacy in many ways by associating a set of various technical and non-technical elements. It revolves around and is in connection with the concepts of computer literacy, media literacy, cultural literacy or disciplinary literacy [44].

Considering that digital literacy is an individual and organizational ability, organizations need to build sustainable digital workforce transformation competencies and support workforce transformation to create a strong cultural foundation for the workforce to navigate turbulence and sustainable response to change [11]. As employees' digital literacy increases, utilization of digital technologies takes place more effectively [1]. Employees not only can conceive possibilities arising from digital technologies but also put them into use and learn from interactions to adapt their behavior and find new ways of using technologies through their daily practices. Accordingly, increasing digital literacy of employees could allow them to take advantage of using digital technologies [10]. If managers could understand the level of digital literacy of their organizations, they could improve it and prepare their workforce for future needs related to digital transformations.

Employee interactions with technology are influenced by their ongoing personal and social judgments and perceived suitability for technology, which collectively shape organizational capabilities at the group level [47].

Therefore, the main challenge for organizations is to adapt their culture, mindset, and competencies to the new digital way of working rather than to technology trends, disruptive innovations or new customer behavior [31]. If the employees are not digitally literate, it will be very difficult to survive digital transformation.

This is in line with previous research that has considered digital literacy of employees as a critical dynamic capability of organizations during their digital transformations [45;48]. Other studies also support this by revealing that the greatest challenge in many organizations in digital transformation and innovation is finding a way for re-imagining the employees' experience and bringing their digital literacy up to date [9;18;30]. Therefore, digital literacy should be restated as employees learn on the job [21].

Up to now, the existing literature on digital transformation is largely focused on external stakeholders, notably their relationship with customers, while it ignores the role of digital skills of workforce in this process [31;32]. Meanwhile, organisations need to equip their workforce with digital literacy to meet the organisational objectives if they want to benefit from their investments in technologies [4;18].

There is a stake of digital skills for disruptive digital business as the developments of the Internet of Things (IoT), cloud technology, big data, artificial intelligence, and robotics. The topic becomes particularly important given the large disparities in digital literacy across regions [44], such as digital inequalities encompass skills, along with access, usage and self-perceptions. These inequalities need to be addressed, as they are perceived as a 'potential to shape life chances in multiple ways' [39], e.g performance, labor market competitiveness, health, civic and political participation. These inequalities have grown larger due to the COVID-19 pandemic.

Discussion

Digital transformation is having a profound impact on the way people live, work, interact and do business, in the areas of human health, education, human resources, humanity, agriculture and many other fields. This transformation has drastically changed the way humans approach traditional problems which certainly affect every level of human life.

The use of technology in the health sector is the use of an application to register at the hospital without having to come in person. Apart from that, advances in technology have provided broad access for the public to obtain adequate information and consultation.

In the field of education, new learning methods have emerged that are easily accessible via the internet. The learning process for teachers and students is getting easier and becoming more varied. Learning does not have to be face-to-face but can also be through various video conferencing applications.

Digital technology is also capable of revolutionizing agriculture by helping farmers work more precisely, efficiently, and sustainably. In this way, environmental performance can be improved while making agricultural work more attractive to younger generations.

In the field of information and communication, access to information from various parts of the world is faster and more accurate. Communication with colleagues and family is very easy even from very far away locations.

In the economic sector, the development of payment instruments using QR scans or mobile banking applications makes banking transactions faster. In addition, there is data integration and economic equity.

It is undeniable, digital transformation has targeted all sides of people's lives. It means that almost no aspects of human life that are not affected by the digitalization process, especially nowadays that almost everyone has a smartphone.

Positive impacts of digital transformation

The development of digital transformation in Indonesia can be said to be advanced and facilitating in all respects. It can be seen from many companies in Indonesia that are already using technology in their business and the large number of mobile and internet users in their daily lives. This development had a huge impact because everything has become more practical in work and everyday life.

One example of digital transformation is the use of the GoJek application, a rapidly growing Indonesian company, which makes it even easier for its users, both in terms of transportation, culinary, and other services. Another example is the availability of various facilities that make it easier for people to carry out economic transactions online.

Another positive impact of digital transformation is that employee productivity can increase due to the use of tools that simplify and speed up their work processes. Business operations are becoming more effective and efficient and labor costs incurred by the company are lower. This has an impact on the growth of the company's profitability level.

Virtual meetings are a simple benefit of digital transformation because they are effective and efficient for discussing with colleagues who are in different locations and far away. With online meetings, companies can save costs and time. One of the most used applications is Zoom. This application can also be used by the community if they have not had time to return to their hometown to meet with relatives.

Negative impacts of digital transformation

The negative impacts occur because there are still many internet users who do not yet have good digital literacy and are only able to receive information without having the ability to understand and process the information

properly. They are unable to differentiate between misinformation, disinformation and malinformation.

As a result, there are many people who are exposed to personal data theft, false information or hoaxes, cyber bullying, and others. First is data security. Having several social media accounts can make it easier for users to share personal data that has the potential to cause cybercrimes such as personal data theft. There are various modes of digital fraud, for example, using survey reasons to obtain personal data, selling products at large discount prices on unofficial e-commerce sites, and so on.

Second, people are easily influenced by hoaxes. The rise of social media and the widespread spread of news makes users less careful in receiving and processing the news they receive because of the low level of digital literacy in society. Usually, the spread of hoaxes is carried out by irresponsible individuals, by twisting certain facts so that they become viral and cause a public uproar and lead to fatal incidents. An example is job vacancy information that is inaccurate and leads to fraud.

Third is cyberbullying potential. Social media that is not used wisely can create cyberbullying crimes that are prevalent in children, adolescents, and adults.

Become irreplaceable persons

Until now, digital transformation has been carried out by many companies engaged in various fields, including Indonesia. The application of technology in a business can provide benefits and efficiency. One of them is Internet of Things (IoT), although its presence is often perceived as a threat to jobs in various positions or disciplines. The presence of digital transformation in the form of IoT must be utilized optimally and thoroughly so that its existence has a significant impact, both in companies and other sectors.

The Indonesian government has launched digital transformation with five main programs in August 2020, namely (1) expanding access (connectivity) and improving digital infrastructure; (2) developing a digital transformation roadmap in strategic sectors, whether in government, public services, social assistance, education, health, trade, industrial, broadcasting, and other sectors; (3) accelerate the integration of national data centers; (4) preparing for digital talent HR needs; and (5) formulating regulations related to digital transformation financing and financing schemes that are prepared as quickly as possible [28].

Various digital transformation frameworks have been proposed by various organizations or developers. For example, the development of digital economy and digitization on the financial side have been carried out so as not to be left behind by global economic developments. The government of Indonesia has established three strategic cross-sectors, namely (1) accelerating digitalization in the business and industrial sectors, (2)

creating various opportunities in digital development and connectivity that can be utilized equally by all parties, and (3) encouraging cross-sector coordination (between sectors and across agencies, government, both central and regional) [42].

Even though the development of the digital economy has brought many benefits to the people of Indonesia, this condition is not without risks. The development of digital society and economy certainly affects the employment opportunities. Only people who are knowledgeable in information technology will have bargaining power and accommodate it. Likewise for people who need to increase awareness about the importance of using technology so they can carry out activities in their daily lives.

The demands and prerequisites that workers in the era of digital transformation must have expertise and educational background in information technology seem to devalue the role of the human in the workplace [42]. Therefore, the development of informational capitalism needs to be carefully anticipated by both leaders of the organizations and employees so that employees are not easily replaced by machines. What needs to be done is to be digital literate by increasing digital capabilities, improving digital culture, and being able to master the leading technological trends to continue to survive and compete.

The role of leaders

Digital transformation basically aims to encourage people to live more comfortably and prosperously. It is very interesting that the development of digital transformation in Indonesia has a positive impact on all levels of society and the network development can continue to grow so that it can provide benefits to a wider community.

With the development of the digital economy in Indonesia and considering that digital literacy is an individual and organizational capability, the leaders need to build sustainable digital literacy among workforce and society to create a strong cultural foundation to be able to navigate the digital turbulence.

Based on the critical studies discussed earlier, it was revealed that even though leaders understand the importance of digital transformation, many of them are still unsure on how the change process should be carried out. It is related to the challenge of adjusting the culture, mindset, work behavior, and competence of employees with the new digital way of working.

During the change process, intensive learning and interaction is needed so that employees' digital literacy meets the requirements. Of course, employees will experience stressful situations because they are not used to doing something new. Not to mention the rumors circulating about the potential loss of jobs because they will be replaced by machines.

The mood of employees is often not noticed by leaders. Leaders pay more attention to the technical aspects

of change and lack of skilled employees. At the same time, leaders are being chased by deadlines to complete the change projects by government regulations or shareholders. This certainly has the potential to cause tension of mind between employees and leaders.

Leaders must be able to identify and calm the atmosphere of tension that occurs because of this change process in addition to ensuring that the digital literacy of employees is sufficient for this change process. Therefore, this condition certainly requires a team consisting of people with sufficient cognitive diversity to deal with the complexity of the transformation. It also needs to be matched by skilled employees and executives to unleash their transformative power.

Digital transformation is part of an evolving complex adaptive system. As digital transformation requires a new mindset and a new approach to management that is more open and collaborative, strong and agile leadership is needed to drive cultural change across the company; and strategies that can instill agility, adaptability, and creativity into organizations.

Hence, the political and corporate leaders have a very crucial role to play in safeguarding their respective institutions and employees as well as society from these internet and digital criminals especially the scammers, hackers and fake networks. They need to ensure there is adequate firewalls in place but also that all concerned are digitally capable, cautious as well as alert to potential threats.

Those in positions of responsibility must also be compliant with all the legislation that helps ensure they are within the new rules accompanying this transformation into a digital economy in a more digitalised world. They also need to work with the regulatory bodies to enact new policies regarding cyber laws that addresses criminal activity and introduces new governance guidelines.

Employers as well as educators have a responsibility to be pro-active in providing digitally literacy so that the general population evolves to become competent and able to navigate the digital space effectively, understand the implications of their actions, and protect themselves from cyber threats.

More important, that the disruption caused by Covid-19 is not in vain but that it has helped transform our communities and society to be more connected, open to the world, helping professionals and entrepreneur create stronger network of opportunities to not only help us 'work, rest and play' but also to bring us together to use this powerful digital ecosystem and new technologies of AR, IoT, the metaverse and many others to solving our global challenges.

Employees with digital literacy skills are a critical dynamic capability of organizations during their digital

transformation. Therefore, leaders must equip their workforce with digital skills to be able to leverage the use of digital technologies to benefit from their investments in technology.

Political and corporate leaders must be able to find ways to update the digital literacy of their people and employees. If employees are not digitally literate, it will be very difficult to survive digital transformation. The key challenge for organizations is to adapt their culture, mindset and competencies to the new digital way of working rather than new technology trends, disruptive innovation or customer behavior.

During the implementation, leaders must also ensure to minimize inequalities which include digital literacy, internet access, and usage. This inequality needs to be addressed to improve performance, labor market competitiveness, health, civil and political participation.

Conclusion

From this article review, it appears that during the digital transformation period, it is evident that political and organizational leaders must pay full attention not only to the technology but also the actors. Without having a readiness to change mental attitude, the cultural transformation that occurs because of digitalization can lead to "culture shock" among the society and employees.

It is the role of political and organizational leaders to make sure that society and employees are well equipped with digital literacy. In addition, employees need to be convinced that even though many work activities are fully or partially automated, there will be other new jobs because of these technological changes.

Therefore, the development of this digital transformation must be accompanied by vigorous socialization and adequate education so that people can use technology properly and wisely. This needs to be done so that there will be not many negative impacts that emerge, which will also have a negative impact on future generations.

Additionally, users (both society and employees) are expected to be able to utilize various social media properly and wisely to minimize exposure to the negative impacts of social media.

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Developing People's Sustainability Using Organizational Social Sustainability Framework: A Conceptual Model

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Abstract

In challenging economic times, organizations are facing surmountable pressure due to constricting budgets, increasing inflation, and economic recession to strive for business profitability and positive shareholder orientations. Under the fragile business environment of balancing business profitability and brand equity, employees are always the soft targets with various means such as firing, retrenchment, and downsizing resulting in depression and increasing the plight of employees and their families. Such a business approach shatters employees' aspirations into severe workforce-related encounters such as low trust, loyalty, dedication, job commitment switching, and people's sustainability in the organization. In spite of populist human resource management research, peoples' sustainability aspects, i.e., employee happiness, satisfaction, well-being, social welfare, governance, etc., are widely scattered. To address the challenges of peoples' sustainability and develop sustained employee focussed business, it is crucial to redefine the human resource paradigm with a strong focus on workplace culture, sustainability, and happiness. The present research aims to develop a conceptual framework of organizational social sustainability to focus on value proposition, people's sustainability, and resilient corporate environment. The research has extensively explored the extant literature on the workforce challenges, people, planet and prosperity (3P) principle, happiness index, social psychology theories i.e., social exchange theory, ability, motivation, opportunity theory, & social identity theory, etc. and conducted personal interviews of social sustainability experts, human resource managers, academics and senior sustainability consultants to address the challenges of the most valuable resource of an organization- "people." The critical analysis of the literature review and experts' interviews provided an extensive list of critical parameters under the umbrella framework of organizational social sustainability (OSS). The key parameters of OSS are egalitarianism, health & safety, human rights and responsibilities, upskilling and succession planning, generosity, cultural enrichment, psychological well-being, and governance. The research findings also highlighted that strong workforce culture, including employee happiness and well-being, helps build employer brands and business profitability. Investing in peoples' sustainability also derives a strong footprint in building environmental and economic sustainability. OSS framework also aims to develop people or employees at the centre stage of the organization, which will significantly improve the business's financial performance. The framework of organizational social sustainability can be used by businesses to devise people-oriented strategies and differentiate themselves from competitors. Employees will develop corporate citizenship behaviors, becoming assets to the company. They will regard the workplace as a family and become more effective and productive. The entire model will assist businesses in becoming "Best Employers" and "Market Leaders" in the eyes of their stakeholders and the market. Employees will serve longer; and potential candidates will also be attracted to the business.

Keywords

Employees; Financial Performance; Happiness; Organizational Social Sustainability (OSS); Peoples' Sustainability; Well-being

1 Introduction

In the current economic climate, any organization's long-term success should be determined not only by revenue but also by its impact on the world's future and its employees. Sustainability at the employee level is considered a growing issue that requires systematic study because employees are crucial systems for organizations (Barbosa-Povoa et al., 2018). Organizations must embrace sustainability & execute it across their workforce as a long-term strategic plan to obtain a competitive edge. (Levesque, 2012). Since the 1990s, social components of sustainable development have been considered. This delay resulted from methodological challenges when establishing the social dimension scale in contrast to the profit and planet dimensions. Academic research focuses more on economic and environmental sustainability than social sustainability (Colantonio & Dixon, 2011). Social dimension is the least researched area from the triple bottom line. Most social domain research emphasizes social responsibility, social justice, equity, health, education, worker rights, and other critical social problems. Organizations can no longer concentrate on and allocate their funds to their economic and environmental infrastructure, given the significant number of employees. According to the limited scope, social sustainability is being examined as the concepts of social exclusion, social capital, & fundamental social needs (including health, housing, and nourishment). Some authors include social networks and relations as a more thorough version. The preservation of social ideals, including equality, culture, & social justice, is also emphasized (Koning, 2002). In light of this, sustainable organizations have democratic, fair, & high-quality lifestyles (McKenzie, 2004). The idea of contemporary social sustainability can be implemented by merging the ideas of social capital, a strong society, a sense of place, welfare, happiness, and life quality (Baines & Brown, 2004; Bromley, Andrew, & Colin, 2005; Colantonio, 2009) into the objectives listed above. Intangible and scarcely quantifiable challenges are replacing traditional social policies since the notion of social sustainability is far complex than economic and ecological sustainability. Due to the multi-dimensional structure and various scholars proposed particular techniques, multiple definitions have emerged. Henceforth, it is challenging to give a single definition of social sustainability. Therefore, in addition to the generic description, it should be articulated from a particular disciplinary criterion or job perspective.

Davidson and Wilson (2009) focused on the social sustainability approach from an environmental, human-based, & development standpoint. From the ecological perspective, intergenerational equality can be achieved through sustainable development by establishing the societal norms, conditions, and preferences that are required for promoting such acts. From a development-

based perspective, sustainable development is made feasible by safeguarding social relationships, institutions, values & traditions (Ecer, 2019). The human-based sustainability approach also contemplates the prevention of social exclusion & polarization & the maintenance of social adaption levels. The objectives of social sustainability were identified by Barron and Gauntlett (2002) as equal opportunities and results, diversification, an interdependence that promotes intra community dependence, life quality i.e., meeting the society's basic needs, democracy, and governance. However, Dempsey, Brown, and Bramley (2012) listed the key ideas associated with the typical trajectories of social life. These include social engagement, involvement in social organizations and networks, social stability, pride in oneself and a sense of safety, a sense of belonging, and self-assurance, in that order. Additionally, social sustainability emphasizes the ideas of identity, culture, and feeling of the place and fair access to basic amenities, promoting sustainable development, social contact, and cohabitation opportunities.

In a dynamic and uncertain era, organizations strive to increase their productivity in achieving sustainable development goals (Precup et al., 2020). Organizations regularly assess their performance concerning each relevant indicator to determine their progress and level of achievement. Compared to their prior position and other companies, medium and large organizations spend a sizable portion of their annual budget on enhancing their productivity in attaining the target.

The factors mentioned above make it urgent to review and analyze earlier research on the social dimensions of organizations. As a result, we are doing a comprehensive examination in this article to comprehend how the social component has been handled in organizations. We examine the contributions made by various organizations to sustainability as well as the determinants of sustainability. To our knowledge, no elaborate social structure promotes organizational satisfaction. So, this work aims to establish a broad framework for evaluating the social component. The current effort is guided by the following research questions to fulfil the objectives mentioned above:

RQ1 What is the current state of research on employee management and social sustainability?

RQ2 What is the current state of research on employee management & social sustainability? What future paths could scholars and practitioners take to create inclusive, sustainable firms in which social factors are entirely interwoven with employee happiness?

This study tries to show historical trends and identify future trends in this field, to address these questions. In more detail, a broad framework that demonstrates how to incorporate social factors in sustainable businesses is suggested, and a research agenda is specified. The rest

of the article is structured as follows: Section 2 contains information by analyzing earlier assessments of the literature that addressed the social aspect of sustainability. Then, the research approach is presented in Section 3. Additionally, Section 4 outlines how a descriptive analysis of the articles under study is developed & outline a framework for setting the direction of a social sustainability research agenda. The key conclusions are summarized in Section 5 at the end.

2 literature review

This section presents a thorough literature analysis to emphasize the significance of earlier research on social sustainability as one of the key pillar of sustainability.

2.1. Social Sustainability

Sustainability is described as “development that satisfies the demands of the present without compromising the ability of future generations to meet their requirements” in the Brundtland Report, published by the UN World Commission in 1987. In this research, “sustainability” defines as the capacity of a human system to maintain three fundamental aspects over time: environmental preservation, economic expansion, and societal participation. Most assume these three pillars are complementary and mutually helpful (Bostrom, 2012). The people dimension has got least attention when the topic of sustainable development is discussed since it is challenging to describe & implement (Ajmal et al., 2018; Missimer et al., 2017). It is, therefore the least theoretically developed of the three pillars. The various social sustainability definitions in the literature reflect this complexity (Ajmal et al., 2018). According to many definitions, social sustainability is a quality of a human system based on a number of values or core ethical principles that provide stable conditions for human well-being, especially for the most vulnerable persons or groups (such as fairness, trust, equity, justice, cooperation, and involvement) (e.g., Bostrom, 2012; Hollander et al., 2016; Sharma and Ruud, 2003). In this sense, social sustainability attempts to supply the basic necessities necessary to prevent the human system from gradually decaying rather than ensuring a comfortable life (Missimer et al., 2017).

2.2 Role of Social Identity Theory

According to Tajfel and Turner (1979), social identity refers to a person’s awareness of his membership in particular social groupings and the emotional and value importance of this affiliation. The image and reputation of the hiring organization have an impact on an employee’s self-concept and perceived social identity, according to research by Greening and Turban (2000). Ashforth and Mael’s (1989) pioneering research on social identity proposed that people’s sense of self is derived from belonging to particular social groupings. Employees occasionally feel happy to be affiliated with specific

organizations due to their reputation. Additionally, Dutton et al. (1994) explain that employees judge an organization’s attractiveness based on how well its image is distinctive and long-lasting while yet upholding its social identity and self-concept. Although EVP includes social values, they are primarily defined by social support and workplace interactions within an organization.

2.3 Role of Social Exchange Theory

Additionally, according to the social exchange theory & its underlying reciprocity norm, employees are motivated to care about the welfare of the company when they perceive it to be supporting them, and they want to return the favor to promote similar future behavior (Eisenberger et al., 1986). Employees’ positive attitudes toward their employer may therefore rise as a result of the company’s care for the sustainability of its personnel, which should have a beneficial effect on their loyalty to this employer (Meyer and Allen, 1991; Porter et al., 1974). Additionally, it is considered that employees’ loyalty to the company grows as a result of their demand for affiliation being satisfied when they perceive the company to regard them. These workers can then create a sense of connection or commitment to the company by incorporating organizational membership into their social identities (Rhoades and Eisenberger, 2002).

2.4 Role of Ability Motivation Opportunity (AMO) Theory

The most crucial theory for comprehending how HRM functions affect organizational performance, the greening of HRM, and environmental results is the Ability-Motivation-Opportunity (AMO) theory. According to the theory, high-performance work systems are different but linked HRM practices that were categorized according to three primary factors: ability, incentive, and opportunity (Amrutha & Geetha, 2020). The methods that ensure individuals have the knowledge and skills required to carry out specific jobs, such as recruiting and selection, training, and development programs, create the foundation of abilities. Practices like performance reviews and financial and non-financial incentives, designed to support employees’ efforts to attain goals, provide the foundation of motivation. Lastly, an opportunity is a collection of activities involving involvement, information sharing, and ways to boost independence.

3 Research methodology

The study is designed as exploratory research because the phenomena under discussion are in their early phases of maturity and are not well understood in the literature (Ardolino et al. 2017; Yin 2017). The existing literature comprehensively conceptualizes social issues (Ben-Daya, Hassini, and Bahroun 2017). To develop this conceptualization by investigating the social aspect of organizations deductively, an in-depth interview method was chosen acceptable. Fifteen key representatives (such

as a senior manager of sustainability, HR manager, or Professors) from several organizations participated in semi-structured interviews of one hour each (Sandelowski, 1995). We followed Olson's (2016) and Brinkman's (2013) advice to create a procedure for interview planning, participant selection, research questions, follow-up questions, conducting the interviews, and data interpretation. The interview schedule was created to examine the various social sustainability elements in use and their effects. These open-ended questions allowed the interviewees to speak effortlessly about their experiences. There were six questions on the interview sheet. Its purpose was to understand better the company, its procedures, and employees' perception. To avoid social desirability bias, which could influence informants' responses, the questions' wording underwent scrutiny (Nederhof, 1985). Initial validation of the questions' applicability, the clarity of the sentences, and the content validity came from two pilot interviews with practitioners. As a consequence of the feedback, the interview questions were improved.

3.1. Thematic Analysis

The fifteen interviews were recorded and then coded and analyzed according to standard qualitative research procedures (Creswell and Poth 2017). The study used the coding recommendations provided by Braun and Clarke (2006), which involve six stages of thematic analysis: familiarizing oneself with the data; creating initial codes; looking for themes; reviewing themes; defining & labeling themes; & preparing the report (Braun and Clarke 2006, 87). They also imply that the theme analysis is a cyclical process with back-and-forth movement rather than a linear, step-by-step procedure. Data were categorized, grouped, organized, and managed using NVivo 12 to help determine themes, sub-themes, and their linkages. Thematic codes were consolidated as a result of phases 2 and 4. While "theoretical" coding comprises the identification of themes through the literature before engaging with the text, open coding, as addressed by Yin (2017) and others, entails the identification of themes through direct engagement with the text (Braun and Clarke 2006). This deductive, or "theoretical," thematic analysis primarily focused on research questions in a "top-down" manner, but new themes were discovered using a "bottom-up" data-driven open coding approach (Braun and Clarke 2006). To minimize and improve codes, the coding procedure was repeated twice. According to the primary theme, topics were coded (Richards, 2014). Sub-themes are formed beneath each main subject. Through independent coding carried out by a different researcher, the coding was cross-checked, and a consensus was obtained (Ardolino et al., 2017). The codes were examined, and overlapping codes were combined into larger groupings to prevent repetition. Over the data, correlations, and patterns were found (axial coding).

4 Findings

The results and interpretation were subjected to a qualitative data analysis using NVivo 12. There were various steps in the study. The history of the company was initially covered. The interviewees' age, gender, and length of work are shown in Table 1. Six ladies and nine males out of the fifteen participants made up the group. The age range was between the mid-20s and mid-40s, and the average number of years worked was 8.86.

Table 1: Summary profile of experts

Case	Name	Age	Gender	Years of Exp
1	Manager 1	28	Female	5
2	Manager 2	32	Female	9
3	Manager 3	45	Male	10
4	Manager 4	46	Male	12
5	Manager 5	30	Female	6
6	Manager 6	30	Male	8
7	Manager 7	47	Male	15
8	Manager 8	33	Male	11
9	Manager 9	45	Male	14
10	Manager 10	27	Male	7
11	Manager 11	34	Male	12
12	Manager 12	30	Female	8
13	Manager 13	27	Female	6
14	Manager 14	26	Male	5
15	Manager 15	30	Female	5

4.1 Thematic Analysis

Thematic networks are used in this research. Following the transposition of text data into the software, a "hierarchy chart" study was first carried out to look at the scope of codes used in the textual data. A "hierarchy chart" is created on the basis of coding references, a graphic output from NVivo 12. The most common code used on the basis of coding references, as shown in Figure 1 by the hierarchy chart, are "psychological well-being", "governance" and "health & safety". Figure 1a shows the areas in psychological wellbeing where participants has emphasized during interview, followed by focused areas of governance (fig 1b) and areas of health and safety (fig 1c).

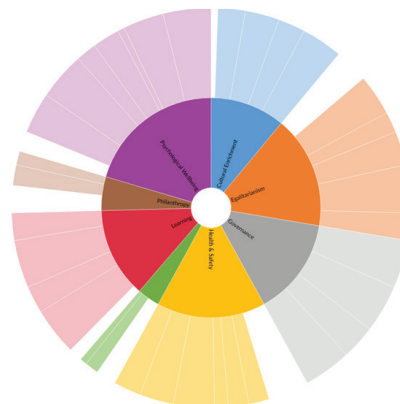


Figure 1: Hierarchy chart of codes



Figure 1a: Hierarchy chart of psychological wellbeing



Figure 1b: Hierarchy chart of governance



Figure 1c: Hierarchy chart of health & safety

4.2 Codes Creation & Themes

The coding phase produced several initial thematic nodes. In NVivo 12, nodes were made using automatic coding. This demonstrates how nodes were created and linked to one another according to their importance. The next step was to create clusters of related themes. This entailed using axial coding, a process focused on looking for and analyzing themes. To use axial coding, the researcher had to examine the data and decide the appropriate themes carefully. The researcher made sure, following their judgment, that the themes developed accurately captured the meaning of the text data and appropriately expressed the opinions and experiences of every participant. The researcher can see how many participants shared data that supported a specific theme using the NVivo 12 interface. In the third stage of coding, known as selective coding, the researcher looks for the primary variables or themes. Egalitarianism, health and safety, cultural enrichment, human rights, learning and development, governance, philanthropy, and psychological well-being were those identified in this study. The topics were then categorized based on their significance, sources, and references. Figure 2 shows all the codes and figure 3 describes the cluster analysis of words on the basis of word similarity in codes.



Figure 2. A conceptual model

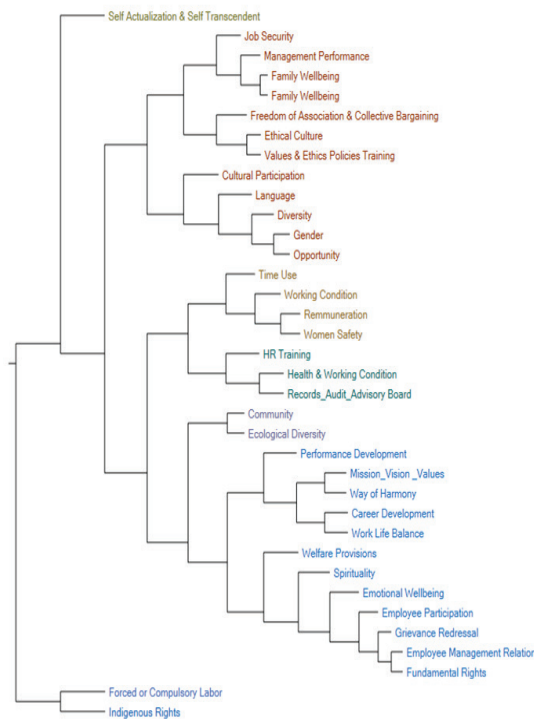


Figure 3: Cluster analysis of words

Learning & development

The entire development of employee's personality & capacity to further the common good is what learning means in the context of well-being. Participants emphasized the need to offer training on organizational values and objectives so that they can be in line with their aims. Many participants discussed various situations when the organization lacks opportunities for career advancement. The organization shall also make an effort to offer education to enhance and increase the knowledge Montalb-Domingo et al. (2018), values, & skills of the workforce, with learning being focused on the complete development of the workforce personality' (Andersen and Skjoett-Larsen, 2009). Learning requires the development of the following skills: Independence, creativity, and the capacity to plan, make decisions, and innovate; subjects knowledge that are intrinsically fascinating and/or will be of practical value; interpersonal relationships characterized by friendship, cooperation, and empathy; respect and recognition of one's own and others' worth; generosity, compassion, lack of prejudice, openness to differing points of view; and tolerance for linguistic and religious diversity.

Governance

To engage, influence, and hold accountable the organizations that impact their lives at any level, employees must practice "good governance." Employees can assert their rights, disagree with management and

demonstrate, and fight corruption without fear. This may occur via various means, including regularly scheduled elections, consultations, communication, political debate, the exercise of fundamental free speech rights, and largely unrestricted media (Montalb-Domingo et al., 2018). These steps were taken to promote good governance. These include whether people were aware of their fundamental rights and believed they were protected, whether they trusted institutions, such as when services were being delivered, and involvement, such as voting. It represents a certain kind of freedom. Many panelists emphasized how much independence employees have within the company will increase engagement.

Culture enrichment

Undeniably, the field of cultural diversity gives people identity, artistic expression, a feeling of history, and significance, notwithstanding how difficult it may be to comprehend Montalb-Domingo et al. (2018). Many organizations place a significant premium on the preservation and promotion of culture. Language, holidays, attire, the atmosphere, the inventiveness of employees, and shared ideals are frequently manifestations of culture. Participants cited the importance of creative workplace culture for the expansion of a firm. Culture shapes employees' personalities and manner of life, though less obviously. Additionally, it is a dynamic idea continually challenged by internal cultural and societal development and outside pressures. There are several significant instrumental links. First, if a company's culture connects its employees to it, it can further solidify and enhance its ties. Celebrations foster a deeper form of closeness than a simple conversation. Relationships based on the same culture may also enable additional advantages, including trust, solidarity, and mutual support.

Health & safety

The intrinsic worth of health is noticeable. In its absence, it is plainly seen. Participants discussed workplace sanitation, clean drinking water, health and hygiene conditions, and safety hazards (Montalb-Domingo et al., 2018). The participants also highlighted matters like adhering to health and safety requirements, and several participants linked it to the organization's moral obligation. Of course, everyone has physical restrictions. However, if medical problems are supported, many people can live long, healthy lives (Eizenberg and Jabareen, 2017). Employees are shielded from accidents and illnesses, which can negatively affect their general physical health and happiness, by having a safe and healthy work environment (Mani et al., 2016). Employees can feel more at ease and focused on their work in a secure and healthy environment that reduces stress and anxiety associated with potential illnesses or accidents. With rare exceptions, being fit helps with work since it reduces absenteeism, improves concentration, and allows

for greater productivity. Additionally, it is essential for schooling and lifelong learning since people who are healthy and well-fed can concentrate more easily (Zorzini et al., 2015). Employee morale and job satisfaction are more likely to be higher when they believe their organization values safety and well-being. Improved job performance and job satisfaction result from increased engagement, a sense of security in their work environment, and concentration on their tasks. Finally, the importance of workplace cleanliness, vacations, and women's safety was emphasized.

Philanthropy

Nevertheless, the study of human happiness brings something fresh, just like each of the other fields. Since it has intrinsic worth, harmony with the environment and the community Montalb-Domingo et al. (2018). The eradication of poverty, the promotion of "harmony with nature," the insights of indigenous people, the need for sustainable transportation, and the comprehensive design of human communities, including metropolitan regions, are all given rightful and vigorous priorities by many organizations (Mani et al., 2016). However, we notice that many firms do not implement all available happiness-related rules. It does not emphasize the necessity of altering humanity's fundamental outlook and mentality toward material goods, of shifting our deepest aspirations away from experiencing sustained and mature human happiness and well-being, with all of the selves that entail, and away from becoming millionaires and billionaires one day. The word "beautiful" is not used in relation to this area; it is mentioned along with the necessity to educate people about sustainable practices and the preservation of natural assets. A few participants discussed the value of building community centers for societal well-being, and it was also discussed how to increase support for sustainable farming to enhance sustainability in the neighborhood and society (Eizenberg and Jabareen, 2017) (Zorzini et al., 2015). In other words, it primarily emphasizes the instrumental value of the environment. It only considers the "intrinsic" worth when it is a unique trait of a minority viewpoint, not the dominant one. Because of this, we call for more regulations emphasizing shifting people's fundamental perspectives away from maximization and toward sufficiency.

Psychological well-being

The development of consciousness characterizes psychological wellness, the growth of a sincere concern for others, the non-judgmental sorting of emotions, the healing of bad memories, work-life balance, and accomplishment. When one is fundamentally self-centered, when emotions and desires bubble up and overpower in ways that one later regrets deeply or that seriously harm others, when one's actions are not integrated with one's emotions and deeply held values, and when one is plagued by worry,

anxiety, or excessive thinking, there is room for greater psychological well-being.

The goal of this area is to provide workers with the tools they need to develop an alternative view of humanity from within. Our theory of psychological health views it not only as a dependent state that can be examined in relation to correlates with other accomplishments but also, in large part, as a skill that can be mastered. It has some independence and stability as a skill and is not just a result of the environment. According to this perspective, psychological well-being also consists of learnable abilities that may have both intrinsic and instrumental worth when routinely mastered and applied. The subjective evaluation of an employee's overall level of satisfaction with various aspects of their well-being is another component of psychological well-being.

Egalitarianism

In essence, it concerns the fairness and equitable treatment of all members in terms of opportunities and resources (Eizenberg and Jabareen, 2017), regardless of distinctions such as gender, ethnicity, religion, age, and sexual orientation (Carter and Jennings, 2004; Chin and Tat, 2015; Zorzini et al., 2015). This implies that all workers should have equal access to promotions, pay, opportunities for training and development, and a welcoming workplace atmosphere (Hutchins and Sutherland, 2008). Employees may feel stressed and frustrated due to workplace discrimination and unfair treatment. Employees can better concentrate on their work when equality is advocated and implemented since this tension is lessened (Mani et al., 2016). Eliminating prejudice and establishing an equal playing field for all employees to prosper and contribute to the company's success are the goals of equality in the workplace. Positive work environments and higher employee morale can be fostered in an environment that values equality and encourages inclusivity. Employees are more likely to be interested and motivated in their work when they believe their contributions are valued and that they have equal opportunities for growth and development. Employee contentment was also a result of it. Employees are more likely to feel appreciated by their employer and satisfied with their jobs when they believe they are being treated fairly and with respect. A more peaceful and effective work environment can result from encouraging improved teamwork and collaboration among employees in a diverse and inclusive company. Overall, promoting equality at work can increase workers' happiness and job satisfaction, which can contribute to the company's success.

Human rights

Participants emphasized the significance of worker rights, which are the cornerstones of every organization. Organizations must uphold and respect these human

rights in all operations, including dealing with staff members, clients, vendors, and other stakeholders (Mani et al., 2016). This entails assessing and managing risks and repercussions related to human rights, collaborating with stakeholders to address human rights issues, and taking action to stop and redress human rights abuses (Zorzini et al., 2015). Human rights-related legal and regulatory requirements, such as anti-discrimination laws and labor regulations, may also apply to organizations. Furthermore, a lot of managers advocated against the use of coerced or required labor. Additionally, workers should receive training to increase their awareness.

5 Discussion & implications

In keeping with current requests for social sustainability research in organizations (Torugsa et al., 2013; Yawar and Seuring, 2015), this study investigated social sustainability characteristics and how they can improve organizational performance. The lack of knowledge of the implications surrounding the social dimension of sustainability served as our inspiration (Zhu et al., 2005; Zapata and Nieuwenhuis, 2010; Silvestre, 2015a). We fill numerous significant gaps in the literature by addressing them, as will be discussed in the following section. We start by conceptualizing the social sustainability model. Our study closes the knowledge gap between the features of several social sustainability elements in organizational performance and the social aspect. Our study presents eight distinctly different dimensions and metrics that provide a deeper understanding of social sustainability. It does this by drawing on social exchange theory and social identity, which support and would give the organization a strategic advantage. This study is a continuation of other studies that concentrated on diversity, charity, safety, labor rights, and human rights, such as Mani (2016) and Carter and Jennings (2004). Our study, however, is unique in several ways. Our study encompassed learning & development, cultural enrichment, and psychological well-being in addition to our initial focus on the social practices of employees. Furthermore, rather than emphasizing organizational productivity, our study concentrated on employee happiness as a result. According to our research, a business with all eight pillars would have content and happy employees. This suggests that an organization's internal branding depends on its employees' happiness. Our findings are consistent with an earlier study by Gopalakrishnan et al. (2012) that discovered ethical problems, concerns with inclusion and diversity, safety issues, and challenges with environmental performance in suppliers. Our findings in the area of societal duty support Silvestre's findings, which pointed out social problems, including clean water and sanitary conditions. In addition to general social issues, researchers in emerging economies have discovered industry- and location-specific issues. For instance, Hall et al. (2012) have noted problems with poverty alleviation, health and safety, and educational

efforts, and Lee and Lee (2007) have reported issues with child and forced labor, minimum wages, freedom of association, and health and safety in their supply chain research for Starbucks. This suggests a variety of social challenges in developing nations and strategies used by key organizations to address them (Hoejmose et al., 2013). In conclusion, our findings point to eight distinct social sustainability dimensions, each distinct and unique. Our research gives societal topics important in the present a fresh viewpoint.

Our study offers practitioners and decision-makers a distinctive perspective on social concerns in the contemporary environment. Additionally, practitioners can benchmark their organizational practices using this tool. This outcome helps the practitioners to create risk-averse and competitive socially responsible enterprises in emerging economies. Second, our findings show how employee sustainability adoption can improve organizational performance. Our findings demonstrate that organizations can gain a competitive advantage by implementing effective collaborative strategies concerning social sustainability adoption that will enhance employee performance. As a result, organizations acquire new social management skills that aid in their efforts to improve integration, collaboration, and long-term performance (Silvestre, 2015b). Another intriguing finding is that the eight pillars promote employee happiness and well-being, which helps an organization's employer brand. This suggests that social sustainability is essential for the company.

6 Conclusion & limitations

This study discovered several social elements in businesses. Compared to other social sustainability measures like GRI indicators, these social variables within the companies are distinctive and diverse. This research covers many social variables to address how businesses may continue to please workers, raise happiness, possibly improve sustainability, and set themselves apart from rivals. By shedding light on the various social dimensions, this study adds to the body of knowledge on social sustainability in businesses. The resulting social sustainability dimensions are essential to workers and serve as a map for managers looking to create socially responsible companies. Also highlighted were the results and indicators of social sustainability.

There are several restrictions to this study. We made use of information acquired from several Indian company CEOs. However, bias may be introduced due to the small sample size and the participant demographics' (firm size, top management position, and year of experience) narrow range. By choosing participants from various industries, we hoped to increase generalizability. We also hoped that the participants' long career paths would have given them diverse experiences at multiple levels and inside various organizations. However, follow-up research should be

conducted utilizing different sample sizes. The suggested multi-dimensional social sustainability components could also be validated by an exploratory and confirmatory quantitative study that uses large-scale survey data for factor analysis.

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Supply-side Dynamics of Gig Economy in the Global South: Implications of Unlimited Supply of Labor

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Abstract

A distinctive characteristic of the global south is the existence of a huge pool of labor force earning low wages for the capitalist sector to exploit .This paper examines the implications of this upon the supply-side dynamics of the gig economy in the food delivery sector in Thailand ,a country of the global south ,by employing netnography to analyze content from YouTube channels as created by gig workers themselves and from a page on Facebook as created by a union of gig workers .It is found that gig economy platforms exploit this distinctive characteristic to their benefit by maximizing the number of gig workers they partner with .As a result ,there are too many gig workers with too few jobs being distributed forcing some gig workers to drastically game the algorithmic management system to the point of outright cheating .This has important repercussions on income distribution among gig workers ,whereby gig workers who cheat) black riders (‘benefit at the expense of gig workers who do not’) white riders .(‘In turn ,this exacerbates the problem of inequality because only gig workers with sufficient resources ,to begin with ,can afford to cheat .Although platforms may be able to prevent outright cheating ,they will instead face a new conundrum of how to fairly distribute jobs among gig workers.

Introduction

”A hot-headed rider ,who could not successfully secure jobs from platforms ,accused his fellow riders of cheating, and grabbed a knife trying to stab other riders“

Thairath news show22 ,nd November2022

The growth of gig workers in the food delivery sector has been a phenomenon ,and their work is being mediated through digital platforms .While there is no absolute definition of what the gig economy is ,this paper adopts the definition by Duggan et al (2020) .which classifies this type of gig work as app work .It refers to service-providing intermediate digital platforms) or” apps (“that use workers to complete local activities for clients who pay for these services ,while the platforms earn a portion of the transaction) De Stefano .(2015 ,It is a form of labor in which” the offering of traditional working activities in local markets is conducted through apps ,managed by intermediary digital platform organizations ,that intervene in setting minimum quality standards of service and in the selection and management of individuals who perform the work) “Duggan et al ,2020 ,.p .(118 .Compared to traditional employers ,gig workers ,who have no contract for continuing work relationships with digital platforms, are not paid wages and salaries ,and do not have predictable work schemes and income) Abraham et al .(2019 ,.Gig workers tend to suffer from emerging issues such as low pay ,prejudice ,irrational work hours ,precarity ,unjust

dismissal ,and hazardous working circumstances) e.g., Yerby & Page-Tickell.(2020 ,

Gig workers are being managed by algorithms ,which is central to the operation of gig economy platforms) Wood et al ,(2019 ,.and the research on sensemaking of algorithm management has just emerged ,recently) Möhlmann et al .(2023 ,.While the concept of algorithm sensemaking already helps to explain the behaviors of gig workers ,the implications of the context of the global south upon the supply-side dynamics of the gig economy have yet to be examined.

This paper fills in the gap and tries to examine the supply-side dynamics of the gig economy in the global south. According to Lewis ,(1954) the labor supply for the capitalist sector to exploit in the global south is seemingly unlimited because of the existence of a huge pool of labor earning low wages outside of the capitalist sector .This research asks one key research question” :What are the implications of a seemingly unlimited supply of labor upon the supply-side dynamics of the gig economy in the global south.“?

In doing so ,it connects the framework of algorithm sensemaking) Möhlmann et al (2023 ,.with the theory of digital object) Kallinikos et al (2013 ,.and relevant global south context) Lewis (1954 ,to explain the supply-side dynamics of the gig economy in the global south or more specifically the food delivery sector ,a subset of the

transportation sector ,in Thailand .In turn ,it constructs a conceptual framework for supply-side dynamics of the gig economy in the global south and draws implications to inequality and fairness which are important areas of inquiry within the realm of ICT for development) Bonina et al ;2021 ,Heeks ;2022 ,Masiero.(2022 ,

Literature review

Algorithm management

Möhlmann et al (2021) .have unpacked algorithm management using Uber as their case study .Algorithm management in gig economy platforms entails two operations .First is algorithmic matching which creates a marketplace optimizing the matching of supply and demand of services being exchanged on the platforms. Data is needed to be fed into the algorithm for algorithm management to operate .One key characteristic of the algorithm is known as” surge pricing “that ensures that riders go online when customers need rides) Chen et al., .(2015

Second is algorithmic control which entails the use of algorithms to monitor gig workers so that their behaviors align with the goals of the platforms .KPIs are being enforced and this may include timely acceptance of new ride requests and low frequency of cancellations .Here, data also plays an important role as the behaviors of riders would need to be tracked to enable this operation. Behavioral nudging may also be utilized) Thaler& Sunstein.(2009 ,

All in all ,the algorithm management system operates through six mechanisms at which Kellog et al(2020) . called the6” Rs .“Platforms use algorithms to direct workers by *restricting* and *recommending* ,to evaluate workers by *recording* and *rating* and to discipline workers by *replacing* and *rewarding* .Some suggest that this has led to a vicious cycle of ethical challenge which entails opacity ,datafication ,and nudging and may limit the ability of gig workers to flourish to achieve both personal and professional growth) Gal et al.(2020 ,.

Algorithm sensemaking

Recently ,Möhlmann et al (2023) .have written on the sensemaking of algorithm management .The concept of sensemaking originated from Weick (2015) essentially entails three components which are enactment ,selection, and retention whereby Weick (2015) posits that the environment we are living in is originally equivocal and ambiguous until we make sense of it ,and Möhlmann et al (2023) .unpack the process of sensemaking in context of algorithm management according process set out by Weick(2015)

As for enactment ,workers may discuss with one another how algorithms work or they may attempt to test algorithms in the real world themselves .As for selection, riders may attempt to find glitches in the system ,or they may start to discover patterns in the operation of

algorithm .Finding glitches and discovering patterns are not based on actions but entail mental effort of interpreting ambiguity and equivocality .Lastly ,retention entails some form of physical encounter or it may happen in digital space as riders access content shared by others on online communication platforms.

The understanding of algorithms may result in two types of behaviors .First is market-like behavior ,where riders believe that they understand the inner workings of the algorithms well enough so that they may exploit existing loopholes to game the system .It is normal for gig workers to resist algorithms) Allen-Robertson(2017 , and they can do it both individually and collectively. This is algoactivism according to Kellog et al.(2020) . Second is organization-like behavior whereby riders act cooperatively with the platforms like workers within organizations.

Theory of digital objects

According to the framework of algorithm sensemaking, algorithm management is viewed as a static entity)Möhlmann et al .(2023 ,.However ,it is changing all the time in reality .Henceforth ,we view algorithms being used to manage gig workers as digital objects .According to Kallinikos ,Aaltonen ,and Marton ,(2013) digital objects are characterized by editability ,interactivity, openness ,and distributedness ,and they fundamentally entail modularity and granularity .In turn ,this makes digital objects inherently unstable and pliable ,changing all the time .Viewing algorithms as digital objects implies that they may change all the time as platforms may choose to finetune their algorithms to maximize the profit of their businesses) Charoenpanich .(2017 ,This adds dynamics to the supply side of the gig economy.

Unlimited labor supply for the capitalist sector in the global south

To answer the key research question ,it is important to know the distinctive characteristics that matter for the supply side dynamics of the gig economy in the global south .According to Sir Arthur Lewis ,(1954) the recipient of the Nobel Prize in Economics in ,1979 there exists a huge pool of labor being employed in the subsistence sector earning a minimum wage acting as a seemingly unlimited labor supply for the capitalist sector to exploit. As labor is being transferred from the subsistence to the capitalist sector ,the wage rate hardly increases as the pool of labor in the subsistence sector is so large .This model is being used to explain the rapid economic growth of emerging economies such as China) Islam & Yokota, .(2008Eventually ,after some time ,the wage will start to increase ,and it is at this inflection point that ,according to Lewis ,(1954) an economy ceases to be underdeveloped. Arguably ,this concept of unlimited labor supply is closely related to the concept of institutional void) i.e” .weakness in institutional functions required by markets (“which has

already been utilized to explore the implications of digital platforms in the global south) Heeks et al ;2021 „Malik et al .(2021 „Gig economy platforms act as institutions, which” collect and analyze information on producers and consumers in a given market) “Heeks et al ,2021 „p (7 „and match demand with supply with their algorithm management system ,helping the huge pool of labor in the subsistence sector to be absorbed into the capitalist market.

Methodology, empirical context, data collection, and analysis

Methodology :Netnography

Qualitative methodology is employed in this paper because it is important to probe into the understanding of algorithms by gig workers to examine the supply side dynamics and this can be done at ease with the qualitative method .In particular ,netnography ,which essentially is the ethnography performed on social media platforms ,is utilized) Kozinets .(2019 ,Arguably netnography is better than traditional qualitative methods such as interviewing as gig workers are more likely to be more honest as they talk with their peers .For example ,there exists some rumor being circulated among gig workers that they may be penalized if they discuss specific inner workings of algorithm management systems with outsiders.

Empirical context :Food delivery sector in Thailand

Thailand has many characteristics of the dual sector as postulated by Lewis (1954) with 38.76% of national income coming from the informal sector) Buddhari& Rugpentum .(2019 ,Further ,real wage growth has been relatively sluggish in Thailand as compared to other countries in the region such as Malaysia ,Indonesia, Singapore ,and South Korea .Arguably ,this is a symptom of the existence of the dual sector .Figure 1 depicts the wage rate of those countries with data from the International Labor Organization) ILOSTAT.(

In this paper ,we specifically choose to examine the food delivery sector ,which is a subset of the transportation sector ,in Thailand .An unlimited supply of labor is likely to play a more important role in this sector as compared to other transportation sectors such as rail-hailing because the cost of entering into the food delivery sector is relatively low .A rider just needs a motorcycle and a working smartphone with an internet connection

Further ,the food delivery sector in Thailand is burgeoning especially during the recent Covid 19-pandemic with the market size increasing from just THB 7 billion in2018 to THB 105 billion in ,2021 according to Statista .The competitive landscape of food delivery in Thailand is constantly shifting .Currently ,major platforms include Grab ,Lineman ,Robinhood ,Foodpanda ,ShopeePay and Lalamove which operate different business models ,and, according to recent news ,Lineman is currently thinking of acquiring Foodpanda.

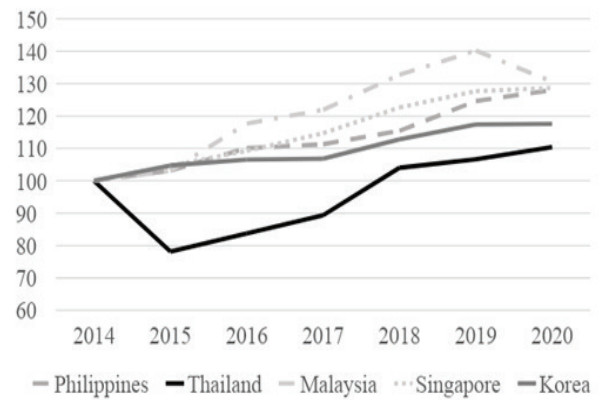


Figure :1 Wage rate of Thailand and its comparable in2017 PPP) Index(100 = 2014

Data collection :youtube and facebook

We collect content from the YouTube channels created by the riders themselves and content created by the union of riders posted on the Facebook page of the organization. Within the rider community in Thailand ,a distinction has been made between ‘white riders ‘and’ black riders.’ ‘Black riders ‘are those with market-like behaviors who game the system with illegit techniques’ .White riders ‘mostly have organization-like behavior ,but some of them may have market-like behaviors as well ,but they game the system with legit techniques.

We select two YouTube channels for analysis of their content on the basis of popularity .One is created by a ‘black rider ‘,and the other one is created by a ‘white rider ‘.The ‘white rider ‘channel that we select has more than50 K of subscribers .It is more difficult to find the ‘black rider ‘channel and the one that we select has nearly 10K of subscribers.

Other than content from YouTube channels ,we also collect content created by the union of riders in Thailand posted on their page on Facebook .This provides a bird-eye view of numerous issues that riders in Thailand are dissatisfied with regarding operation of gig economy platforms.

Data analysis and interpretation

Upon the completion of data collection ,we analyze the dataset using the constructivist grounded theory) Charmaz, .(2006We constantly compare between ‘white rider ‘and ‘black rider ‘to identify the similarities and differences in content ,dynamics ,and characteristics between the two groups) Berdychevsky & Nimrod .(2015 ,The analysis methods are described step by step below .Firstly ,we carefully watch each video on Youtube and read each post on Facebook .Secondly ,we use open coding to generate initial codes and categories .Thirdly ,we use axial coding to identify the major differences between ‘white rider ‘and ‘black rider ‘.Fourthly ,we implement selective coding

and provide thick descriptions for each code. Lastly, we utilize theoretical coding to summarize the relationships within a form of a conceptual framework.

Findings

Design choice of gig economy platforms in the food delivery sector in Thailand

A YouTube content from the 'white rider' channel entitled "Which food delivery platforms should newbies work for" posted on 18th April 2021 delineates the design choice of food delivery platforms in Thailand. New riders will need to apply to become partners of platforms and different platforms have different procedures and may be open for recruitment for different periods of time. The pay to riders varies across platforms and locations at which riders work, and they are also subjected to changes all the time. Most importantly, perhaps, algorithm management systems of platforms allocate jobs in two ways. On the one hand, the system may directly assign jobs to riders (AI-assigned jobs), and, on the other hand, riders may be presented with all jobs in the areas and the riders secure jobs by being the first one who tap to accept jobs on smartphones (job competition). (In the latter case, riders would need to have fast smartphones with good internet connections as riders would need to compete with one another in terms of speed and it can be a matter of milliseconds. Further, platforms may manage supply and demand, and, sometimes, riders would need to apply to work at a particular time, despite the fact that they are already partners of platforms. Lastly, there exist hierarchy systems that rank riders within platforms, whereby riders with higher ranks may obtain certain benefits.

Exploitation of unlimited supply of labor in the global south

On 13th October, 2022 the union of riders in Thailand wrote an interesting post on Facebook entitled "Platforms should control the birth of riders," they make the following important points. Platforms do not pay salaries or provide benefits to riders; therefore, these platforms can hire all riders that they want, while riders would need to bear the cost of working for platforms. Only riders who perform very well will obtain benefits from platforms according to the hierarchy system, but this becomes impossible when the number of riders working for platforms is so very large. Henceforth, platforms would end up not paying any benefits to riders. Lastly, platforms create an oversupply of riders. Platforms would need to ensure that they have enough riders to satisfy demand in peak hours. This leads to drastic competition for jobs during normal hours.

Sensemaking and behaviors of white riders

As aforementioned, there are two ways in which jobs are assigned to the riders, AI-assigned jobs and job competition. As for the first one, the 'white rider' channel delineates the strategy to follow in a video clip

entitled "What to do when you are not being assigned jobs for Grab newbies" posted on 28th August, 2020. Firstly, the gig economy applications must be updated. Secondly, riders should know which restaurants enter into partnerships with platforms. They may even check which restaurants are launching promotions, and riders must find strategic locations to gain access to many restaurants at once at ease. Thirdly, riders must be able to predict the behaviors of customers. For example, customers are likely to order coffee in the afternoon. Fourthly, the suggestion is also based on the belief about the inner working of the algorithm management system. For example, new riders should refrain from refusing to accept jobs as this may have repercussions for jobs being allocated in the future.

Another kind of system is job competition. Here, the 'white rider' channel launched a video entitled "Review of Mi10 T Pro to use with Lineman and Lalamove." The video pointed out that the Mi10 T Pro smartphone is just right for the job because it is large, has high refresh rate and has CPU with high performance. Also, it can be connected to 5G internet which can increase the chance of securing jobs by as high as 30% according to the video's maker. Unfortunately, it is rather expensive and is being sold at around THB.15,000.

Sensemaking and behaviors of black riders

Black riders modify their smartphones to enhance their performance in the system of job competition. This includes changing the operating system of their smartphones. The 'black rider' channel posted a video entitled "Newbies' root smartphones: Advantages and disadvantages of different Rom" in 7th April, 2022. The act of rooting implies changing Rom, which refers to the operating systems. The video then goes on to explain the differences between traditional Rom and modified Rom, whereby the former is the original operating system that comes with smartphones, and delineates different Rom including Miui, OxygenOS, Pixel, Havoc, Arrow and XD. Further, the 'black rider' channel also demonstrates that smartphones with modified Rom see jobs faster in a video titled "What are the differences between smartphones which are rooted and not rooted" launched on 14th December, 2021.

There are also many other tricks to boost speed in the system of job competition. As an illustration, one of them is changing the size of the display on smartphones. This makes it easier to click to accept jobs as the buttons will become larger on the smartphone. Further, buttons for selecting jobs and confirming jobs will become aligned on the same spot making competing in the system of job competition easier as riders would just need to continuously tap at a particular point on smartphones to compete for jobs. The 'black rider' channel launched a video entitled "Teaching one-point click for both suitable for Samsung smartphones yet to be rooted for free" on 13th February, 2021. It is clearly shown the setup process

is very complex entailing turning on developer modes, downloading specialized software ,and connecting smartphones with laptops to enter' special codes 'on terminal windows.

Recent reactions from gig economy platforms ,ongoing battles ,and fairness of AI

According to gig economy platforms ,the behavior of 'black riders 'is unacceptable .In turn ,platforms take two kinds of action .First ,platforms may try to prevent such behaviors from happening ,but' black riders 'can always find ways around it .The' black rider 'channel posted a video entitled" Rooted smartphones cannot be used now with the new update from Robinhood "on9th December .2022According to the clip ,smartphones which are 'rooted 'or with developer mode being turned on will no longer be able to access the Robinhood application. Toward the end of the clip ,the video creator asked for his audience to leave comments inviting users to find ways around the algorithm management system of Robinhood.

Second ,platforms may switch from' job competition 'to 'AI-assigned jobs 'system .Here ,the main issue becomes the fairness of job assignments by AI .Lineman recently made such a change and the union of riders posted on 1st December 2022 that the system tends to favor new riders .This hypothesis has also been confirmed by a video created by the' black rider 'channel showing the AI system of Lineman tends to discriminate against older riders ever since the period of' job competition 'in a video entitled" why newer riders see jobs faster "posted on15th December of.2021

Discussion

A conceptual framework of the supply-side dynamics of gig economy in the global south

The finding in the above section is synthesized alongside the framework of algorithm sensemaking of Möhlmann et al (2023) .which already links algorithm management, sensemaking ,and behavior into the conceptual framework of supply-side dynamics of the gig economy in the global south) Figure .(2 We add an additional link from behavior to algorithm management as it is clear that behaviors of' black riders 'lead to changes in the algorithm management system .In addition ,we situate the conceptual framework within the global south context which entails the seemingly unlimited supply of labor.

Essentially ,the global south context enables gig economy platforms to hire more gig workers than job availability. There are too many gig workers chasing for too few jobs and so' black riders 'emerge and game the algorithm management systems .In turn ,platforms may need to finetune the algorithms at which they use to manage workers to prevent gaming by' black riders 'who may continuously find new loopholes .Hence ,the gig economy ecosystem will be very unstable and will change all the time .Nonetheless ,gig economy platforms can end illegit behaviors by changing from' job competition 'to' AI-assigned jobs 'system.

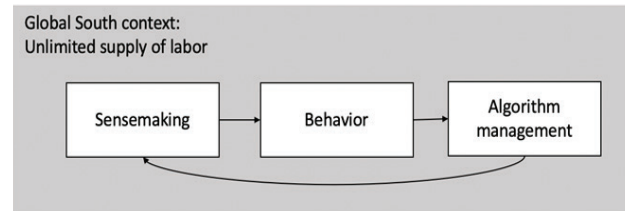


Figure :2 Conceptual framework

Issues related to equality and fairness

'Black riders 'earn more than' white riders 'in' job competition 'system .Inequality among gig workers is being exacerbated because riders need relatively more resources to begin with to operate as' black riders.' Firstly ,riders would need very good smartphones with good internet connection to be competitive .Secondly, they need to have good knowledge of digital technology as operating' black riders 'can be complicated .Thirdly, equipment ,essentially smartphones ,which riders use would need to be upgraded all the time ,and this is expensive.

Gig economy platforms can end illegit behaviors once and for all by changing from' job competition 'to' AI-assigned jobs 'system but this will lead to the problem of fairness .Given that most platforms have a large number of riders as partners in relation to existing jobs ,it is hard to imagine a system of job assignment that would be able to satisfy every rider .Even if jobs are being assigned to each rider equally ,the amount of income each rider earns may not be enough to sustain their livelihoods.

Theoretical and managerial implications

As for theoretical implications ,this paper has constructed a conceptual framework of the supply-side dynamics of the gig economy in the global south .The examination of the unlimited labor supply in the global south as postulated by Lewis (1954) is novel as the connection has yet to be made between this distinctive characteristic and the gig economy .Further ,this paper has repercussions on the issue of equality and fairness which is deemed an important area of inquiry within the realm of ICT for development) Bonina et al ;2021 ,.Heeks ;2022 ,Masiero, (2022

As for managerial implications ,this paper highlights the paradox that gig economy platforms are facing in the global south ,whereby gig economy platforms would need to expand quickly to compete ,but it will be more difficult to manage the supply side ,as a result .Expansion of riders will lead to outright cheating whereby' black riders 'benefit at the expense of' white riders .'Platforms can change their business model from' job competition 'to' AI-assigned jobs 'system ,but this leads to a conundrum of how to assign jobs fairly among riders.

Conclusion

This paper essentially examines the implication of the seemingly unlimited supply of labor upon the supply-side dynamics of the gig economy in the global south using the food delivery sector of Thailand as the case study .Netnography is being used to analyze content from YouTube as created by riders themselves and Facebook

posts from the union of riders .In turn ,it extends the framework of algorithm sensemaking of Möhlmann et al (2023) .into the conceptual framework of supply-side dynamics of the gig economy in the global south.

It is found that gig economy platforms exploit the seemingly unlimited supply of labor by recruiting a lot of gig workers .This intensifies the competition between gig workers to find jobs and it may lead to outright cheating as defined by gig economy platforms .This exacerbates inequality among gig workers as only those who are already better off are more likely to be able to cheat ,and, hence ,earn more .Gig economy platforms may try to avert this problem by changing algorithms being used to manage gig workers ,but gig workers can always spot new loopholes.

Gig economy platforms may attempt to end cheating once and for all by changing from the system of” job competition ‘to the system of” AI-assigned job ,‘but the conundrum now becomes the issue of fairness of AI to which gig economy platforms use to assign jobs to gig workers .This creates a paradox for the gig economy platforms because it will be difficult for platforms to assign jobs in a way that will satisfy every gig worker given the number of gig workers that gig economy platforms have recruited.

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Decoding India's skill deficit :Exploring strategies that bridges the skill gap

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Abstract

India is amongst the youngest countries across the globe having a population size of more than 1.3 billion with an average age below .30 One of the common issues faced by a country like India is unemployment .The credit goes to the dearth of jobs ,skill gap ,lack of hiring etc .The growth and success of any country depends on the capabilities and skills of its people .This paper aims to emphasise on the factors that can bridge the skill gap at the mass level thereby letting the country grow at a faster pace with respect to the other fast-growing economies around the world .A conceptual model has been framed that highlights the schemes and policies which can be adopted that will help India in reducing the skill deficit faced in the present times .This study is unique in itself as it has implications both for public and private stakeholders whose partnership will help in providing training and confirming the employability of the people by eliminating skill shortages and gaps.

Keywords

India,skill deficit Industry-academia affiliation ,Hyper-personalisation ,learning ,skill institutions

Introduction

India is known to be the world's largest democracy with the second largest population in the world .With this ,the country has the largest working population across the globe .India has been facing a severe skill deficit ,with organizations 'needs growing every single day ,thus, worsening the conditions of employability .According to Sumit Kumar ,Vice President ,NETAP ,TeamLease specified very categorically that the Indian education system doesn't allow much space for workplace learning as well as the industry exposure) Banerjee .(2021 ,This has been truly depicted in the' National Employability Report for Engineers '2019 that more than 80 per cent of the qualified Indian engineers are not suitable to do any job in the knowledge-based economy) ET Spotlight team .(2020 ,This report further illustrated that the global engineers are far more ahead in the race of honing pertinent digital abilities in the job market across the globe specifically in the advanced technological skills such as machine learning ,wireless technologies etc. In fact ,out of the entire lot ,only 2.5 per cent of Indian engineers own artificial intelligence abilities making, thereby ,making the rest of the engineers struggle in the queue of unemployed) ET Spotlight team .(2020 ,These figures anticipate a miserable statistic of just 1.5 per cent of Indian engineers who are fit for new-age jobs.

Way back in ,2020 the year began with the good news

for candidates looking for jobs in India .Both the private as well as public sectors announced openings in large numbers .However ,not all the job openings could find the suitable candidates to fit in .Approximately 63 per cent of the Indian companies reported deficit of skilled employees ,especially in the domains of sales ,engineering services ,and information technology) IT (as per the ManGroup's Talent Shortage 2020 report) ET Spotlight team .(2020 ,In fact ,a similar situation was faced in the year 2019 when numerous contemporary jobs were not able to find the right match because of the skill deficit across various sectors .Due to this ,approximately 53 per cent of the businesses were not able to recruit that year .As per International Labor Organization) ILO ,(for various job profiles in different sectors such as senior information technology) IT (manager 61) per cent ,(web administrator 58)per cent ,(development operations manager 63) per cent (etc .jobs remain unoccupied and the journey to recruit the right candidates with the right skills remain continued) Careers Desk .(2020 ,Another study by ILO found that the country will face a 29 million skill gap by the year) 2030 Careers Desk .(2020 ,In fact ,Accenture projected in its 2019 report that if the prevailing skill deficit in the county is not taken care of ,it will lessen the GDP of the nation by Rs 150 .trillion by the year 2028)Vasudevan and Vohra.(2021

The Indian youth is habituated to terms like job vacancies, hiring ,unemployment ,lack of jobs and skills etc.

Unemployment is the virus that the country is fighting since long. In the opinion of Wheebox, who have published the India Skills Report, 2022 out of the total youth in India only 48.7 per cent are employable (Banerjee, 2021). These statistics exemplify that approximately 1 out of every 2 Indian youths is unemployable. Further, the study highlighted that more than 75 per cent of the companies who participated in the survey reported a skill deficit in the market.

The main goal of this study is to make significant contribution towards identification of the barriers in the way of skilled workforce, and offer measures and strategies to reduce as well as eliminate the skill gap persisting in the current competitive job market. With this in mind, the authors wanted to contribute to the extant literature by adding meaningful insights to this academic dialog.

Theoretical background

The last decade has observed noteworthy efforts made by both the state and central governments in the direction of skilling India's youth. There were two major problems faced by them which are *skill shortage* and *skill gap* (Vasudevan and Vohra, 2021). *Skill shortage* refers to the shortage in the number of skilled people to fill a particular occupation. A recent study by National Council for Skill Development and Entrepreneurship found that approximately 53% of businesses in India were not able to recruit in the year 2019 because of skill shortage. *Skill gap* refers to the employer's qualitative assessment that emphasizes on individuals who are apparently skilled, but cannot be employed as their skills will not be able to deliver good results on the job, if hired. The primary, whys and wherefores, behind this skill shortage and gap along with the challenges faced by India in skill development have been discussed below in detail.

Barriers to a skilled workforce

Level of Education

Theory-based knowledge is still being imparted in the Indian higher educational institutions in the present scenario. Merely 40 per cent of the entire set of graduate engineers take up internships for professional learnings and hands-on experience (ET Spotlight team, 2020). In the opinion of Sarthi Acharya, Professor, New Delhi-based Institute for Human Development, specifically in the private engineering colleges no teaching happens and are mostly run by politicians (Sharma, 2021). Indian education system has almost overlooked offering quality teaching pedagogies to create a link between the classroom teaching and practical application. This leads to a failure for students to actually apply the learnings practically. Thus, the students are unable to analyze the problems and find a suitable solution in that situation. This further worsens the situation as the academic education is not able to meet the world-wide education standards. For

example, an Indian-3 year graduation course is equivalent to a US-1 year diploma course (Editorial, 2020).

Brain Drain

Most of the best-trained brains leave the country and settle abroad (Sharma, 2021), for many reasons such as better compensation, standard of living, culture, etc.

Compensation

People usually in the technical fields have not been remunerated well (Careers Desk, 2020). India has been witnessing a major chunk of graduated people, especially the engineers, taking up post-graduation courses in the management field as most of the organizations pay higher salaries to non-technical than the technical employees.

Scarcity of Relevant Skills

The students immediately after graduation usually do not have on-the-job-skills (Editorial, 2020). This makes them less attractive to the recruiter for hiring purpose. Correspondingly, the skilled professionals are also struggling to hop the jobs as they find it difficult to upgrade themselves with respect to the latest technological and market trends. Therefore, the recruiters land into major problems in hiring and their companies have to make huge investments in training the existing and new employees but this doesn't give the assurance that after the training, the employees will not look for any other good opportunity offering higher pay packages.

Lesser Female Involvement

As per the statistics from the year 2020 female representation is 91.6 million in the total labor force of 395.2 million which is relatively quite low (Editorial, 2020). Various ins and outs, behind this depiction is the scarcity of essential societal support in the form of local workshops, lack of appropriate mentoring and coaching in the above stated skills programs, and non-availability of female trainees' residential facility 'at centers where trainings are conducted.

Challenges faced in skill development

Deficient Infrastructure

At present, the availability of infrastructure facilities in HEIs across the country are deficient keeping in view the high demand for skilled people (Rai, 2016). Also, there is a dearth of skilled trainers who are motivated and skilled enough to handle higher level responsibilities.

Mobilization

The people connected with skill development are still carrying a traditional viewpoint which is why it has become a daunting task to enroll the candidates for professional education and training (Rai, 2016).

Expandability

This requires support as well as funding from a number of stakeholders (Rai, 2016). With the inadequate acceptance and willingness from the corporate sector, it is difficult to achieve major advancement in this direction.

Skills Disparity

There is a lot of skill mismatch when brought together the industry needs and the skills taught in HEIs) Rai, .(2016This is all because of the absence of interaction between the faculties of the HEIs and industry specialists. This brings the major differences into the skills needed against the skills obtained .Therefore ,employment is still an issue as the people are skilled in something which is not meeting the requirements of the industry.

A number of barriers and challenges as identified in this section ,clearly highlights the notion that though India has been having the largest working population but is still not able to fully utilize its strength i.e .its working population. There are many countries which are adopting a number of schemes and policies to grow and come as a strong nation in front of the world be it in service or manufacturing industry .What is that which is stopping India to become a super power ?Why is there a big void which is not letting India grow like other nations ?Let's understand what the other countries have been doing for skill development on a continuous basis which is keeping them ahead in this dynamic competitive business environment.

Skill development policies of other countries

China

China is known to be the manufacturing giant from the past many decades .China's government view education as a long-lasting strategic precedence .They have been introducing vocational education at a very early stage in schools for students aged between 12-14 years of age .The country has a law which mandates 9 years of compulsory vocational education for all the students after which approximately 12% students directly joins the workforce whereas from the remaining 88% students 47% ,join the vocational stream) Mehrotra et al .(2015 ,.This shows that they have a systematically designed vocational education training system which has a standardized legal framework)Vocational Educational Law (1996 ,that draws out the entire process of implementation with complete clarity. This law mandates a minimum of 20 per cent of the annual budget to be given for education .This system also allows the creation of factory-based schools and school-based factories that gives a hands-on revelation to the students for developing their skills .Teaching pedagogy involves innovation as a key ingredient.

China has more than 13,000 schools that provide vocational education and to further promote this education amongst the students ,they have waived off the tuition fees at the senior secondary level at schools and also their government gives inducements to students coming from poorer sections) Mehrotra et al .(2015 ,.Moreover ,the country has achieved 100 percent enrolment in primary education ,thereby ,reaching the employment rate of 95 per cent for secondary school passing students ,and 90 per cent for higher school passing students .In reality ,people

working in different streams such as farmers ,retired soldiers ,etc .are also trained to develop skills so as to utilize their idle time and do something productive.

China has dedicated one-third of the urban tax to education for economically backward students) Mehrotra et al .(2015 ,.China has strong policy makers who have strategically introduced vocational education at early years of schooling and they unremittently keep upgrading their system to keep growing as the manufacturing giant in the world.

Philippines

In the year ,2007 Philippines recognized that the key to sustainable development is vocational and technical education and introduced' *Strengthened Technical and Vocational Education Program*) 'STVEP (across various secondary schools in 16 regions with the main aim to provide high school students with technical and vocational skills to allow them to gain opportunities in the field of entrepreneurship and formal employment)Valles .(2012 ,A team of academic experts ,technical and vocational practitioners ,industry experts ,etc .has designed a competency-based curriculum that includes learnings for 21 technical and vocational specializations. They have built capability building programs for teachers, instructors ,and administrators done in collaboration with industry to provide technical assistance .There are provisions for providing tools and equipment, infrastructure support ,competency assessment subsidy, additional teacher plantilla items ,maintenance ,etc. The Department of Education funds for all the above provisions and has entered into strategic partnership with numerous agencies such as SEAMEO INNOTECH) for generating best skill development models ,(TESDSA)provides technical assistance in developing industry-based curriculum ,(technical and vocational universities)for offering skill enhancement trainings to teachers,(and local governments as well as private institutions) for offering learning interventions and financial aid.(

STVEP has also entered into an inter-agency partnership specifically with the industries so as to let students acquire synchronized competencies via the scholarship programs, availability of latest technology and expertise ,tools and equipment ,and co-sharing facilities during the trainings. Moreover ,Philippines schools have been using a variety of integration skills approaches to impart industry exposure and skills training such as strong linkage of industries with universities) Bataan School of Fisheries ,(2011 ,On-the-job training with industry) Siniloan National High School, ,(2011partnering with industry and local government for skills and resource generation) Subangdaku Technical and Vocational High School ,(2011 ,adopt-a-School program)e.g .Muntinlupa Business High School) (Valles.(2012 ,

Korea

Korea has a huge skills training account system wherein the jobless people, whether experienced or inexperienced, are eligible for having a training account using which they can enroll in different training programs that matches their own purpose and need not pay for the trainings as well) Oh. (2012). Thus, the unemployed have the right to select the training program as per their choice as this training account system allows the right to be trained to all the job seekers who are looking for job in the labor market. Apart from this, Korea has a mandatory system for company employment insurance that covers training cost reimbursement. Companies have to pay the premiums associated with the employment insurance. The companies also get reimbursed for the contributions made towards training of the employees via the employment insurance fund only if they have implemented the training programs. So, by this means, companies have dual benefits i.e. they can utilize their training fund along with inducement to provide trainings to their employees.

Vietnam

Vietnam is a country which has prioritized skill development amongst one of the important policies for sustainable development. Since 2010 the central government of the country has been aiming towards training 1 million people every year in the vocational programs) Vinh. (2012). Their target is to create new jobs for the youth and women, and advancement towards human resources development programs especially in garment and textile industry to ensure sustainable growth for the coming decades. The government has come up with 3-year programs to improve HEIs education quality to develop high-quality workforce by introducing legal framework that offers more autonomy and accountability along with providing financial aid.

The country is ensuring economic development via transitioning from supply-driven vocational training to demand-driven for the labor market. For this purpose, they have introduced separate laws on Education and Vocational Training, developed a network of institutions offering vocational education and training which has raised trainees participation remarkably, human resources needs are aligned with the skills training, nearly 70 per cent trainees create jobs directly after completing graduation, usage of advanced methods and techniques to impart learnings, accreditations enforced to keep a check on vocational training and skills quality, Vocational training structure have been improved, etc) Vinh. (2012). Moreover, a Central Steering Committee has been introduced for providing vocational education to rural workers who meet every 6 months to check the growth and execution of this scheme. The success rate of this

scheme is high as more than 80 per cent of the rural worker trainees get jobs after these trainings. This skills training scheme works on the model of "one village, one product," offering area specialized trainings in agricultural production, and creation of jobs.

USA

According to the Wall Street Journal, in 2019 President, Donald Trump, signed an administrative policy stating the huge investments in training the Americans to facilitate them with job security and formed a National Council for the American Worker) NCAW. (Keeping this in mind, many big shot companies such as FedEx, Walmart, Microsoft, General Motors, IBM etc" pledged to hire or train more than 3.8 million people over the next 5 years" Oesch. (2019). After few months of this declaration, Workforce Advisory Board was introduced. In the opinion of Ivanka Trump, daughter of Donald Trump, it has various leaders on board such as Lockheed Martin, chief executives of Apple etc. who will work with NCAW to ensure inclusive growth and help Americans to have the skills and opportunities to secure good paying jobs and successfully navigate technological disruptions and the rapidly changing nature of work) Oesch. (2019).

The companies have been implementing innovative and quicker models of learning which is backed up by the government by acting as a convener between employers and HEIs, thereby supporting workforce development. With the constructive disruption in the field of education, trainees and learners are enabled to access content, courses, trainings etc. via the online mode from experts across the globe. They are no longer limited by boundaries. Additionally, higher education stakeholders have realized the importance of bringing workforce systems and higher education to work along hand-in-hand to make the most in terms of workforce development. The industry as well as higher education have been continuously working on creating new learning models that allows constant trainings related to technical skills which will let the people upgrade themselves when any technology becomes obsolete) Oesch. (2019).

The above-mentioned insights on skill development policies of different countries gave a food for thought to the authors on how India can improve its present state of skills shortages and gaps.

Findings and discussion

After analyzing and interpreting the data from various secondary sources, following learnings from different countries and major strategies have been identified which can reduce or alleviate the skill shortages and gaps from the country:

Lessons learnt from different countries

In India, vocational education shall begin in the secondary school itself. At present, it is like a big black hole that is

still trying to figure out what is to be done with respect to vocational education and when in order to be on track the way China is now. In India, out of all the trainees who have been exposed to vocational education, only 3 per cent join the vocational stream in contrast to 47 per cent joining in China. This seriously needs attention to grow as a better India tomorrow. Like China, India strongly needs to have a formally designed vocational education training system with standardized legal framework. India also needs to waive off fees or offer other incentives to encourage students to choose vocational education, thereby, increasing the interest of the poor students who could not earn while studying which can help in compensating for the opportunity cost in this period when they choose to study under these programs. India shall introduce an act dedicated to vocational education in its 5-year plan that allows joint certification by private and government institutions as well as include provisions for rural economy development via encouraging technology advancement in the rural areas for enhancing vocational education. Industry needs to show eager interest in training the students and to arouse this interest amongst the industries, local governments shall incentivize them via offering lands at subsidized rates, giving recognition by awards, etc. Likewise, industry shall invest on in-house training of their employees, thus, making them more skilled for all the challenging jobs. Both industry and government need to go hand-in-hand to make this turn into reality.

Vocational school teachers should be trained at least for 1 month each year which would no doubt increase their learnings and knowledge that can be shared with the students and also good for their personal career growth and advancement. Similarly, these vocational schools' curriculum shall be designed in such a way that the students learn both the general academic skills, and content related to specific occupational field. Notably, the 3 years course shall include 2 years dedicated to learnings at school and the remaining 1 year meant for gaining hands-on experience via practical training in the industry. Another important aspect is funding, which requires both central and state governments to come together and contribute towards vocational education of the students via dedicating certain percentage of the annual education budget towards this. They may charge tax from medium and large industries for allocating resources for skill development. Furthermore, India needs to have strong policy makers who can strategically introduce vocational education at early years of schooling and unremittingly keep upgrading the system to keep the country at least stand strongly next to China which is known for its manufacturing capacity worldwide.

In fact, it is high time that India should realize that the main key to sustainable development is vocational and technical education. Apart from generating skills to

make the students more employable, this education also helps in gaining insights to grow as an entrepreneur and create more jobs. The vocational education shall include a competency-based curriculum which has learnings across various specializations both in technical and non-technical domains. Appropriate infrastructure, tools and equipment etc. shall be provided for technical assistance. Strategic partnership needs to be built with the industries, HEIs and universities, and local governments to provide technical assistance in developing industry-based curriculum as well as for offering learning interventions and financial aid. The industries can offer on-the-job trainings, and can partner with local governments for skill and resource generation.

In reality, if India could adopt the Korean strategy of offering a training account to all the job seekers, irrespective of their experience, to enroll in different training programs that matches their own purpose and is imparted free of cost, it will bring a revolution in the country as it will give the right to training to all the unemployed. Additionally, if the industries are reimbursed by the local governments to train their employees and upgrade their skills, it will be a win-win situation for companies as they will get the money back invested on employees; employees will upgrade their skills and will have scope for growth and development; and the government will be moving towards the path of fully realizing the goal of 100 per cent skill development and employment via vocational education and trainings.

There is a dire need for introduction of a legal framework that provides vocational education and training compulsorily at the school and higher education level to equip the students with the latest tools, techniques, and skills with respect to the ever-changing business environment. This framework will be able to develop the right infrastructure in terms of network of institutions offering vocational education, curriculum based on advanced methods and techniques, and accreditations to check the quality of the skills imparted. Besides this, the framework should also include vocational education for rural workers, and offering area specialized trainings in agricultural production. Furthermore, the big companies should take the onus on their shoulders to train the employees and interns, thus, reducing the skill gap faced by the country in the present times. They should ensure their overall development and help Indians to build the abilities so that they could manage any sort of technological or non-technical disruption owing to the changing landscape of work.

Strategies to reduce/alleviate the skill shortages and gaps

Apart from the numerous lessons learnt from the various countries by studying their patterns of skill development, few more strategies have been mentioned below that can

be worked upon by the government leaders and policy makers so as to improve and completely eliminate the skills shortages and gaps identified at all the levels) small, medium ,and large (in India).

Emphasis on the fundamentals

For the job seekers to take up the vacant jobs ,they need to be emphasizing on the fundamentals .According to Anindya Mallick ,Partner ,Deloitte India” ,It would be more crucial for job-seekers to have a basic understanding or a primary level course in technology ,irrespective of the field they are applying in as technology is the way things communicate .For instance ,financial services are on an upward trajectory and is set to witness major hiring due to newer service avenues created by technology in the sector and onset of fin-tech ,online banking services etc) “Careers Desk .(2020 ,Hence ,it can be said that it is important to focus on the basics in order to reduce the skill gap in the country which probably could be the first step in this direction.

Digital knowledge and Flexibility

In the present era ,all the huge firms have been driven by data and an understanding of the data and digital knowledge will be the key skillsets an employer will be looking forward to in the job seekers in such companies. In the opinion of Zairus Master ,CEO ,Shine.com ,digital knowledge is turning out to be a mandate nowadays as this knowledge will help in analyzing large volumes of data to make more informed decisions with respect to firm’s workforce) Careers Desk.(2020 ,

Skilled in Artificial Intelligence

In the present era of Artificial Intelligence) AI ,(the need for professionals skilled in predictive analytics to give influential acumens associated with employee attrition, performance ,recruitment trends ,and understanding of AI as well as robotics is already high and will continue to grow with the deepening of this era ,as suggested by Yogita Tulsiani ,CEO and Co-founder ,iXceed Solutions)Careers Desk .(2020 ,She further highlighted that AI will bring massive changes in the recruitment methods .The selection process will be dependent on robotic technology to eliminate errors as well as the human biases involved. Additionally ,the reliance on AI will further help in envisioning the success rates of this process by checking the online presence of the job seeker .This will completely change the way companies hire as this would lead to setting up of high standards which is incomparable to human efforts involved.

Lifelong Learning Ecosystem

Programs and policies associated with labor market, social ,fiscal ,and economic should include learning as an essential chunk .In order to acclimatize with the continually developing world of work ,it is imperative that the individuals should be given the right to learn and take advantage from all the skill development opportunities) Sharma.(2021 ,

Identification of skill gap

Dagmar Walter ,Director of ILO Decent Work Technical Support Team for South Asia ,highlighted the importance

of involving stakeholders in identifying the gaps in current skills and future requirements) Sharma .(2021 ,Similarly, Sumit Kumar pointed out the importance of blending together the mainstream education with the vocational education so as to bridge the skill gap faced by Indian industry) Banerjee .(2021 ,Walter further suggested that a nationwide qualification framework shall be put in place to allow a blending of professional training with formal education and vice versa .Therefore ,the national standards of education shall be raised.

Invest in Skill Advancement

Industry should become a protagonist in bringing the major change by paying good salaries to the skilled workforce)Vasudevan and Vohra .(2021 ,It may seem economical to hire an unskilled labor but paying off their costs such as training ,errors as well as inferior productivity will all be reduced by offering premium salary to the skilled candidate .Additionally ,industry shall take a step ahead in doing partnerships with higher educational institutes)HEIs (looking at it from the perspective of investment in their future productivity.

Government Initiatives

The government can go in for numerous initiatives such as incentivizing the firms those hire skilled candidates, subsidizing the skill training by the way of helping HEIs to set up educational laboratories and upgrading them with respect to the developing needs ,pushing the HEIs to upgrade their curriculum as per the leading industry trends, and ensuring that the vocational education emphasizes on both detailing as well as appreciation in the value of that occupation) Vasudevan and Vohra .(2021 ,Government initiatives may also include providing industry related on-the-job training as well as market-driven apprenticeships. Numerous skill India programs and campaigns have been launched by the government of India from Pradhan Mantri Kaushal Vikas Yojana) PMKVY) (Editorial, .(2020The Indian government can also tackle this gap via offering endorsement to more HEIs for worldwide recognition ,associating with advanced nations to aid in improving the India’s skill standards ,providing industry-specific courses available on digital platforms so as to reskill the present workforce ,and encouraging the usage of new technologies .Hence ,it requires a synchronized effort from all the stakeholders i.e .government agencies, industries ,students ,job-seekers ,HEIs and trainees so that together they can alleviate skill shortage and gap from its roots throughout the country) Rai.(2016 ,

The Rajasthan state government took the initiative and opened up its first Skills University and approximately 60skill development institutions are operational since 2018wherein 3000 students have been enrolled for getting expertise in specialized training) Wheebox.(2021 , Likewise ,the Karnataka state government has also been endorsing skill development in the state and allocated Rs 100 .crores generously in the year 2022 for imparting industrial training to 80,000 job seekers and Rs 40 .crores for women workers skills upgradation) Wheebox.(2021 , Correspondingly ,the Tamil Nadu government trained more than 2.5 lakhs of youth until 2019 and took various

initiatives like entrepreneurship development ,youth empowerment ,etc .to reduce the industry-academia skill gap .Similarly ,most of the states have taken some or the other initiatives to reduce the skill gaps and shortages. Analogous to this ,the union budget ,2022 declared that the partnership with corporate as well as skilling programs will be rebuilt so as to help in propelling skilling techniques which would further enhance employability)Kolikapudi.(2022 ,

So ,few initiatives have already been taken up by both the central and state governments ,yet there is a need to work on various other initiatives that could change the face of India in terms of skill development and more jobs creation.

Conclusion

India has been facing the issues of skill shortages and skill gaps since many decades .This study was able to identify the major barriers to a skilled workforce and challenges faced in skill development .Further ,this paper highlighted the skill development policies adopted by different countries who are doing economically well with respect to India .A lot of lessons learnt from these countries have been identified that could be used by India to improve the current situation of skill shortages and gaps .A number of strategies to reduce as well as alleviate the problem of skill deficit which have been suggested in this study are emphasis on the fundamentals ,digital knowledge and flexibility ,skilled in artificial intelligence, lifelong learning ecosystem ,identification of skill gap, invest in skill advancement ,and other government initiatives .Working on all of the above parameters as well as learnings from different countries can be used by the policy and decision makers as approaches to eliminate the current skill crisis faced by the country and completely change the face of the country by making it more self-sufficient in terms of skills.

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Developing Optimal Demand Forecasting Models for a Very Short Shelf-Life Item: A Case of Perishable Products in Online's Retail Business

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Abstract

Demand forecasting is a crucial task for an online retail where has to manage daily fresh foods effectively. Failing in forecasting results loss of profitability because of incompetent inventory management. This study investigated the optimal performance of different forecasting models for a very short shelf-life product. Demand data of 13 perishable items with aging of 210 days were used for analysis. Our comparison results of four methods: Trivial Identity, Seasonal Naïve, Feed-Forward and Autoregressive Recurrent Neural Networks (DeepAR) reveals that DeepAR outperforms with the lowest MAPE. This study also suggests the managerial implications by employing coefficient of variation (CV) as demand variation indicators. Three classes: Low, Medium and High variation are introduced for classify 13 products into groups. Our analysis found that DeepAR is suitable for medium and high variations, while the low group can use any methods. With this approach, the case can gain benefit of better fill-rate performance.

Keywords

Demand Forecasting, Deep Learning, Perishable Products, Online Retail, Case Study

Introduction

Demand forecasting is the process of predicting the demand for a product or service in the future. It is a crucial aspect of managing a retail business, as it allows businesses to plan their inventory and operations to meet the expected demand. However, demand forecasting can be especially challenging for businesses that sell perishable products, such as fresh food, meat, and vegetables, due to their limited shelf life and products tend to lose their value overtime they need to carefully manage inventory to avoid waste and excess costs.

In the present, retailers of perishable products include the need to accurately forecast demand to minimize waste and excess inventory costs, as well as the challenges of managing inventory in an environment with rapidly changing consumer demand. These problems can lead to lost opportunities for generating higher revenues and reduced profitability for the business. So, development of machine learning and deep learning models to predict possible demand will be a success key to manage inventory effectively. From author experience in managing inventory with pharmaceutical products found that inaccurate in demand forecasting can lead

to oversupply and undersupply. Unnecessary supply in our inventory creates holding costs, on the other hand undersupply makes our company lose the opportunity to generate higher revenue. Therefore, the author would like to use data analytic techniques to forecast demand accurately and select proper inventory policy to manage inventory with maximum efficiency.

According to reasons above, author wants to study about forecasting models to create guidelines for anyone who interested in managing inventory using data analytics.

Objective

1. To optimize weekly demand forecasting model which suitable for perishable product using deep learning models and baseline models.
2. Minimizing loss from decayed goods and oversupply in inventory to improve profit.

Scope

3. The scope of data are 13 perishable products in total that are classified in meat category.
4. The scope of time in our study is 212 days of actual demand data, starting from January 1st, 2022 to July 31st, 2022. This provided a sufficient amount

of data for training our forecasting models and allowed us to consider the weekly demand during the model training process.

Framework

1. **Input:** Historical demand data of perishable products past 7 months.
2. **Process:** Classify products into 3 groups using CV (Coefficient of Variation) and training each forecasting model with specific product historical demand data.
3. **Output:** Demand forecasting values with 1-week horizons and model's performance compared with evaluation dataset.
4. **Implementation:** Implement demand forecasting in business scenario and result of using machine learning and deep learning models.

Benefit

1. Improved inventory management by developing a demand forecasting model that is specifically tailored to perishable products, the study can help retailers better predict and plan for future demand, leading to improved inventory management and reduced costs associated with waste and excess inventory.
2. Enhanced profitability by minimizing losses from decayed goods and oversupply and maximizing revenues from accurate demand forecasting.

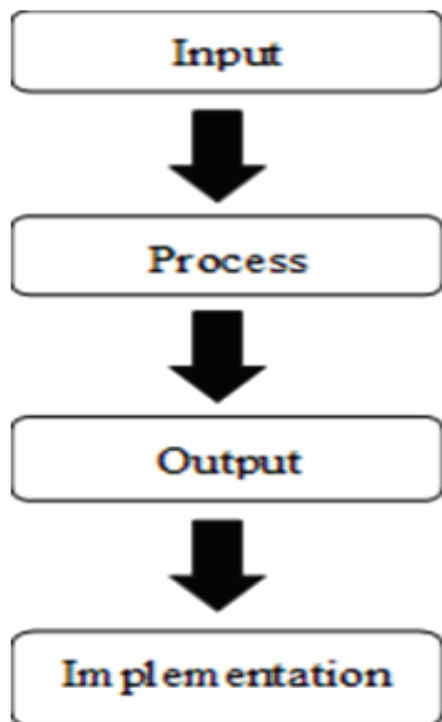


Figure 1 – A Framework used in this study.

Literature review

Perishable products

Perishable products are products whose quality diminishes over time. These products can be further classified into two sub-categories: those with a fixed lifetime and those with a random lifetime. Products with a fixed lifetime, such as canned goods, bottled milk, and pharmaceutical products, have a known expiration date and do not deteriorate until that point. In contrast, products with a random lifetime, such as fresh vegetables, fruits, and blood in blood banks, experience continuous deterioration and must be sold as soon as possible to avoid waste (Madduri, 2009). The importance of accurate demand forecasting in managing inventory for perishable products has been discussed, as well as the use of time-series forecasting techniques, including traditional methods and neural networks to improve the performance of predictions and reduce forecasting errors.

Demand forecasting

Forecasting is an essential tool for predicting future values, and it involves the use of historical data combined with mathematical techniques to increase the accuracy of the predictions (Intipeek, 2018). Demand forecasting is particularly crucial in business planning, as it enables businesses to plan their inventory and operations to meet the expected demand. For companies in the perishable products industry, accurate demand forecasting is even more critical as these products have a short shelf-life and can quickly lose value over time. By having an accurate forecast, companies can minimize waste and excess inventory costs, while maximizing revenue opportunities.

The process of demand forecasting typically falls into three categories: short-horizon forecasting, which predicts values within a three-month period; medium-horizon forecasting, which predicts values between three months and one year; and long-horizon forecasting, which predicts values more than three years into the future (Intipeek, 2018). In (N. de P. Barbosa, 2015), the authors use demand forecasting and visualized the results using Minitab software to demonstrate how a food company can use monthly sales predictions to plan their production line, this study show that accurate forecasting is essential for managing inventory.

Time-series forecasting technique

In addition to traditional time-series forecasting methods, such as Naïve Forecast and Moving Average which calculated future value based on previous period and season (Sharma, 2015), more advanced techniques like Neural Networks (NNs) are being increasingly used in the field of demand forecasting. NNs, which are modeled after the human brain, can analyze large amounts of historical data and make predictions by processing this data through multiple layers, including an input layer, a hidden layer, and an output layer (Yemane, 2021). The use

of NNs in demand forecasting has been shown to improve the performance of predictions and reduce forecasting errors. For example, in (Intipeek, 2018), Watcharachai used the Moving Average method and other traditional forecasting techniques to predict customer demand for a duck processing factory. In (Yemane, 2021), researchers predicted solar energy production using a Seasonal Naive model, which was compared to deep learning-based time-series forecasting methods, demonstrating the improved performance of these techniques. In (M. Ghiassi), demand forecasting was done using a feed forward neural network model (NN base model) to predict urban water demand and the study showed that Autoregressive Recurrent Neural Network (DeepAR) had better performance in forecasting energy production (Sharma, 2015).

Performance metrics

The selection of an appropriate metric for evaluating performance in forecasting is crucial for drawing meaningful conclusions from the results. Many metrics have been proposed and used in different areas of research, but some are more commonly used than others. Studies have been conducted to understand the frequency of use or importance of different metrics among organizations and practitioners. These studies have identified a variety of metrics, but the three most used metrics that have been consistently identified across multiple studies over 25 years are the mean square error (MSE) or root mean square error (RMSE), the mean absolute error (MAE), and the mean absolute percentage error (MAPE) (Botchkarev, 2009). In this study we will focus on using MAPE since it is scale independent and easy to compare with several models.

Method

In this research we are using “Dataiku” as a platform to do all data preparation, baseline models and deep learning algorithm.

Data preparation

Data preparation is a crucial step in research methodology, as it lays the foundation for the analysis and modeling to come. In this study, we will **sum up historical demand data of perishable products for the past 210 days to 30 weeks** as our primary source of data. This data will be used to classify the products into 4 groups using the Coefficient of Variation (CV) method, which will serve as a basis for our forecasting models.

We will also be performing data cleaning and transforming to ensure that the data is in a format that is suitable for our models. This includes removing any missing or duplicate values and removing unnecessary features. The data will be split into training and evaluation datasets, with the evaluation dataset being used to measure the performance of our models. By following a thorough data preparation process, we aim to ensure that our models are as accurate and reliable as possible.

Data characteristics

After data preparation, we classifies the products into 3 groups based on their weekly demand variation using CV (Coefficient of Variation).

Formula as follow:

The given rules used to classify are:

- $CV \leq 0.3$: low
- $0.3 < CV \leq 0.6$: Medium
- $CV > 0.6$: High

Technique

Time-series forecasting models.

1. Trivial Identity
2. Seasonal Naïve
3. Simple Feed Forward
4. Autoregressive Recurrent Neural Network (DeepAR)

Performance metric: use the mean absolute percentage error (MAPE) as a performance metric to evaluate the performance of demand forecasting models.

Formula as Follow:

Model configuration

1. Given the perishable nature of our products, and the need to minimize waste and excess inventory costs, we set the **forecasting horizon at 1 week**. This allowed us to anticipate future demand and make informed decisions on inventory management in a timely manner, to make the most efficient use of our products.
2. For configuration of **Seasonal Naïve** model, we set the **seasonal length 2 weeks**, as our perishable product data was in the meat category, and we observed a significant demand change every 1 or 2 weeks in our data.

Seasonal length	2 weeks

3. For configuration of our deep learning models in Table 1, we used a batch size of 1 and 10 epochs. This meant that our algorithm would work through the entire training dataset 10 times, with each sample being processed in a separate batch. This resulted in the model weights being adjusted 300 times during the training process, as our dataset contained 30 weekly historical demand samples. By using this configuration, we aimed to optimize the models’ ability to learn and adapt to the data. We also use dropout as a regularization technique to prevent overfitting and underfitting of our models. Dropout works by randomly setting a certain percentage of neurons to zero during

training. This forces the model to learn multiple independent representations of the input data, rather than relying on a small number of neurons. This makes the model less likely to overfit the training data. In our study, we will use a dropout rate of 0.8, which is a typical value used in practice (Nitish Srivastava, 2014). This means that during training, 80% of the neurons will be kept and 20% will be dropped out. This will prevent the model from overfitting the training data and improve the generalization performance on unseen data.

Table 1 - Deep learning models configuration

Learning rate	0.0001-0.1 (Search size = 20)
Batch size	1
Epochs	10
Batch per epochs	30
NN layer	2
Cell per layer	40
Dropout	0.8

Splitting strategy

To evaluate the performance of our forecasting models, we will use a K-fold cross-validation method. In this method, the data is randomly divided into k subsets, or “folds”, with each fold containing approximately the same number of data points (Oneto, 2012). The model is then trained on k-1 of the folds and evaluated on the remaining fold. This process is repeated k times, with a different fold being used as the test set in each iteration. The final performance of the model is calculated as the average performance across all k iterations.

In our study, we will use a 6-fold cross-validation, with each fold containing 20% of the data. This means that the model will be trained on 80% of the data and evaluated on the remaining 20% in each iteration. By using this method, we will be able to evaluate the model’s performance on different subsets of the data, which will provide a more robust estimate of the model’s performance.

Result

In this study, we examined the effectiveness of different demand forecasting models for perishable products in retail business. Our analysis of 30 weeks of demand data for 13 perishable products revealed several demand patterns in their characteristics. In the following sections, we present the results of our analysis in detail, including the performance of the various forecasting models that we tested. The results of our study have important implications for inventory management and profitability in the perishable products industry, and we discuss these implications in the later section of the paper.

Product classification

Based on the coefficient of variation (CV) of their weekly demand, our 13 perishable products were classified into three groups: low, medium, and high in Table 2.

Table 2 - List of products and CV groups

Group	Products	CV
low	M3820	0.2294
low	M7894	0.2621
low	M6138	0.2785
low	M3715	0.2821
medium	M7325	0.3463
medium	M3729	0.3725
medium	M1890	0.3821
medium	M2806	0.3832
medium	M7198	0.3958
medium	M6786	0.4264
medium	M7635	0.5302
medium	M6788	0.5528
high	M2917	1.1020

Model performance

In this study, we will analyze the performance of the models for all perishable products in each group using the Mean Absolute Percentage Error (MAPE) as performance metric. Figure 2. shows example detailed of all model performance for product M7894 and Figure 3. shows model evaluation compare forecasting value and actual value in each fold using line chart.



Figure 2 - Model’s performance of product M7894

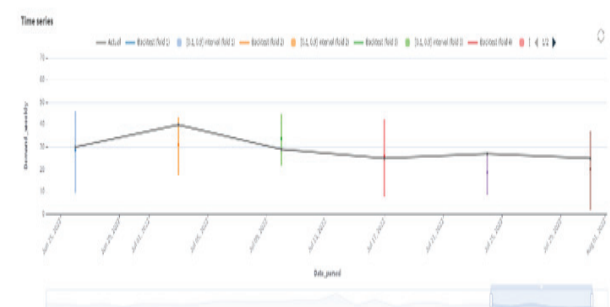


Figure 3 - Forecast values vs actual values of M7894

Model performance of models for all perishable products in “Low” group

Table 3 - MAPE of each product in low group

Product	Trivial Identity	Seasonal Naïve	Feed Forward	DeepAR
M3715	38.4%	38.5%	44.9%	37.4%
M3820	22.9%	24.5%	26%	24.2%
M6138	13.7%	13.6%	17.2%	13.8%
M7894	19.6%	17.5%	15.6%	18.7%

The results are shown in Table 3, all the models have similar performance across all products in the “Low” group. The MAPE values for the Trivial Identity model, the Seasonal Naïve model, the FeedForward model, and the DeepAR model are relatively similar for all products in this group.

For example, product M3820, the Trivial Identity model has a MAPE of 22.9%, the Seasonal Naïve model has a MAPE of 24.5%, the FeedForward model has a MAPE of 26%, and the DeepAR model has a MAPE of 24.2%. For product M7894, the Trivial Identity model has a MAPE of 19.6%, the Seasonal Naïve model has a MAPE of 17.5%, the FeedForward model has a MAPE of 15.6%, and the DeepAR model has a MAPE of 18.7%

These results show that the demand for products in the “Low” group is relatively stable and predictable, and all the models can capture this regularity and produce similarly accurate forecasts.

Model performance of models for all perishable products in “Medium” group

Table 4 - MAPE of each product in medium group

Product	Trivial Identity	Seasonal Naïve	Feed Forward	DeepAR
M1890	36.7%	22.9%	54.7%	24.4%
M2806	45.3%	52.6%	35.5%	33.5%
M3729	22.7%	22.6%	46.1%	17.3%
M6786	36%	35.5%	55%	27.7%
M6788	21%	17.2%	66.3%	17.5%
M7198	17.6%	17.6%	31.3%	17%
M7325	27.3%	31.5%	29.8%	22%
M7635	25.7%	43.5%	28.2%	22.6%

The results show in Table 4, the Trivial Identity and Seasonal Naïve models still maintain their performance at a proper level. However, in the medium group, the DeepAR model has the highest performance across all products, except for products M1890 and M6788 which Seasonal Naïve has slightly better performance. For example, for product M1890, the Trivial Identity model has a MAPE of 36.7%, the Seasonal Naïve model has a MAPE of 22.9%, the Feed Forward model has a MAPE of 54.7%, and the DeepAR model has a MAPE of 24.4%

The result is obvious that demand in the “Medium” group is less stable than “Low” group, and more fluctuation in demand, but the DeepAR model has a better performance in capturing this regularity and produces more accurate forecasts than other models.

Model performance of models for products M2917 in “High” group

Table 5 – MAPE for product M2917

Product	Trivial Identity	Seasonal Naïve	Feed Forward	DeepAR
M2917	25.7%	42.9%	47.1%	29.1%

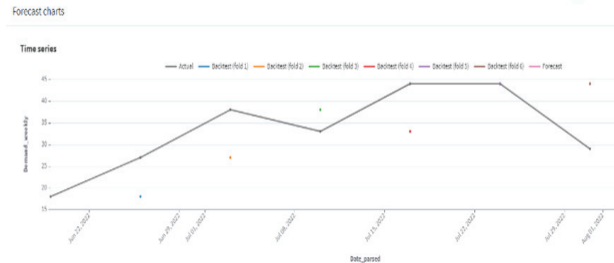


Figure 4 - Forecasting value vs actual value of product M2917

From Table 5, we can see that the Trivial Identity model has a MAPE of 25.7%, the Seasonal Naïve model has a MAPE of 42.9%, the Feedforward model has a MAPE of 47.1%, and the DeepAR model has a MAPE of 29.1%.

This suggests that for product M2917 in the “High” group, the demand is highly volatile and unpredictable, and none of the models performed well, except for the DeepAR model and Trivial Identity which is our baseline model that has the lowest MAPE among the other 2 models. In this case the DeepAR model can capture the complex patterns and fluctuations in demand for this product more accurately than the other models while Trivial Identity shown that last 6 period demand pattern for product M2917 does not fluctuate like it does before from Figure 4.

Discussion

In this study, we developed demand forecasting models for perishable products in a retail business using baseline models and deep learning models. Our results showed that the performance of the forecasting models varied depending on the product group, with the DeepAR model performing the best overall.

It can be concluded that for most perishable products especially in “Medium” group, DeepAR model has the highest performance compared to other models, and it could be considered as the best model for this category. Since in “Low” group, all models perform similar performance and in “High” group we have only 1 product which we need to study further about models that suitable for perishable products in this group.

The findings of this study indicate that accurate demand

forecasting is crucial for managing inventory in the retail business of perishable products. By using the appropriate model for each product group, retailers can minimize waste and excess inventory costs while maximizing revenue opportunities. Our results also suggest that deep learning models such as DeepAR have the potential to improve the performance of demand forecasting for perishable products.

However, it is worth noting that this study has some limitations. For example, we only used data from a single retail business and the results may not be generalizable to other retail businesses. Additionally, our study only focused on weekly demand, future research can be done to expand the forecasting horizon. This study provides evidence for the importance of accurate demand forecasting for managing inventory in retail businesses of perishable products. The results suggest that deep learning models such as DeepAR have the potential to improve the performance of demand forecasting and provide guidelines for anyone interested in managing inventory using data analytics.

Conclusion

In conclusion, the study aimed to develop and optimize demand forecasting models for perishable products in a retail business. Through data preparation, classification of products into groups, and implementation of various time-series forecasting models, we were able to achieve this goal. Our results showed that the use of deep learning models, specifically the DeepAR model, resulted in the highest performance for forecasting demand for perishable products in the high and medium groups. However, for products in the low group, all models performed similarly.

In our study, we have divided our implementation into two distinct areas: improving financial performance and enhancing service levels.

Table 6 – Cost and markup for each product

Product	Cost	Holding cost	Markup
M2917	64.00	6.40	32.00
M2806	168.67	16.87	84.33
M7894	59.33	5.93	29.67
M1890	806.67	80.67	403.33
M6786	131.33	13.13	65.67
M3729	80.00	8.00	40.00
M7198	148.00	14.80	74.00
M3715	83.33	8.33	41.67
M3820	68.67	6.87	34.33
M6138	140.00	14.00	70.00
M6788	130.00	13.00	65.00
M7325	260.00	26.00	130.00
M7635	30.00	3.00	15.00

Financial performance

Table 7 – Lower, Average and Upper forecast for each

product

Product	Lower fore- cast	Avg. Fore- cast	Upper fore- cast
M2917	26.54	34.00	41.47
M2806	10.82	13.83	16.84
M7894	22.099	26.50	30.90
M1890	15.83	18.00	20.17
M6786	25.07	28.33	31.59
M3729	26.53	29.33	32.13
M7198	82.32	97.50	112.68
M3715	20.57	25.67	30.77
M3820	43.673	51.33	58.987
M6138	179.94	188.00	205.05
M6788	96.62	109.83	123.04
M7325	46.9	55.50	64.1
M7635	32.47	43.33	54.19

We postulate that if companies do not utilize forecasting methods and maintain inventory levels that deviate by more than 10% from the predicted lower and upper bounds as shown in Table 7, they will incur both cost and opportunity losses for each product as detailed in Table 8.

Table 8 – Cost and opportunity loss for each product

Product	Cost	Opportunity loss
M2917	291.95	84.93
M2806	769.41	223.82
M7894	270.66	78.74
M1890	3679.77	1070.45
M6786	599.10	174.28
M3729	364.94	106.16
M7198	675.13	196.40
M3715	380.14	110.58
M3820	313.24	91.12
M6138	638.64	185.78
M6788	593.02	172.51
M7325	1186.04	345.02
M7635	136.85	39.81

As detailed shown in Table 8, if the company has a total of 13 perishable products that will result in significant costs for holding inventory and wasted products if the inventory level is kept too high. This cost is estimated at ₱9,898 per week. Additionally, if the inventory level is kept too low, the company will also experience opportunity loss, estimated at ₱2,879 per week.

Enhancing service level

Our analysis shows that if the company follows a policy of maintaining a fill rate of at least 95%, there are 6 products out of 13 that fall below this standard, as seen in Table 9. This indicates a potential opportunity loss and can't satisfy customer needs for the company.

Table 9 - Fill rate for each product

Product	Forecast	Actual demand	Fill rate
M2917	34.00	35.83	94.88%
M2806	13.83	18.33	75.45%
M7894	26.50	29.33	90.34%
M1890	18.00	17.50	102.86%
M6786	28.33	27.50	103.03%
M3729	29.33	32.67	89.80%
M7198	97.50	104.00	93.75%
M3715	25.67	30.00	85.56%
M3820	51.33	52.67	97.47%
M6138	188.00	166.83	112.69%
M6788	113.33	109.83	96.91%
M7325	55.50	53.33	104.06%
M7635	43.33	40.83	106.12%

To ensure that the company meets its fill rate policy of being greater than or equal to 95%, we recommend using the upper forecast values rather than the forecast values presented in Table 10. This will allow the company to maintain a higher fill rate and avoid any potential losses and improve their service level.

Table 10 – Fill rate for each product using upper forecast values

Product	Upper Forecast	Actual demand	Fill rate
M2917	41.47	35.83	115.73%
M2806	16.84	18.33	91.85%
M7894	30.9	29.33	105.34%
M1890	20.17	17.50	115.26%
M6786	123.04	27.50	108.56%
M3729	32.13	32.67	98.36%
M7198	112.68	104.00	108.35%
M3715	30.77	30.00	102.57%
M3820	58.987	52.67	112.00%
M6138	205.05	166.83	122.91%
M6788	31.59	109.83	114.87%
M7325	64.1	53.33	120.19%
M7635	54.19	40.83	132.71%

By applying the upper forecast values in place of the forecast values, the company's fill rate surpasses its policy for 12 out of 13 products, thus enhancing customer satisfaction and improving overall service level.

Overall, the study provides valuable insights for retailers of perishable products, as it demonstrates the benefits of using advanced forecasting models and techniques to improve inventory management and increase profitability. In addition, it highlights the importance of considering

product characteristics and variation in demand when developing forecasting models, as this can greatly affect their performance. As an extension of this research, it would be beneficial to test the developed models on different product groups, and to consider other factors such as weather, economic conditions, and promotional activities that may impact demand.

In summary, the study proposed an effective forecasting model for perishable products and provided a practical guideline for retailers. Implementing the developed model and inventory policy will improve inventory management and increase profit.

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Development of a Hybrid Exploratory Factor Analysis and Logistic Regression model for predicting factors affecting electric vehicle adoption in Delhi

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Abstract

Large-scale penetration of electric vehicles in the Indian market can play an important role in reducing Indian urban air pollution level, but it may also face obstruction from different barriers at social, cultural, economic, political and technical aspects. This study will be focused on identifying these barriers and the stakeholders associated with them by carrying out a city-specific study and using suitable statistical techniques such as exploratory factor analysis and logistic regression.

In this study, 12 such items have been identified from the literature. A total of 515 data sets have been collected for this study. The study area for this study is Delhi. Exploratory Factor Analysis has been conducted on these items, which has resulted in three factors. After the factors have been identified and logistic regression model has been developed to identify the significance of the factors This study found that government subsidies and tax incentives have a positive impact on consumer purchase of EVs and the growth of the EV industry. Additionally, investment in charging infrastructure is crucial for the continued growth of EVs.

Keywords

Electric Vehicle, adoption, logistic regression, Exploratory Factor Analysis

Introduction

Background

Indian urban air pollution due to public mobility is showing an increasing trend which is challenging the sustainability of the present public mobility system. It is widely accepted that Electrical vehicles (EVs) have helped a lot to lower tail-pipe emissions. Other than offering a reduction in environmental pollution EVs also have less maintenance and operation cost, compared to conventional Internal combustion engine vehicles (ICEVs). Still, the adoption in India is less than 1 per cent. Whereas the total number of EVs globally has exceeded 5.1 million in 2018[1]. It has risen by a number of 2 million since 2017, [1]. The People's Republic of China is currently the world's largest EV market with nearly 1.1 million EVs sold in 2018. It holds 2.3 million units of electric cars, which is about half of the total global stock of EVs. Followed by Europe with 1.2 million EVs and the United States with 1.1 million EVs on roads by the end of 2018[2].

Norway is the presently leading global leader in terms of EV market shares at 46%, which is more than twice the second largest market share in Iceland which is 17%. The

third largest share is held by Sweden which is about 8% only[2]. Whereas the rest of the countries are showing a growth of Electric Vehicles in, on road fleets, India is also framing policies and schemes to promote Electromobility. The market share of EVs is very low at present time but is expected to show a boom in recent future. The National Electric Mobility Mission Plan (NEMMP) and Faster adoption and manufacturing of electric and Hybrid vehicles (FAME)[3] schemes are one of the many current steps taken to attract consumers. It is proposed to shift all vehicle fleets to electric.

Public attitude and preference for EVs must be considered in developing markets as it can be crucial for increasing the market share of EVs. It's important to note that social norms play a crucial role in the Theory of Planned Behaviour, which is a commonly used theory of behavior change in travel behavior research[4]. Identification of barriers is the primary step of this study, as it will lead us toward understanding the ground reality. For identification of barriers we also have taken consideration of Technology Acceptance Model (TAM)[5]. The TAM model explains how individual users form their attitudes towards a new

technology and the likelihood of adopting it, based on perceived ease of use and perceived usefulness.

Growth of electric vehicles in India

The growth of electric vehicles (EVs) in India has been driven by several factors, including [6], [7]:

- Government support: The Indian government has been supportive of the adoption of EVs, with policy measures such as financial incentives, infrastructure development, and regulatory requirements.
- Cost reduction: The cost of EVs has been reduced, making them more accessible to the public.
- Increased awareness: Increased awareness of the benefits of EVs, such as reduced air pollution and lower fuel costs, has contributed to their growing popularity.
- Expansion of charging infrastructure: The expansion of charging infrastructure has made it easier for people to use EVs.
- Growth of domestic manufacturing: The growth of domestic manufacturing has made EVs more accessible and affordable for the Indian market.
- Increasing demand: As awareness of EVs grows, so does consumer demand, which is driving the growth of the EV market in India.

Overall, the growth of EVs in India has been significant in recent years, and the trend is expected to continue in the future

Identification of factors

We have identified 8 barriers based on the literature and expert's opinions as shown in Table 1

Table 1: Factors affecting adoption in India

SN	Barriers identified	Author
1	Limited range and long charging time.	Langbroek et al. 2019 [8]
2	Cost and unavailability of incentives	Hidrué et. al 2011 [9]
3	Driving range and battery charging and cost.	Egbue, 2012 [10]
4	Cost and battery charging time	Shukla, Dhar, and Bhaskar 2014 [11]
5	Lithium Ion Battery and expectation regarding price.	(Vassileva and Campillo 2017) [12]
6	Safety, performance Range and purchasing cost of EV.	(Vassileva and Campillo 2017) [13]

In this study, we aim to club these items into factors using exploratory factor analysis and then provide a logistic regression model to predict adoption. The variables selected after the expert opinion and from frequency analysis of literature we have finalized the following factors:

1. Availability Charging Station
2. Charging time of electric vehicle
3. Purchase Cost of the vehicle also known as the setup cost
4. The maintenance and operational cost of the vehicle
5. The safety of electric vehicles against fire and other security reasons
6. The perceived benefits of the EV by the future users
7. Incentives available for buying EVs
8. Availability of tax rebate schemes to promote EVs

These factors are used in this study.

Methodology

Exploratory factor analysis and Confirmatory factor analysis are used widely in traffic and transportation studies, mainly for the development and configuration of instruments [14]. This study uses these techniques to establish the role played by potential users' perception of Electric Vehicle characteristics in adoption intention. The concept diagram is as

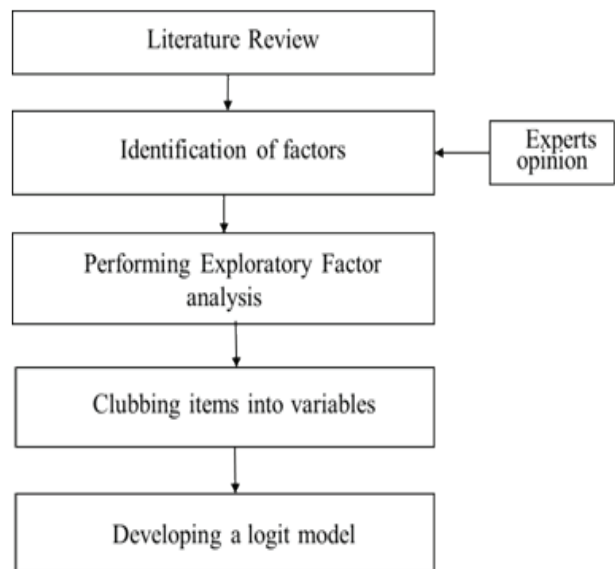


Figure 1- Methodology step diagram

Population and sampling

Deciding the sample size required to perform EFA is one of the most important tasks in the designing stage. There are two approaches to address this problem. Either a minimum sample size should be fixed, or the data can be collected for a specific ratio of respondents to variables. Several guidelines have proposed a minimum sample size variable between 150 to 500. Or it has been suggested that the ratio of respondents to variables may range from 5:1 to 20:1. Keeping both these approaches in mind a total of 400 respondents were approached. Overall, 350 respondents participated in the survey, representing a

response rate of 87.5%. This response rate is acceptable for a quantitative study. After cleaning data for ambiguity out of these 350 data sets only 315 data sets were used for further analysis.

This study takes the city of Delhi as the study area. It is the capital of India. In Delhi, various initiatives to promote adoption have already started.

Exploratory factor analysis:

EFA is a multivariate statistical method in which clubs observed variables with regard to their relationship with each other into unobserved latent variables called factors [14]. this method can be used either to reduce the summary of a large number of observed variables to fewer latent variables or to determine the theoretical construct among the observed variables known as items.

For performing EFA the steps include, checking for sample adequacy, correlation among the items, factor extraction, factor retention and factor rotation.

Logistic regression:

Logistic regression is used when our dependent variable is binary. In our study, we have taken adoption as a likability to either buy or not buy an electric vehicle.

Logistic regression also known as the logit model, is a statistical method which models the probability of an event to take place, using a maximum likelihood estimate to predict the outcome. The logistic regression model estimates the probability that the response variable belongs to a particular class based on the values of the predictors. The relationship between the predictors and the response is modelled using a logistic function, which outputs a value between 0 and 1. The logistic function is transformed into a predicted probability, and a decision threshold is used to classify the response variable into one of the two classes.

$$\log\left(\frac{p}{1-p}\right) = \sum_{j=1}^n \beta_j x_j \quad (1)$$

Results and model

Exploratory factor analysis:

PCA with pro max rotation was employed in this exploratory study to reduce the dispersion matrix. From the 8 surveyed factors, 3 principal components were derived, with eigenvalues greater than 1 and a cumulative variance of 62%. The validity of PCA was confirmed using the Bartlett test of Sphericity and KMO Measure of Sampling Adequacy. Both tests indicated adequate sample correlation and sampling ($KMO > 0.6$, Bartlett's p -value = 0.00).

The sample is checked for sample adequacy using Kaiser Meyer Olkin (KMO) and Bartlett's test. The value > 0.6 shows the sample size adequacy for this study. The values are shown in Table 2.

Table 2: KMO and Bartlett's test results

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.609
Bartlett's Test of Sphericity	Approx. Chi-Square	438.960
	df	28
	Sig.	<.001

It is observed that all 3 new variables explain about 62.18% of cumulative variance. The details are shown in Table 3. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Table 3: Total variance explained due to the unobserved variables

Total Variance Explained							
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	
1	2.24	27.96	27.96	2.23	27.96	27.96	2.22
2	1.58	19.79	47.75	1.58	19.79	47.75	1.55
3	1.15	14.44	62.18	1.15	14.44	62.18	1.26
4	0.86	10.73	72.91				
5	0.79	9.91	82.82				
6	0.56	7.08	89.90				
7	0.49	6.17	96.08				
8	0.31	3.92	100.00				

The scree plot is the plot between the Eigen value and the number of components. Only that minimum number of components is used for which the Eigen values are > 1 . A total number of 3 is taken. The scree plot is shown in figure 2.

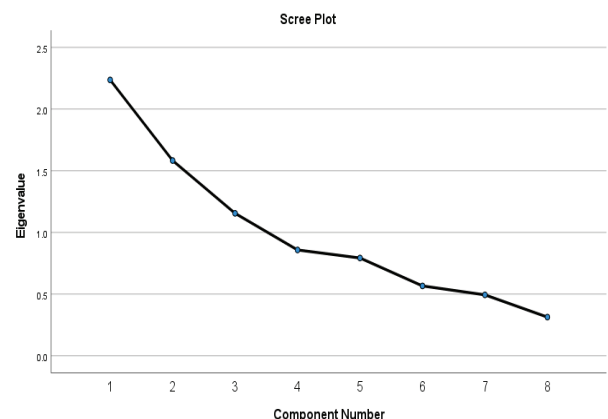


Figure 2- Scree Plot

The convergent validity of the formative constructs checks for redundancy among indicators. A path coefficient of 0.6 or higher is considered desirable per Nunnally, 1978 [15]. None of the reflective constructs in the study was below 0.6. The factor loading is shown in table 4.

The extraction method used is Principal Component Analysis and the rotation Method is used Promax with Kaiser Normalization.

Table 4: Factor loading

Structure Matrix			
	Component		
	1	2	3
Availability CS		0.850	
Shorter Charging Time		0.829	
Setup cost			0.713
Operational Cost			0.730
Safe	0.640		
Beneficial	0.630		
Incentives	0.834		
Tax- Relax	0.810		

From the factor loading its observed that our initial 8 variables can be clubbed into 3 variables. The factors availability of “Charging Stations Availability” and “Shorter Charging Time” are clubbed together to get variable “Charging aids”. Variable “Safe”, “Beneficial”, “Incentives availability” and “Tax-relaxation” can be clubbed as a variable “Benefits”. The other two variables set up costs and Operational costs can be clubbed under “Cost” variable.

Logistic regression

Since the dependent variable is categorical, a logistic regression model is developed. The data collected for the independent variable is also further transformed into a binary scale. As the independent variables are also categorical in nature. The model developed is shown in table 5.

Table 5: Logistic regression model

Variables in the Equation							
Step		B	S.E.	Wald	df	Sig.	Exp(B)
1 ^a	Benefits	1.170	0.268	19.074	1	0.000	3.223
	Charging aids	1.007	0.309	10.608	1	0.001	2.737
	Cost	-0.909	0.318	8.166	1	0.004	0.403
	Constant	-0.445	0.277	2.581	1	0.108	0.641

From the results it is observed that all three variables are significant at a 95% confidence interval as the p-value for all 3 variables is less than 0.05. Factor benefits and charging aids are positive in nature which helps to prove the theory that shorter charging time, availability of charging stations and incentive schemes do help in promoting EV adoption in India. Whereas for the variable “Cost” the sign is negative. This means the factor cost

greatly influences the likability of Indian potential users to buy an EV.

Conclusion

An electric vehicle can be an important solution, both at the policy as well as and innovation level, as it will reduce fossil fuel dependency and will be valuable in bringing down air pollution levels, providing a sustainable public mobility sector and a much healthier environment for society. Several promotion schemes are running at the level of central government and local government. But to have an informed decision the current ground reality is very much required.

This study gives a hybrid model combining exploratory factor analysis and logistic regression, which ultimately predicts the likability to buy as a measure of adoption. This will help the manufacturer as well as the government to have an exact picture of today’s ground reality that can form the policies considering the target consumers in the mind. as well as gets an estimate of whether the current schemes are producing favourable results or not.

In this study, a total of 12 factors hindering adoption were identified in the literature. Data from 316 respondents were collected in the city of Dehradun and taken for feature importance analysis. Out of these 12 factors only 8 were considered for further analysis, based on the expert opinion. The logit model form in this study suggests the following results.

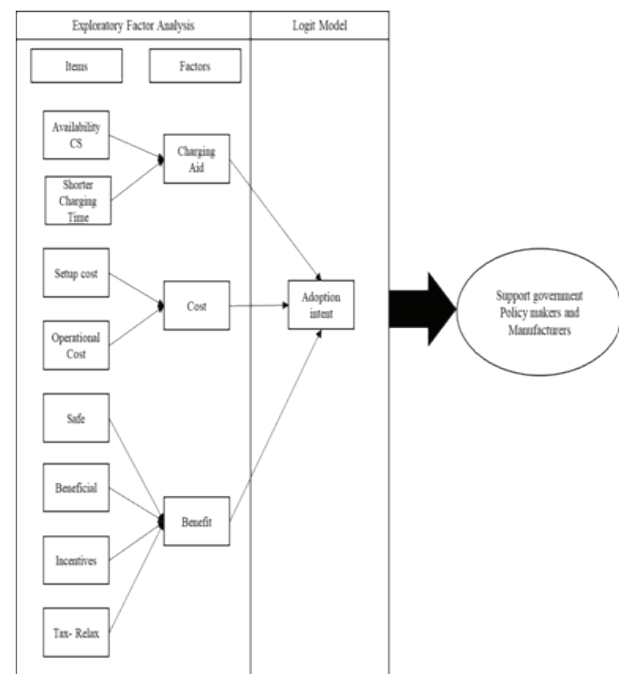


Figure 2 – Conclusion step daigram

The results of this study observed that the subsidies and tax incentives provided by the government positively encourage consumers to purchase EVs and support the development of the EV industry. The investment in the

development of charging infrastructure can support the growth of EVs. As well as in research and development to improve the technology of EVs to reduce the charging time will also promote innovation in the EV sector. The factor costs have a negative sign in the model shows as compared to other factors. This shows that if there is adequate investment in charging stations and incentives schemes the factor cost can be compensated, hence will improve the adoption rate.

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Comparative Analysis of Feature Selection Techniques for Average Speed Prediction

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Abstract

To improve the accuracy of the machine learning model, the objective of extracting the associated features from a set of data is a big challenge. One of the fundamental ideas in machine learning, feature selection, has a substantial influence on how well the model performs. These techniques delete the irrelevant or less significant features that do not significantly affect the target variable. This study aims to examine and compare the feature extraction methods for identifying the best set of features for the average traffic speed prediction in the context of two-way two-lane Highways. The results show hybrid method has performed better than the filter methods for a given set of input features. The implementation of these techniques has been done on traffic data collected for two-lane highways of a mid-size city. It also compares the performance of the feature extraction methods.

Keywords

Traffic speed, Mutual information, Recursive feature Elimination, Average speed prediction.

Introduction

Transportation is the main backbone of any country, even though the road network varies among countries in accordance with regional economic dynamics, land use patterns, Travel demands etc. Also, the implementation of the intelligent transportation system is at different levels, from developed countries to developing economies. An essential aspect of the intelligent transportation system is traffic congestion prediction. Early traffic congestion forecasting aids in improved traffic control by allowing commuters and travelers to plan their routes in advance. Traffic flow, variables derived from traffic flow, and outside events are typically used to quantify traffic congestion. Congestion's frequency of recurrence varies depending on its recurring and nonrecurring sources. For the forecast and measurement of traffic congestion, some studies consider non-recurrent causes, while others exclusively consider recurrent ones. Out of which the most reliable feature is traffic speed, variation in its value determines the status of road segment.

A conceptual framework for traffic speed prediction research has frequently been provided by prior literature investigations. This framework may be separated into two modules: Data collection and Model training. ICT technological improvements have made it easier to gather traffic data, creating a substantial volume of data. The literature also demonstrates that diverse datasets, such as primary and secondary data, are employed for research

on congestion prediction. Few studies show datasets are constructed at intervals of 5 mins, 10 mins and 15 mins.

Also, the data sets are constructed to study the congestion either to quantify it or to predict congestion status typically varies in the context of area selection like for Freeways, Expressways, and Urban roads concerning different countries. These studies have used data obtained from stationary cameras or probe data depending upon the research study area ranging from cities and freeways to highways.

In the Indian context, the past study focus is Traffic flow prediction compared to traffic congestion prediction. As in the following (Amita et al., 2016), (Sharma et al., 2018), the study's authors want to predict the traffic flow variables (Traffic volume, Travel time) using artificial neural networks to identify the pattern of the traffic flows in the areas of Delhi and Roorkee. The study (Kumar et al., 2015) predicts the traffic flow condition for 5,10,15 mins in Roorkee city. These studies account for the traffic volume variable prediction for the coming next 5,10,15 mins. Some other similar studies (Vasanth Kumar & Vanajakshi, 2015); (Rajendran & Ayyasamy, 2020); are also done in different parts of Indian cities like Chennai, and Bangalore to identify the traffic flow pattern by predicting traffic variables. For prediction, the previously stated research employed both statistical (ARIMA) and machine learning approaches(ANN), but they did not employ any feature selection techniques to minimize the

dimensionality of the data or to identify the aspects that are more crucial. The study identified this as a literature gap. Based on the above research gap, the research question can be formulated as what feature selection techniques could be used to identify the best features set to perform traffic speed prediction. Hence, the objective of the study is to examine the performance of the feature selection techniques on traffic flow data.

A review of feature selection techniques conducted by the authors (Chandrashekar & Sahin, 2014); (Pavlyuk, 2019) has classified the techniques for spatial temporal features. The authors (Pavlyuk, 2019) in the study have classified the feature selection techniques into five categories. Some studies in other countries context have used different feature selection techniques like filter methods p-test (Yang, 2013).

Two-way two-lane undivided roads constitute significant portions of the National Highways, State Highways and other district roads in India and can be more prone to traffic congestion due to bidirectional traffic flow. Congestion modelling for two-way two lanes undivided roads in the Indian context is not studied well while the existing studies have more focus on the urban cities and well-divided 4 –lane, 6-lane Highways. Hence, there exists a research gap in the context of Two-way two-lane highways, which creates a research question what might be the congestion prediction scenario or status depending upon what the traffic flow variables? However, this study deals with the prediction of traffic speed, which will be considered for identifying the traffic status of the road segments.

The rest of the paper is organized as section 1 discusses the Introduction and background literature. Section 2 discusses the Methods & Materials used in the study. Section 3 describes the experimental analysis. Section 4 describes the Results Section 5 is Discussion & Implication and Section 6 describes the Conclusion.

Methods & materials

Methods: -

The process of minimizing the number of input variables while creating a predictive model is known as feature selection in machine learning and statistics. It is also referred to as variable selection, attribute selection, or variable subset selection. Several factors lead to the usage of feature selection techniques. By removing certain pointless features, the model complexity is decreased. Also, it helps the Machine Learning algorithm train a model more quickly and reduced dimensionality aids in preventing overfitting also. This study examines the research design of the adopted methodology can be expressed as: -

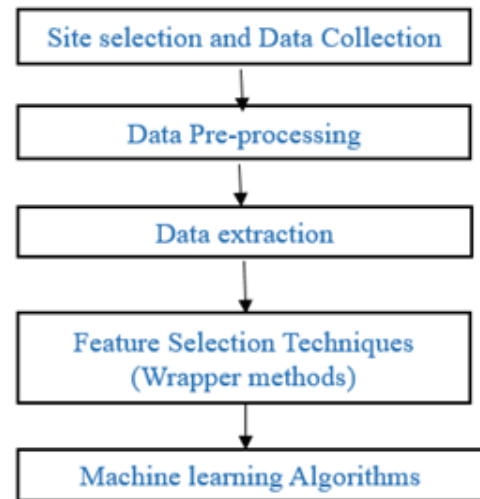


Fig1. Research Design

Materials: -

Site Selection: -The study is carried out at the city of Roorkee in the northern state of Uttarakhand, which is situated at latitude 29.85° N and longitude 77.88° E. As seen in figure 1, a national highway (NH-334) (formerly known as NH 58) connects this city to the national capital Delhi, Dehradun City, and Haridwar City. The National Highway-334 (NH-334) is primarily used by pilgrims heading to Rishikesh and Haridwar during religious occasions like the Kumbh Mela, Mahashivratri, and Kawad yatra, in addition to acting as an important industrial corridor between the Haridwar industrial sector and the National Capital Region. Stretches selected for a research study are variable in length and depend upon the mixed land use pattern. It has been observed route is always populated for working and commuting trips on Weekdays & Weekends. However, the data collected was not in the time of religious events due to covid restrictions. Fig 2a). & 2b). shows study location and experimental set up around data collection site.

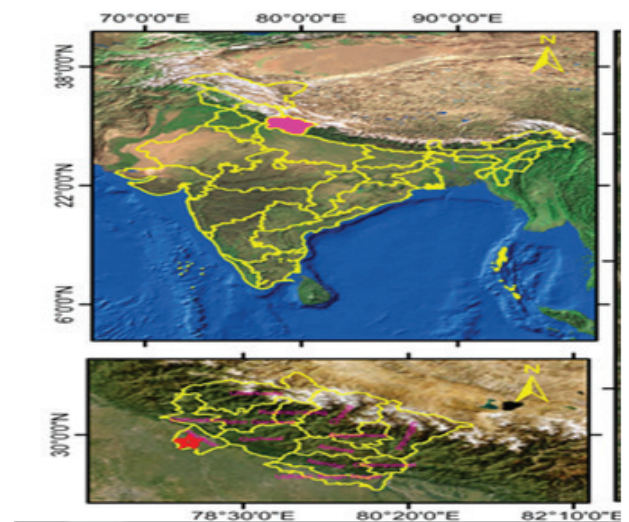


Fig 2 a). Study Location Layout

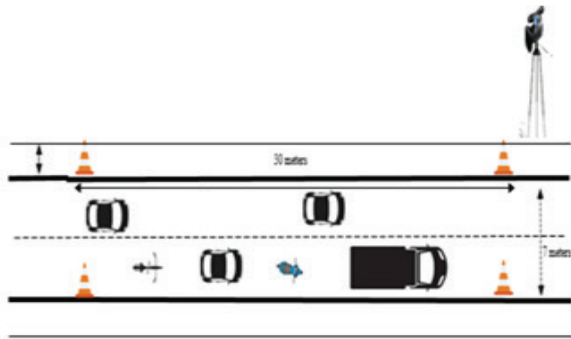


Fig2 b). Experimental set up

Data Collection: -The study performs analysis of data collected for in the month of November 2022 collected at one stretch to explore the traffic characteristics of rural highway. The experimental set up shows the location of instruments deployed near the site of National highway 334. The camera is mounted at the height of 18 ft. from the ground floor. The data collected is at the time interval of 5 mins for both the direction (Mangalore to Haridwar & Haridwar to Mangalore) during weekdays & weekends by considering stretch from the stretch of into SDM chowk to Shankarcharya chowk which are classified according to the mixed the different land use patterns. Table no 1. Shows the data collection location of the road segment.

Table 1. Data collection location

Link Id	Location	Latitude	Longitude
1	Near SDM Chowk	29°51'45.75"N	77°53'20.27"E
2	Shankaracharya Chowk	29°52'27.48"N	77°53'40.25"E

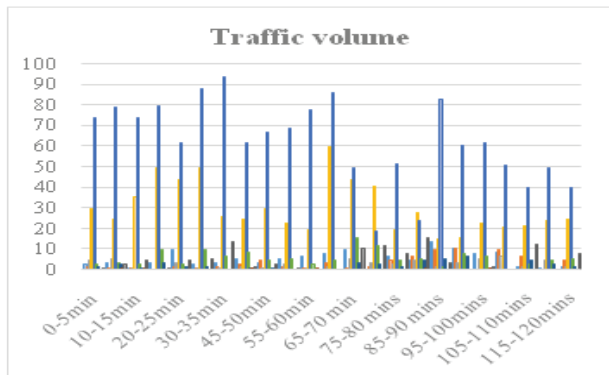
Analysis

Data extraction and Pre-processing: - The data is recorded from the stationary camera mounted over the foot over the bridge for the duration of morning & evening peak hours for two hours considering both the northbound and southbound direction of traffic flow. The identification of morning & evening peak hours of the site is identified through a pilot survey conducted for one week. The extraction of the traffic flow variables (Categorised traffic volume, Categorised traffic speed and Roadway parameters) is done at intervals of 5 mins and the traffic speed of the vehicles is recorded at the time of data collection through radar gun.

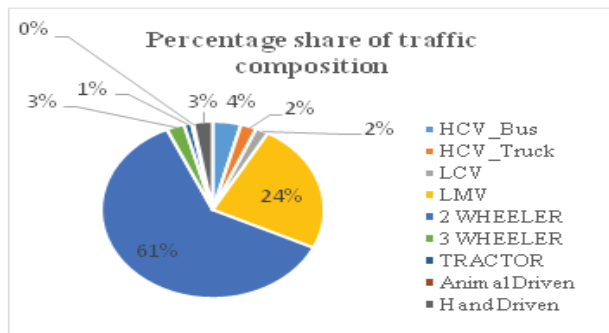
An excel sheet is prepared from traffic flow variables values at the interval of 5 mins for morning and evening peak hours of two hours making it a total dataset of 182 rows & 26 columns for weekends & weekdays data.

Descriptive Analysis: - The traffic volume is categorized on the basis of vehicles travelling on the location. The vehicle categorization is based on the IRC Manual IRC 64 1990. Traffic volume is extracted for morning & evening peak hours for a defined 30 m stretch for each vehicle class, which is then multiplied by vehicle PCU values.

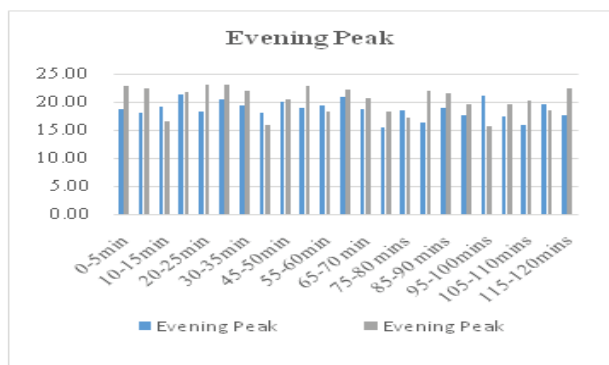
The descriptive analysis of Traffic volume & Traffic speed is shown in the following fig 3a, b, c & d: -



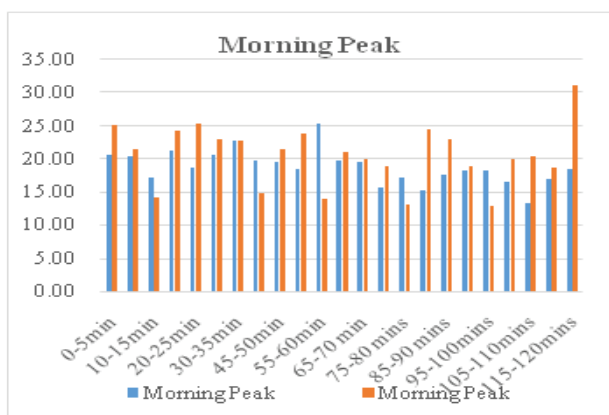
3a). Vehicle categorization



3b). Percentage share of traffic composition



3c). Average speed at Evening peak hour



3d). Average speed at Morning peak hour

Feature selection techniques: -

Feature selection is a commonly used tool used to reduce the effects of high dimensionality on a dataset (Awada et al., 2012). The feature selection technique used for the selection of variables from the input data are wrapper methods (Pavlyuk, 2019). The main objective of the feature selection technique is to identify the set of the variables and define them on the basis of rank, as they are able to describe the whole dataset. The techniques used for feature selection in the study are filter methods (Mutual information) & Hybrid method (Recursive feature elimination method). Also, Hybrid feature selection approaches are those that choose the best set of features based on predicting model performance. It selects and removes the features sequentially, that is it drops or adds the features in sequence manner either forward or backward. The input data set prepared is bifurcated into two categories weekdays data and weekends data. The input features /independent features are 22 features. The output feature is average traffic speed. The variables extracted & their symbols from the data are tabulated in the table no 2.

Table 2. Input Variables representation

Sl.No.	Variables	Symbols	Unit
1	Categorized Travel speed	TS	Km/hr
2	Categorized Traffic Volume	TV	--
3	Time of Day	TD	hr
4	Day of Week	DW	--
5	Roadway Parameters	RW	Km/m

Table 3. Categorized Vehicular speed

Vehicle Category	Min	Max	Mean	SD
HCV	27.11	38	32.30	3.15
LCV	19	33	15.03	15.09
LMV	24.08	46	33.34	6.82
2W	25.8	46.34	33.62	5.99
3W	16	37	24.44	8.98
Tractor	11	28.66	13.95	10.76
Animal Driven	8	18	5.81	7.00
Hand Driven	10	18	10.25	6.16

Results

The filter methods used is mutual information method, that identifies the number of features that represents the maximum amount of information in the input dataset. When variable input is known, the mutual information quantifies how uncertain output becomes. The mutual information between the predictor variables and the target is all about Less uncertainty regarding the target variable given the input variables is indicated by higher mutual

information levels. Fig 4. shows the outcome of mutual information method that identifies the variables able to cover around 40 percent of variance are plotted below: -

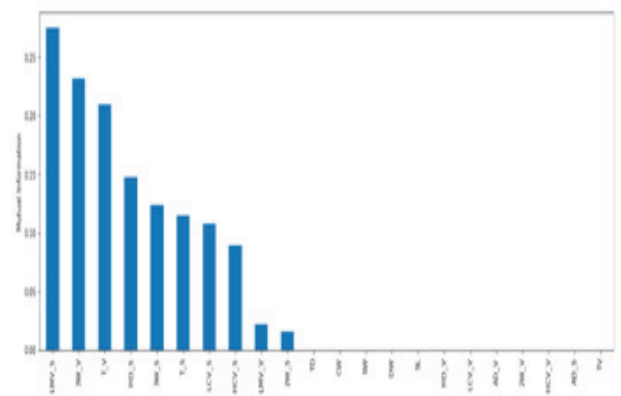


Fig 4. Mutual Information ranking

Hence, according to the mutual information useful features are 'HCV_S', 'LCV_S', 'LMV_S', '2W_S', '3W_S', 'T_S', 'HD_S', '3W_V', 'T_V'. The rest of the features are ranked below as they are not able to give information of variance about the dataset. Another feature selection technique used is Recursive feature elimination technique that sorts the features into descending order of importance using a machine learning technique. This algorithm may use tree importance or coefficients from linear models and builds a machine learning algorithm using the remaining features after removing the least essential feature. The determination of the performance metrics of the model created are dependent upon rmse, r2 score, accuracy. Those feature which are significant and ought to be retained if the measure falls below a predetermined threshold. If not, those features can be disable the feature up until all features have been assessed. The recursive feature elimination has the r2 score of .5893. And the features according to their rank are shown in fig.5. Out of the 22 features only two will be dropped and rest 20 will be retained. The two dropped variables are 3W_S and LMV_S.

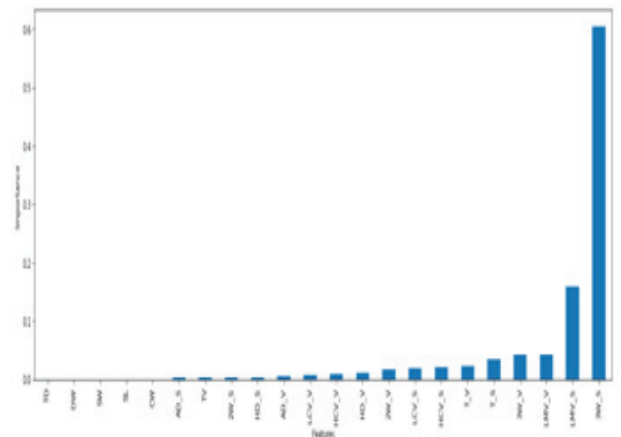
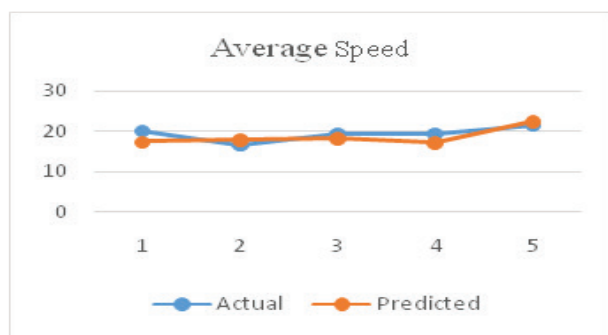


Fig 5 . Recursive Feature Elimination Ranking

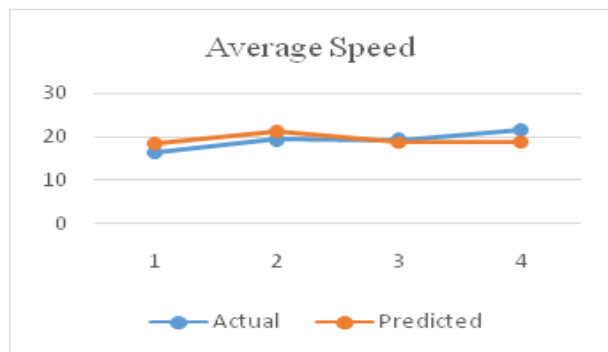
Hence, the performance of Machine Learning Model (ANN) is evaluated according to the above proposed features with both the techniques Mutual Information and Recursive Feature Elimination. The performance metric used here is accuracy that is obtained through 100-MAPE (mean absolute percentage error). Also, the hyper parameters tuned for the model is batch size 15 and no of epochs are 100. The table 4 represents the performance of three models.

Table 4. Performance of ANN models

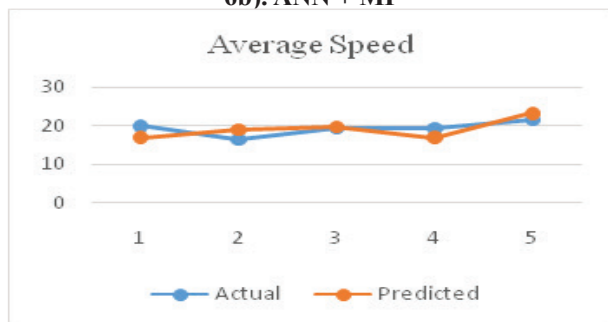
Model	Accuracy
ANN	83.94 %
MI+ANN	85.60 %
RFE+ANN	90.31%



6a). ANN



6b). ANN + MI



6c). ANN+RFE

Fig 6a, 6b, and 6c Shows the actual & predicted values of the average speed for input dataset.

Discussion & implications

Each network is tuned to the same settings for the hyper parameters in order to evaluate the performance of the applicable ANN models. Additionally, the bifurcation of the database for training and testing of neural networks is in the ratio of 80% & 20%. The variation in the accuracy of the models has been observed due to the application of Feature selection techniques. By ranking the input variables according to the information they carried, the Mutual Information(MI) method only took into account 40% of the input variables to the given dataset. Hence, MI method produced the subset of input features dataset for training of ANN model that are able to explain the dependence between variables. On the other hand, Hybrid method used for the study is Recursive Feature Elimination method(RFE) identified the feature subset with the greatest performance, by using a greedy optimization approach. The best or worst performing feature is set aside after each round of model creation. Up till all the features have been used, it builds the subsequent model using the left features. The features are then ranked according to the order in which they were removed. It has considered 20 input variables and dropped rest two variables. For, this study RFE model has outperformed as, it builds several machine learning models to select the best subset of features out of the given input dataset for training the model. The implication of the study is prediction of average traffic speed at different time of the day & week is able to present the traffic status of the given segment through speed performance index as suggested by the authors (He et al., 2016) in there study. This will help in determining the road segment index that represents the congestion state of the road segments.

Conclusion

In this study, three variation of ANN models are studied based on same hyper parameters. The performance of the system for average traffic speed prediction is determined through performance metric MAPE, from which accuracy of the model is obtained. The results show the feature selection techniques when combined with machine learning algorithm has shown the better performance compared direct fed of the machine learning algorithms. However, more datasets are required to test robustness of the models. Also, dataset used for the study has taken only traffic flow variables. Other traffic derived variables could be explored to understand the traffic flow patterns of the road segments. Capacity-related indices (Traffic volume-based, LOS-based, Time headway) are not explored in current scenario study for two-way lane highways studies which could be considered for further research.

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A Conceptual Framework for Selecting Appropriate Lean Tools to Increase Productivity in SMEs: An Integrated Fuzzy AHP and TOPSIS Approach

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Abstract

Small and Medium Enterprises (SMEs) have various problems in their production that affect their operational efficiency, productivity, and competitiveness. To remain competitive, many SMEs can apply lean manufacturing techniques to improve efficiency and productivity. Identifying the appropriate lean tools to increase productivity is therefore crucial for the effective implementation of lean manufacturing in SMEs. This study proposes a conceptual framework for selecting appropriate lean tools to increase productivity in SMEs using an integrated Fuzzy Analytical Hierarchy Process (AHP) and Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) approach. A literature review was conducted to identify criteria for selecting lean tools using the multiple criterion decision-making concept, and AHP was used to structure the selection of lean tools that provide a comprehensive overview of factors influencing productivity and lean tools in SMEs. The framework will be used to effectively select relevant lean solutions to improve operational efficiency and productivity in SMEs.

Keywords

Small and Medium Enterprises (SMEs), Fuzzy Analytical Hierarchy Process (AHP), Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS)

Introduction

SMEs are a rapidly expanding sector of the business world, playing a vital role in economic and social development. These businesses create added value by utilizing resources effectively and establishing a competitive system, thus reducing the dominance of larger manufacturers, and providing more options for consumers. [39] (Piriya Pholphiroon, 2013) However, SMEs often face challenges in expanding, such as difficulties in obtaining funding and credit, competition from larger businesses, and the impact of economic downturns. To address these challenges, Thailand governments have implemented policies to promote the growth of SMEs to revitalize and develop the country's economy. (Office of Small and Medium Enterprises Promotion (OSMEP), 2001) However, SMEs also face many limitations due to internal and external factors such as limited access to funding. These limitations can lead to higher costs and lower productivity compared to larger enterprises, for instance due to the smaller scale of production [1].

One of the major challenges faced by SMEs is limited

productivity, which can negatively impact their competitiveness in a highly competitive market. Businesses with low productivity may have to price their products higher, making it difficult to attract and retain customers, and may also hinder the ability to scale and grow the business. Additionally, low productivity can negatively impact the financial performance of a business by causing inefficient use of resources, leading to higher costs and lower profits, making it hard for businesses to achieve their financial goals and objectives. [3] Furthermore, low productivity can lead to inconvenience for customers, dissatisfaction and loss of trust in the company, [4] [5] [6] [7] Low productivity in SMEs not only affects the competitiveness of the business, but also negatively impacts employee morale, which can lead to high turnover rates. (Food and Drug Administration, 2002) This can also result in higher energy consumption and waste, which can be harmful to the environment and affect health. In order to increase competitiveness, SMEs need to improve their productivity. [40] The Office of Small and Medium Enterprises Promotion (OSMEP)'s Strategic Plan for

Small and Medium Enterprises Promotion (OSMEP) 2001 provides guidelines for enhancing competitiveness of enterprises through productivity enhancement. Increasing productivity in SMEs in Thailand can be challenging, particularly for those with limited resources or small investments. However, SMEs in Thailand can improve their performance and productivity without massive investment by using lean tools. Lean tools are principles and practices that focus on maximizing value and minimizing waste in business operations. By using lean tools, SMEs in Thailand can streamline operations, eliminate waste, and improve efficiency. [1] [8] [9] [10] [11]

In this study, the researcher aims to investigate the selection of lean-based tools for production processes to increase productivity in the small-scale business, taking into consideration the context of Thailand, where research in this industry is limited. This is because SMEs in Thailand still face many challenges and factors that hinder them from effectively using lean tools in their business. By choosing the appropriate lean tools, entrepreneurs, employees and those involved in the production process can reduce resource costs such as investment, personnel, and time, and minimize the risk of damage or waste from improper problem-solving. The selection of lean tools is crucial as they come in a variety of tools, techniques, and methodologies, each with a different purpose and use depending on the problem or critical factor that needs to be addressed to increase productivity leading to increased productivity.

From the literature review on factors affecting production in SMEs, it can be inferred that these factors can be grouped into six main aspects: human resources, in-house knowledge, machines, processes, management and marketing. Many small and medium enterprises (SMEs) have been successful in improving productivity by utilizing lean tools. There are many different lean tools available, each with a specific purpose, and choosing the right tool is critical to the success of a lean tool implementation. Choosing a lean tool is crucial as it can help businesses become more efficient, productive and customer-focused. Therefore, operators should exercise careful consideration when selecting lean tools. This is because incorrect tool selection or improper use can hinder the success of a lean SME implementation [1] [12].

Fuzzy Analytic Hierarchy Process (AHP) and TOPSIS techniques are popular techniques applied in decision-making for many aspects, such as deciding on supplier and investor selection [14] This guideline is perfectly suited for the job. Since this method considers both quantitative and qualitative factors, and provides a systematic and structured approach to decision-making. Fuzzy AHP is a multi-criteria decision-making method that uses subjective judgment and fuzzy information from decision-maker opinions, while TOPSIS is an alternative

sequencing method. the most appropriate using the closeness of each alternative to the ideal outcome. Both approaches have been used in many studies to assess and select lean tools, and found to be effective in improving productivity in manufacturing and service industries [15] [16]. A research conceptual framework to help SMEs choose lean tools to suit their business and production. This will increase the productivity of the production even higher.

Literature review

The factors that impact production in SMEs have been identified through literature review and can be grouped into five main categories: human resources, machinery, processes, management, and marketing. Each of these categories encompasses specific details that contribute to the overall productivity of the enterprise as follows.

The human resources factor

The involvement of employees is crucial for the successful implementation of corporate goals, as noted by several studies [17] [18] [19] [20] [21] Having a clear corporate culture that encourages employees to work as a team and helps new employees to quickly adapt to the organization, is important. This includes guidelines that help employees understand how to achieve the goals of the organization correctly [17] [22] [23] Managing workload properly is one of the key factors in enabling employees to execute their plans effectively [24] It is important to promote employee empowerment (James, 2006; [25] by providing training to employees in a variety of knowledge to be able to identify bottlenecks and take corrective action. This can help to reduce the occurrence of large and repeatable problems [26].

Machine factor

Ensuring the proper maintenance and upkeep of equipment and machinery is a crucial aspect of the production process in SMEs. Regularly checking the condition of the equipment and maintaining it helps keep the production line running efficiently and consistently, which is an important factor in increasing productivity [37]. Upgrading or modernizing equipment and machinery is also important, as it allows for faster identification of problems on the production lines [27].

Process factor

Proper inventory management is an effective way to improve business operations. By managing inventory systematically, organizations can effectively control production costs [28]. Standardizing work processes and utilizing resources in a systematic way allows for the most efficient use of resources, which can help develop operational standards in terms of process factors. Organizations should aim to reduce waste and maximize resource efficiency [28]. Effective cost control is an important aspect of long-term business operations [28].

Additionally, being able to adapt to change is an essential skill that business operators need to plan for throughout their operations [28].

Management factor

In SMEs, it is important for both executives and front-line workers to engage in open and effective communication in order to identify and solve problems together. This type of two-way communication is crucial for business development as it allows for the exchange of knowledge and the sharing of operational information. This can help executives to better understand the issues that arise in the workplace and take immediate action to address them (Chang and Lee, 1996). This type of communication is essential for effective management of a business (Understanding Manufacturing Productivity, 2022).

Marketing factor

Creating products that meet consumer needs and presenting them in a way that can generate demand in the market is crucial for SMEs [29]. Managing customer relationships, known as Customer Relationship Management (CRM), is also important in terms of creating products that meet consumer needs. By listening to consumer feedback and opinions, entrepreneurs can better understand consumer needs and use this information as a guide for creating products in the future [25] [28] [30] [37] [38].

Lean tools

The implementation of lean tools is crucial for the success of many businesses. Lean tools are management approaches that emphasize the elimination of waste and constant improvement of processes to provide maximum value to customers. Businesses that utilize lean tools can improve efficiency, decrease costs, and enhance customer satisfaction. For instance, an automotive SME in Mexico used lean tools and experienced a 50% decrease in lead times, a 35% decrease in inventory levels, and a 20% boost in productivity. Similarly, a small machining company in the US that adopted lean tools saw a 50% reduction in production time, a 30% decrease in downtime, and a 25% increase in production capacity. Indian small manufacturing companies that used lean tools also reduced production times by 35%, inventory levels by 25%, and experienced a 20% increase in productivity. There are various lean tools available, such as Value Stream Mapping, 5S, Kanban, Standard work, and Total Productive Maintenance (TPM), among others, each with its specific purpose. The selection of the appropriate tools is crucial for the success of a lean tool implementation. Choosing the right tools is important as it can help businesses become more efficient, productive, and customer-focused. However, businesses should choose carefully when selecting lean tools as using the wrong tools or using them incorrectly can negatively impact the success of a lean implementation. SMEs have limited resources, so the use of tools and techniques to

lead development within an organization is essential for the survival and development of competitiveness [1] [12].

From the literature review, we have discovered several studies across various industries where different decision-making techniques are applied in different situations. One study in the automotive industry used a methodology to identify and classify 7 types of waste based on lean concepts impacting the environment. Another research by [31] K. Velmurugan in 2022 evaluated the efficiency of SMEs using the Fuzzy Analytic Hierarchy Process (AHP) and found that organizational and environmental factors have the most significant impact on determining the optimal maintenance strategies and achieving maximum productivity in a small enterprise's electronic sensor and switch manufacturing plant in southern Tamil Nadu, India. Another study by Bai in 2002 applied the FAHP method to prioritize the factors that customers consider when choosing products based on quality function deployment techniques. Lastly, [19] Yadav et al. used Aesthetic Attribute that customers desire to be incorporated into car design. In 2008, [32] Cheng et al. conducted a study that used the FAHP method to compare and select the best predictive techniques for predicting technologies for material development. A Fuzzy-TOPSIS technique was used in a 2014 study by Ksenija Mandic [16] to select the optimum range of data during the manufacturing process to improve production line efficiency. In 2022, [20] Ezutah Udoney Olugu's study presents a study of metrics that impact sustainability across 12 dimensions and used the Fuzzy sets modified-Delphi Method to handle uncertainty and subjectivity of expert judgment and the TOPSIS technique for sequencing, proposing an integrated conceptual approach to prioritize strategic management indicators. [34] Kamran Rashidi's 2020 research presents an analysis of supplier selection using the TOPSIS sequencing technique, examining data of logistics service providers in Sweden. The results of the study showed that TOPSIS performed better than DEA in both complex calculations and sensitivity to changes in the number of suppliers, with the results pointing to issues related to price and service quality. In 2018, [35] Himanshu Gupta's research examined the barriers that impede the adoption of green practices among SMEs in terms of products, processes, and management to identify obstacles and solutions to overcome barriers to environmentally friendly practices. An extensive literature review and feedback from managers in SMEs was conducted, leading to the identification of 7 major obstacles, 36 minor obstacles, and 20 solutions. The researchers used the fuzzy TOPSIS technique to rank the obstacles and solutions and tested it on 4 sample businesses for validation of the results. The results of the analysis can assist small enterprise managers in eliminating and overcoming barriers to green practices

in their companies and increase their competitiveness in the marketplace.

Conceptual framework for using multi-criteria decision making in the selection of lean machines for production line productivity in SMEs

In this study, the researcher has developed a conceptual framework for using multi-criteria decision-making in the selection of lean machines to improve production line productivity for SMEs, which is beneficial both academically and commercially to enhance productivity, efficiency, and competitiveness for SMEs. In this study, the researchers combined the Fuzzy Analytic Hierarchy Process (AHP) and TOPSIS technique into two methods, using a total of 31 factors, divided into 6 factors that impact small enterprise production as criteria for selecting the most suitable Lean machines.

The significance of this research framework is that it presents a conceptual framework for utilizing multi-criteria decision making in selecting lean machines to enhance production line productivity for SMEs. The conceptual framework from this research will provide SMEs with the tools to determine which lean equipment is appropriate for their business and in line with the evaluation criteria for lean equipment in production line management in SMEs.

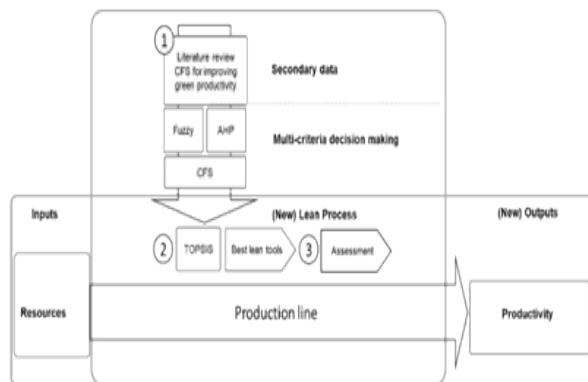


Figure 1 - Conceptual framework for using multi-criteria decision making in the selection of lean machines for production line productivity in SMEs

The use of Fuzzy AHP and TOPSIS for selecting lean tools in SMEs has been the subject of numerous research studies in recent years, and such studies have shown that the use of this technique helps to achieve objectives. However, there is still room for further research in this area. One area of future research could include evaluating the effectiveness of Fuzzy AHP and TOPSIS approaches for selecting lean tools across various industries and contexts such as small-scale enterprises, agriculture, or services. Another area could be examining different objectives, such as increasing productivity in an environmentally friendly way. Additionally, research could also explore the use of Fuzzy AHP and TOPSIS methods for selecting lean tools to improve performance in other departments

such as supply chain, logistics, and distribution. Another area of research could be examining whether the Fuzzy AHP and TOPSIS methods for selecting lean tools can be tailored to the specific needs of SMEs, as the methods used in the study may be too complex for SMEs to implement on their own. A more intuitive method may need to be developed. Additionally, the criteria used may not be appropriate for all types of SMEs, so there is a need for research to identify new criteria specific to certain types of SMEs. In conclusion, this research has shown that the use of Fuzzy AHP and TOPSIS for lean tool selection in SMEs is likely to be successful, however, more research is needed to fully understand and develop strategies that are suitable and accessible for SMEs.

Discussion

AHP (Analytic Hierarchy Process) is a structural model used to evaluate and compare complex decision-making problems. A key advantage of AHP is its ability to reduce bias in the decision-making process by allowing decision-makers to compare criteria pairs one at a time. This allows for the evaluation of options more neutrally. AHP also provides a consistency ratio to help ensure that the weights of the criteria that decision makers rate are consistent, which is calculated by comparing the importance of different criteria and ensure that they are consistent (Saaty, 2008). TOPSIS (Technique for Order of Preference by Similarity to Ideal Solution) is a method for selecting the best alternative from a set of available options. It has the concept of finding alternatives that are closest to the ideal outcome and is often used in AHP to rank alternatives and aid in final decision making [13] [33] [36]. Fuzzy Logic can be used to manage inaccurate or uncertain data in AHP, making the decision-making process more efficient. Qualitative and Quantitative Fuzzy Logic reduces subjectivity and ambiguity in decision makers' evaluation processes. This allows for a more comprehensive assessment of options and provides more accurate assessment results [33].

This research presents a conceptual framework for selecting the appropriate lean tools to boost productivity in SMEs. With many available lean tools, it's crucial to choose only those that meet the specific needs of the business. The Fuzzy AHP and TOPSIS integration methods are used to identify the most suitable Lean tools based on their importance as assessed by the Fuzzy AHP method. The TOPSIS method is used to evaluate various lean equipment options on a criterion basis. This conceptual framework helps develop work processes in SMEs to choose the most fitting lean equipment for increasing productivity by considering both the criteria and the specific requirements of the business.

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Utilizing Nudge Theory on Evaluating the Effectiveness of the Bagmati River

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Abstract

The Bagmati River, which flows through Nepal's Kathmandu Valley, has been seriously impacted by urbanization and inadequate waste management techniques. The current study aimed to evaluate the effectiveness of the Bagmati River restoration project by examining temporal changes in water quality over the previous five years, as well as to investigate the best suitable methods for river environment improvement utilizing the concept of nudge theory. The physicochemical analysis of water samples obtained from major places along the Bagmati River, as well as the use of nudge theory to understand the behavioral aspects of the restoration effort, were the main approaches used in this study. The physicochemical parameters of the river water were analyzed and compared to previous data to better understand the river's current water quality. The study will look at the effectiveness of nudges like signage, community engagement, and incentivization in promoting waste disposal and Bagmati River conservation. The study will also evaluate the environmental, social, and economic benefits of implementing these nudges in the Bagmati river restoration. The study will draw conclusions about the current state of the river's water quality and identify areas for improvement based on data analysis. Furthermore, the application of nudge theory is expected to provide insight into the effectiveness of various behavioral interventions in promoting the sustainability of the restoration project. This study will provide useful information about the Bagmati River restoration project's effectiveness and the potential of nudge theory to promote sustainable behavior in relation to river restoration.

Keywords

Nudge theory, Bagmati River restoration

1 Introduction

1.1 Background

Bagmati River is Holy River flowing through Kathmandu valley. The Bagmati River flows from Shivapuri Hill through various culturally significant areas of the Kathmandu Valley. In Kathmandu valley, it begins in Sundarijal and ends in Chovar. During the dry season, around 80% of the Bagmati river flow is diverted for drinking water purposes leaving very little flow to carry waste effluents (ADB, 2012). Agencies working on it realized the urgency to work to protect and enhance water resources and increase water discharge to the Bagmati, conserve terrestrial and aquatic biodiversity and to maintain and enhance the river water quality. The concerns for the river environment and the pressing needs for improvement are expressed in the Bagmati Action Plan (BAP) prepared in 2008. It addresses the issues if the health of the Bagmati River is to be restored (BAP 2009). The BAP activities include the expansion of the water recharging capacity by expansion of the existing Dhap. Environmental Management Plan (EMP) plan has been made in Dhap construction process which could be one

the major strategy to mitigate existing issue of Bagmati corridor restoration.

1.2 Rationale

The Bagmati River is an important water source for the people of Kathmandu and its surrounding areas, and the solid waste issues that it has been facing for many years have a significant impact on the health and well-being of the local population. Additionally, the Bagmati River is also an important cultural and religious site for many people in Nepal and its degradation has significant implications for the country's cultural heritage. Bagmati river corridor restoration efforts are already in place through government and non-governmental entities. Already number of projects and plans has been made to do so. However, systematic documentation of those efforts and their outcomes are barely discussed among policy makers, academia and practitioners. No concrete studies have been made to understand crux of the problem and effectiveness of the investment. As river itself flows through one of the most populated cities in the country, anthropogenic causes are multiple in ecological harmony of the Bagmati river corridor. Human factor apparently

becomes one of the contributors in degeneration of the river ecosystem but hardly found the way forward how hundreds of thousand inhabitants can work collectively to restore the natural flow of river. This study aimed to understand the changes in the water quality of the Bagmati River over the past 5 years and to evaluate the effectiveness of the Bagmati River Restoration Project in improving water quality. The study will focus on key water quality parameters such as pH, turbidity, and chemical oxygen demand, as these are indicators of water quality and are important for the health and well-being of the local population. By analyzing data on these parameters, the study will be able to provide valuable insights into the water quality of the Bagmati River over the past 5 years and to identify areas for improvement.

1.3 Objectives

The objectives of this study are:

- To investigate the temporal changes in the physicochemical characteristics of the Bagmati River over the past 5 years (2074-2078 BS) and the present water quality in 2079 BS
- To understand the reasons behind these changes in the water quality of the Bagmati River
- To evaluate the effectiveness of the Bagmati River Restoration Project in improving water quality
- To identify areas for improvement in the water quality of the Bagmati River
- To recommend future actions to improve the water quality of the Bagmati River.

1.4 Scope and limitations

This study aims to investigate the temporal changes in the physicochemical characteristics of the Bagmati River over the past 5 years (2074-2078 BS) while comparing with the present data of 2079 BS and to evaluate the effectiveness of the Bagmati River Restoration Project in improving water quality. The study will focus on key water quality parameters such as pH, turbidity, and chemical oxygen demand, and will use data visualization techniques such as graphs to depict the trend in the physicochemical characteristics of the river over time. The study will be conducted in the Kathmandu valley, Nepal. The findings from this study will be able to provide important information for future efforts to improve the water quality of the river. It will be equally useful for sanitation construction project designer and implementers, and the Community at large.

Limitations

- This study is limited to the analysis of the data collected over the past 5 years (2074-2078 BS) and conclusions drawn may not be generalizable to other time periods.
- The study will not include an analysis of the social and economic aspects of the Bagmati River and its restoration project.
- The study will be affected by the seasonal fluctuation of water parameters depending on the climate season in which water sampling was done.

- The study will be based on secondary data and the accuracy and completeness of the data may be limited.
- The study will not include a detailed analysis of the effectiveness of the restoration project in terms of cost-benefit and other economic factors.
- The study will not include the assessment of the effectiveness of the restoration project in terms of achieving other objectives such as biodiversity conservation, recreation, and cultural heritage preservation.

2 Literature review

2.1 Water Quality

Bagmati River is one of the major rivers of Nepal that originates from Shivapuri hills in the Mahabharata range of mountains and flows down south into the Terai plains before crossing the Indo-Nepal border. Although it is frequently referred to as a “Holy River,” the Bagmati River’s water is polluted and not suitable for practical uses as it is utilized as a sewer for domestic and industrial waste. Inadequate sewerage, on-site sanitation, and wastewater treatment facilities on the one hand, and a lack of efficient pollution control measures and their stringent enforcement on the other, are the direct consequences of pollutant discharge into aquatic systems.

EIA study of Dhap Dam concluded that ongoing project is primarily intended to augment the dry season flow in the Bagmati River which is currently in poor conditions due to haphazard human activities. The major adverse impacts of the project implementation include: temporary and permanent change in land use, change in the qualities of air, water and air, noise pollution, change in river morphology, loss of standing vegetation, disturbance to wildlife, possibilities of wildlife hunting and poaching, impacts related to occupational health and safety, possibilities of dam failure and associated issues.

EIA study identified that there are numerous benefits from the implementation of the project. Such benefits from the project include: flow augmentation in downstream of dam, creation of business opportunities, employment opportunities, enhanced ecosystem services, and benefits from environmental enhancement measures. The adverse impacts can be mitigated using practical and effective mitigation measures.

An Environmental Management Plan (EMP) has been developed to implement the mitigation measures for adverse impacts and augmentation of benefits. The primary responsibility of implementing the EMP lies within the proponent, but there are other stakeholders like MoSTE, MoFSC, SNNP, DDC, VDC, NGOs and CBOs that need to be coordinated for effective implementation of EMP. With the EMP implemented, the benefits of project shall far outweigh the adverse impacts.

The water qualities are measured by various Physical, Chemical and Bacteriological parameters and are used to indicate the pollution level. Following is the water quality standards comparison for drinking water sources as per WHO, Nepal Standard and Aquatic Ecology Health Standard:

Table 1: Water quality standards as per WHO, Nepal Standard and Aquatic Ecology Health Standard.

Parameter	Unit	WHO GV	Nepal Standard (2022)	Aquatic Ecology Health Standard (From World Bank)
Electrical Conductivity	μS/cm	-	1500	-
pH	-	6.5 – 9.2	6.5 – 8.5	6.5-8.5
Temperature	□	-	-	-
Taste and Odour	-	unobj	unobj	-
Total Solids	mg/L	-	3000	-
Total Dissolved Solids	mg/L	1,500	1000	1000
Turbidity	NTU	-	5(10)	-
Ammonia	mg/L	-	1.5	0.02
Dissolved Oxygen	mg/L	-	-	6
Biochemical Oxygen Demand	mg/L	4	-	4
Chemical Oxygen Demand	mg/L	-	-	-
Total Coliform	CFU/100 mL	Nil	Nil	-

WHO GV: World Health Organization Guideline Value 2017 update ,unobj: Non Objectionable

3 Methods and methodology

3.1. General Methodology

The following figure shows the general overview of the methodology

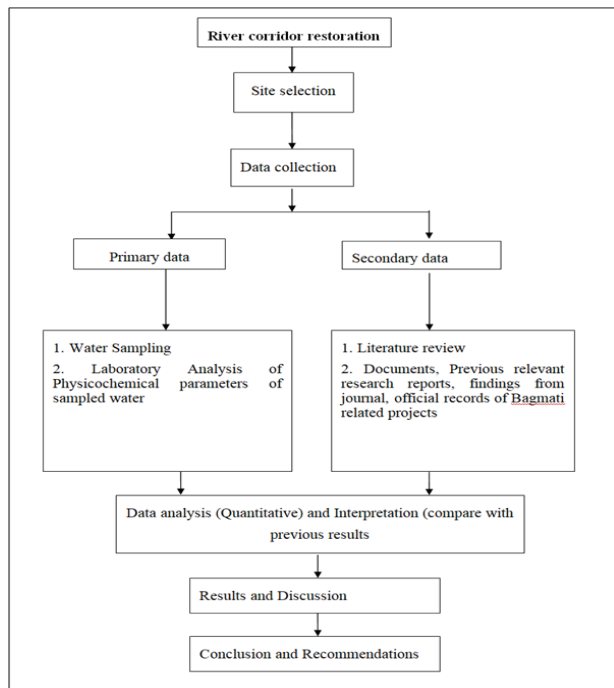


Figure 1: General Methodology

3.2 Study Area

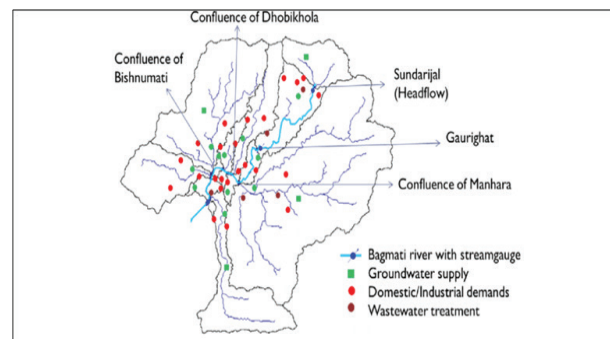


Figure 2: Study Area (Source: (Mishra et al., 2017)
awareness-raising and policy measures. The paper assesses the sustainability of the surface water resources of Kathmandu valley by analyzing the water quality parameters such as Dissolved Oxygen (DO

3.3 Sampling Sites

Table 1: Sampling Sites along the Bagmati River

Sample Name	Sample Site
S-1	Sundarimal
S-2	Gokarna
S-3	Jorpati
S-4	Guheshwori
S-5	Aryaghat
S-6	Minbhuban
S-7	Manohara-Bagmati Confluence
S-8	Thapatali
S-9	Bagmati-Bishnumati Confluence
S-10	Sundarighat
S-11	Chovar

3.4 Laboratory analysis of water parameters

Table 3:Parameters and Methods for the Analysis of Sampled Water

Parameters	Unit	Standard Test Method	Instrument Used
Electrical Conductivity	μS/cm	2510 B. APHA 23 rd edition	Conductivity Meter (EC-035 (ATC))
pH	-	4500 H+ B. APHA 23 rd edition	pH meter
Temperature	°C	-	Humidity meter/ Thermometer
Total Solids	mg/L	2540 B. APHA 23 rd edition	-
Total Dissolved Solids	mg/L	2540 C. APHA 23 rd edition	-
Turbidity	NTU	2130 B. APHA 23 rd edition	Turbidity Meter (Lutron-2016)

Parameters	Unit	Standard Test Method	Instrument Used
Dissolved Oxygen	mg/L	DO Meter	DO meter (Lu-tron, DO-5519)
Biochemical Oxygen Demand (BOD)	mg/L	5210 B, APHA 23 rd edition	Incubator (CE,-Model,CLE-102)
Chemical Oxygen Demand (COD)	mg/L	5220 B., APHA 23 rd edition	COD Digester (WTW,CR-2200)
Orthophosphate	mg/L	4500-P E., APHA 23 rd edition	Spectrophotometer (CT-2400)
Total Coliform	CFU/100 mL	9222 B., APHA 23 rd edition	Incubator (CE,-Model,CLE-102)

3.5 Data Analysis and Interpretation

The data obtained from the results of analyzing the sample collected was measured with pervious secondary data of Bagmati River from the year 2074-2078. This was done to compare the trend of change in the physiochemical parameter of the river in past 5 years.

4 Results and discussions

a. pH

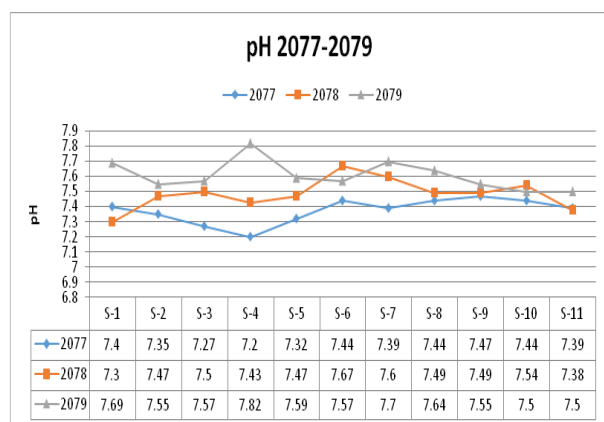


Figure 3: pH values from 2077-2079

b. Turbidity

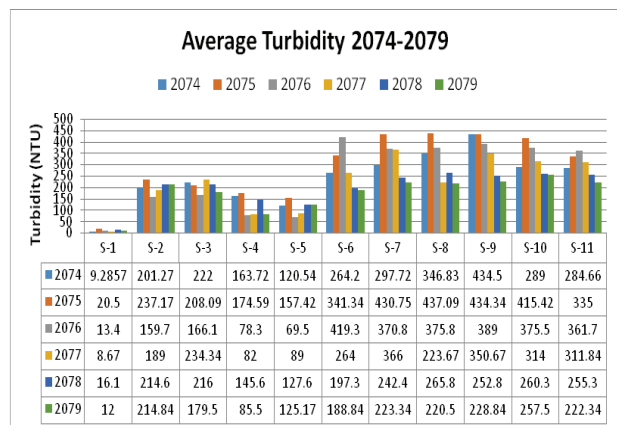


Figure 4: Turbidity values from 2074-2079

c. Total Suspended Solids (TSS) and Total Dissolved Solids (TDS)

a)

b)

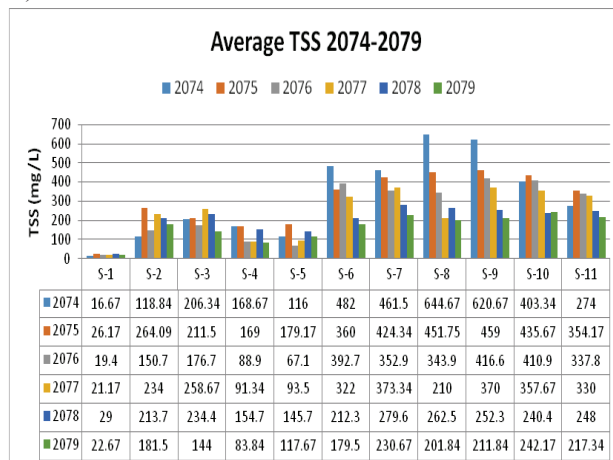


Figure 5: Average values of a) Total Suspended Solids (TSS), b) Total Dissolved Solids (TDS) along the Bagmati River

d. Chemical Oxygen Demand (COD)

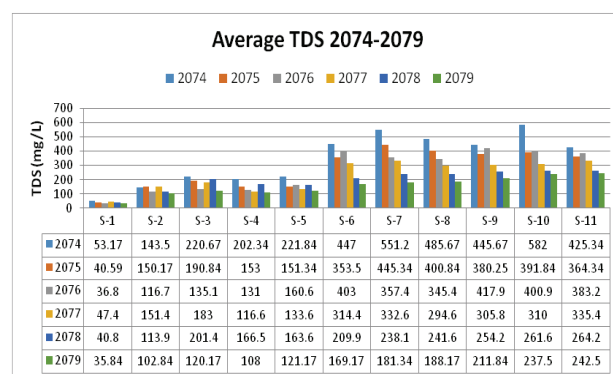


Figure 6: COD values along the Bagmati River

e. Biological Oxygen Demand (BOD)

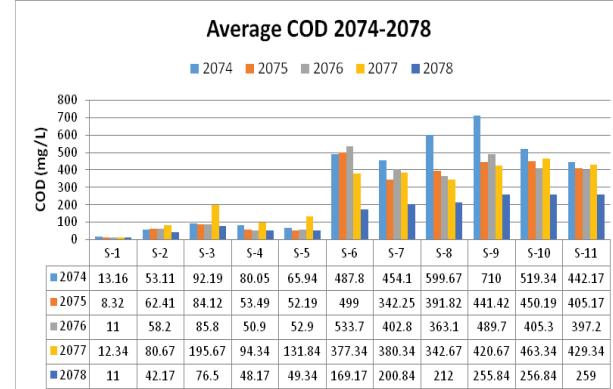


Figure 7: BOD values along the Bagmati River

f. Dissolved Oxygen (DO)

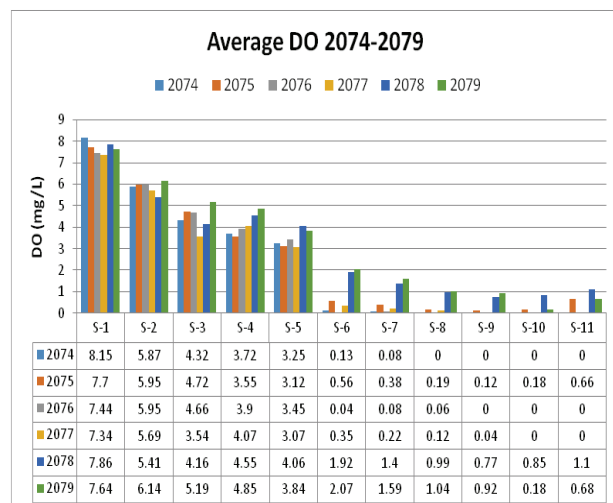


Figure 8: Average DO along the Bagmati River

g. Total Phosphate

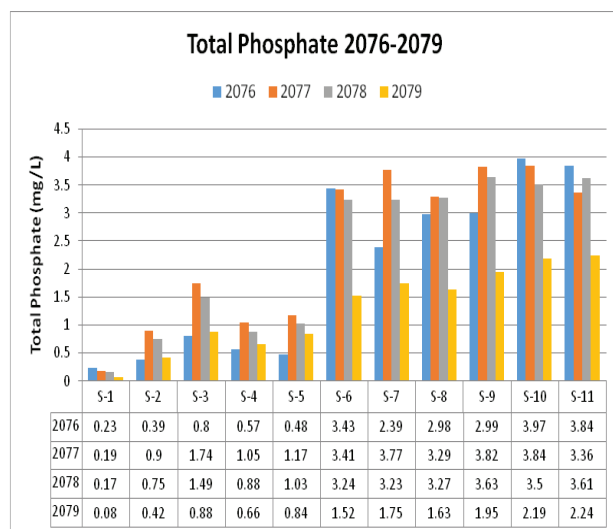


Figure 9: Average of Total Phosphate along the Bagmati River

5 Conclusion and recommendation

5.1 Conclusions

This study assessed the changes in the water quality along the Bagmati River to evaluate the effectiveness of the Bagmati River Corridor Restoration. The extent of pollution caused by dumping untreated sewage into the river system was determined. Human activities and

untreated municipal sewage contribute to higher levels of pollution in metropolitan areas, rendering the water unfit for any practical use. Water in rural upstream areas, on the other hand, is generally clean. The data reveal that as you proceed from the headwaters to more densely populated urban areas, the concentration of pollutants increases.

Overall, the comparison with the present characteristics of water with the previous results show that the indicators of the water quality such as BOD, COD, Turbidity, TSS and TDS show a decreasing value over the years with the lowest being in 2079. However, DO, which is one of the most important water quality indicator, has increased in the downstream regions. The lack of wastewater treatment plants and the direct discharge of sewage and solid waste into the Bagmati River downstream caused an increase in organic waste and soluble conductive substances, leading to the consumption of almost all of the dissolved oxygen (DO) in the water.

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Application of Information Technology to Promote Community-Based Tourism Among Entrepreneurs of Homestays in Mae Hong Son Province

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Abstract

This project aims to create a model database system for community-based tourist management and homestay groups using standard innovation and technology. Moreover, it will be used for promoting homestays and guest reservation information. The population and sample are a homestay community in the Mae La Noi and Khun Yuam districts of Mae Hong Son, Thailand. The research instruments comprised two primary components: A survey and an interview about the administration of community homestays. According to the seven-step System Development Life Cycle (SDLC) model, tools for developing the system structure context diagram, data flow diagram, and data relationship diagram. As a result, a prototype model database system for community-based tourist management and homestay companies was developed. The researcher has referenced the website's name in this presentation. Both the PHP programming language and the MongoDB database system are open source. The URL for the hill-tribe homestay is <https://hilltribehomestay.com/>.

Keywords

Information Technology, Database System, Community-Based Tourism, Homestay, SDLC

Introduction

A. Background

“Homestay” is a kind of tourism activity that aims to prevent tourism from negatively impacting the local people’s environment and way of life, diminishing tourist attractiveness. Encourage visitors to purchase products and services directly from the local community, such as lodging, food, and souvenirs. Presently, homestay tourism is offered in several ways, including living as a family member in the houses of local peasants. Almost every aspect of village life has been altered to accommodate visitors. Housing facilities have been constructed in specific locations, but the communal homestay experience has been preserved. The stay illustrates the distinctive lifestyle of the local Thai population. It has a distinct charm and local character derived from the simplicity of daily living and traditional activities required to sustain the surrounding natural environment. All homestays must be inspected and re-registered as they conform to the requirements. Tourism Department Ministry of Tourism and Sports: The administration wants to emphasize local autonomy. Community development emphasizes job creation that generates money for the community. Utilize

tourism as a strategy to expand the community’s tourist offerings. [1]

There are 171 villages or communities around the nation that arrange events and homestays as part of the “Homestays” program, which has been established to this point [2][3]. One of the criteria for homestays is a reservation system. Therefore, the registration fee and deposit will be utilized to administer the homestay for the community.

A survey of homestay information websites revealed that the Department of Tourism, Ministry of Tourism and Sports had created a website named <http://homestaythai.net/> to supply the general public with homestay information. It was discovered that the website has information regarding homestays but needs more decision-making elements. Stay or travel on a tourist’s journey, including lodging information. Tourists must contact the appropriate party for further details. Many websites provide services from experienced individuals who share their travel experiences, such as <http://tripsthailand.com>, <http://www.moohin.com>, and others. These websites do not, however, offer booking services. This is a critical factor that travelers consider while selecting a service.

It was determined that the hassle of utilizing the service is a concern for the new generation of visitors who choose to travel and stay in homestays. This is because guests cannot inspect the accommodations—tourist decision support data about accommodations, services, and neighborhood activities. Therefore, developing a reservation information system and homestay data will supply travelers with information that will aid them in selecting the service. In addition, it is beneficial for the community to provide activities and information that will assist guests in deciding where to stay. Additionally, there is a solid public relations push for the homestay community[4][5].

Mae Hong Son, There are natural tourist resources, such as mountains, woods, rivers, and a particular local culture. This has led to a rise in the number of visitors and a subsequent expansion of tourism-related businesses. In addition, the number of visitors interested in visiting Mae Hong Son province continues to rise, as does the area's popularity. There have been more than 15 years of full-service community tourism, with several towns functioning as examples and learning environments for students. Developers and scientists The community has been through the process of learning—management, and development till now with cooperation from local groups. However, the community-based tourism concept remains an option for ASEAN tourism, representing a minor share of the tourist business. Therefore, it is an effective means of enhancing community-based tourism. It is the era of information and communication technologies at present. The Internet, which reaches almost every part of Thailand, facilitates the flow of information and communication in a timely and accessible manner. Information technology is used in various fields, including education, the corporate sector, and tourism. In the tourist industry, Information technology is used in several sectors, including public relations. For example, there is the creation of a website to promote tourist sites, mobile GPS systems for travel, etc., and information technology for tourism management, such as hotel reservation systems, etc.

The study team thinks that employing information technology to boost the community-based tourism of homestay entrepreneurs in the province of Mae Hong Son would increase the tourist attraction's visibility and accessibility. Therefore, this project will construct an information system as a tool for creating a database for community tourist management and homestay organizations by creating a plan for pinning tourist sites, networking communities, and constructing a system for finding and booking homestays for the tourism community and homestay operator management in Mae Hong Son Province. In the same framework, competition is increased, and the community tourism business is pushed forward, connecting local communities to the globe. In addition, distributing revenue to the community

is well-known and more in line with international norms. This author kit is designed to assist you in preparing your submission; it is an exact representation of the format expected by the editor.

B. Research objectives

- 1) To create a novel database system paradigm for community-based tourist management and homestay groups. And conventional technologies
- 2) To be used as information for advertising homestays and reserving homestay accommodations for visitors.

Conceptual framework

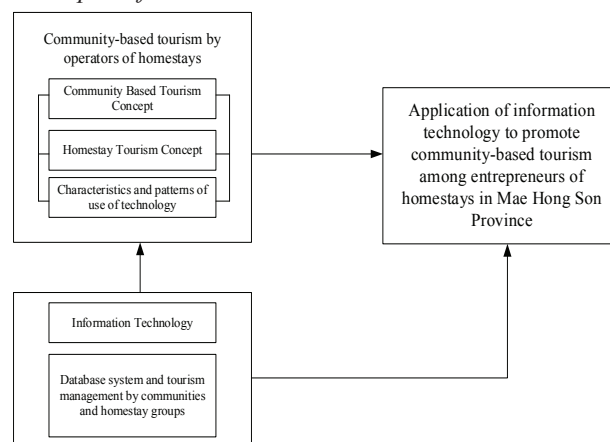


Figure 1 - Conceptual Framework

Literature review

The creation of information systems is designed to increase the competitiveness of homestays. According to the survey findings, the new generation of visitors is interested in ecotourism. In addition to the country's policy that encourages the community to build homestays to produce money, the community should establish homestays to generate income for the community. Consequently, homestay tourism has grown increasingly popular, although information regarding homestays needs to be publicized. This is because the homestay community needs help to do this. According to contextual research, only 19.4% of 36 homestays in the upper northern provinces had a website, 22.2% used Facebook for public relations, 25% used email for communication, and 25% used Facebook for communication, according to contextual research. 97.2 Communicate through the telephone. Creating a reservation information system for homestay accommodations is one way to boost the competitiveness of homestays. Utilizing the system development life cycle, a web-based information system is created. Including seven significant kinds of information, homestay information, guest house information, community activities, Awards, committees, and local attractions are managed using the Microsoft SQL Server database management system and the ASP.net programming language. The new system was then implemented in twelve homestays. There were 63 participants, including 39.7 percent of the homeowners,

30.2 percent of the community committees, and 19.0 percent of the youngsters. The majority of them were older women (60.3%). They ranged in age from 15 to 76, with an average age of 43[6].

Mueang Pan District, Lampang Province, mobile phone-based information system development to promote tourism attractions. This study aimed to establish an information system for promoting Muang Pan District, Lampang Province tourism attractions through mobile phones. Representative of the community and Chae Son Subdistrict Administrative Organization Community representative, Pan municipality representative, community representative, and Thung Quo Subdistrict Administrative Organization (SAO) representative. Local citizens, visitors, and information technology experts It is a development study that uses the MySQL database management system, the PHP programming language, and HTML5 as development tools. (1) The study determined the backdrop of the necessity for information systems to promote tourism attractions using mobile phones. The following are the six subsystems for Mueang Pan District, Lampang Province: monitoring system login password member database administration System for handling tourist information Press release administration system Commenting reporting system for information management. The system is built by the system development life cycle (SDLC), which involves the creation of web apps that aid in the promotion of Mueang Pan District's significant tourist attractions. They promote tourism by classifying tourist attractions into three categories: natural tourist resources, Cultural and ecological tourist destinations. By combining the HTML5 instruction set with PHP as a tool for developing information systems for the Android operating system, information may be shown on mobile devices. (2) Quality assessment of created information systems is separated into five categories, including data entry into the system. An aspect of the presentation about Processor Evaluation of the functional unit of the storage unit Overall, the mean was 4.42, and the standard deviation was 0.125. The evaluation findings indicated that the quality of the system was excellent. The compromise was 3.82, and the standard deviation was 0.284%. It was determined that administrators were pleased with the system. At a high level and based on the results of an evaluation of user happiness, the overall system user status, the mean was 4.26, and the standard deviation was 0.260. pleased with the system to a very high degree.[7]

Information management system for tourist attractions and tourism-related activities. Khung Bang Kachao region Phra Pradaeng District Samut Prakan Province. This study aimed to 1) examine and categorize information on tourist resources and proper management via community engagement with tourism routes. The research findings, the classification of tourist resources, and the management of

tourism routes with community input. Group the content into four sections; the first consists of information about tourist destinations. Designated as ecotourism, agricultural tourism, Cultural tourism, etc. (2) Information about tourism-related and nature and environment-educational activities. Activities based on local knowledge, Cultural activities, Cycling-related pursuits, etc., (3) information on lodging in the region, and (4) information on local items. It is a popular and well-known product, and 2) it provides an information system for tourist management in the Khung Bang Kachao region.

Analysis outcomes Synthesize system development from associated parties and related individuals who are happy with the tourist management information system in the region. Because it provides a summary of the Khung Bang Kachao region. as a medium for public relations and Convenience for businesses and visitors. Overall, the testers were quite delighted with the system's usability. The average was 4.32. The plan was simple to access, easy to use, and transparent in its outcomes reporting. This is useful to the community and may boost the local economy. [8]

A Case Study of the Mobile Application for Promoting Community-Based Tourism in Baan Muang-Ruang, Mueang District, Chiang Rai Province, The objectives of this study were (1) to develop and evaluate the efficacy of a tourism application for the Baan Muang-Ruang community, (2) to examine user satisfaction with a tourism application for the Baan Muang-Ruang community, and (3) to examine the results of tourism promotion by the Baan Muang-Ruang community in preparation for the implementation of a tourism application at the Baan Muang-Ruang community. The assessment of the effectiveness of tourism apps in the Baan Muang-Ruang community utilized ten professionals, including application developers, website developers, and UX/UI designers, in addition to 52 representatives of tourism community residents and visitors picked randomly. Tourist application for Baan Muang-Ruang community, performance evaluation, user satisfaction questionnaire, and tourism promotion assessment for Baan Muang-Ruang Community in preparation for the deployment of tourism application for Baan Muang-Ruang Community was the study instrument. The data was examined using the mean and standard deviation measures. Experts assessed the tourist application for Baan Muang-Ruang as having the most significant degree of user happiness. At the same time, the community rated the outcomes of tourism marketing as having a moderate level of satisfaction[9].

Methods

This study is a research and development (R&D) study in which the researcher adapted the System Development Life Cycle (SDLC) [10] 7 steps into 4 steps of system development.

A. Requirement and feasibility study.

This research is experimental. Five homestay communities in the Mae La Noi and Khun Yuam districts of Mae Hong Son served as the experimental/data collection sites. By applying the concept of System Development Life Cycle: SDLC 7 steps to a 4-step system development process and collecting secondary data from research documents, textbooks, community research, and publications from both public and private organizations, communities, and the Internet. And fundamental information

Data were collected from a sample group that was determined using an interview form, conducted in a study in a standardized homestay community area, and is currently being submitted for standards by the Homestay Committee or the representative responsible for the homestay community. Management and observation of community homestay services during a local study to determine the actual conditions of community homestay services. They utilized structured and semi-structured interviewing techniques.



Figure 2 - Interview of Entrepreneurs of homestays

B. Requirement and Feasibility study.

Bring the findings of the research to analysis and design of a system to suit the requirements of the community by assessing the old system, the previous job characteristics, the difficulties that arise, as well as proposals and analyses of the new job characteristics, such as the shape of the new work system. Compare the original work, including the database functional program's logical structure, with the revised version, as shown in Figures 3-5.

Concept diagram

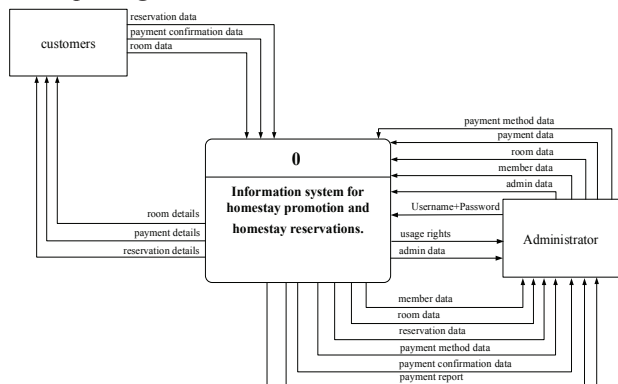


Figure 3 - Context Diagram

Figure 3 shows that those involved in the system or users

include system administrators and customers.

Data Flow Diagram

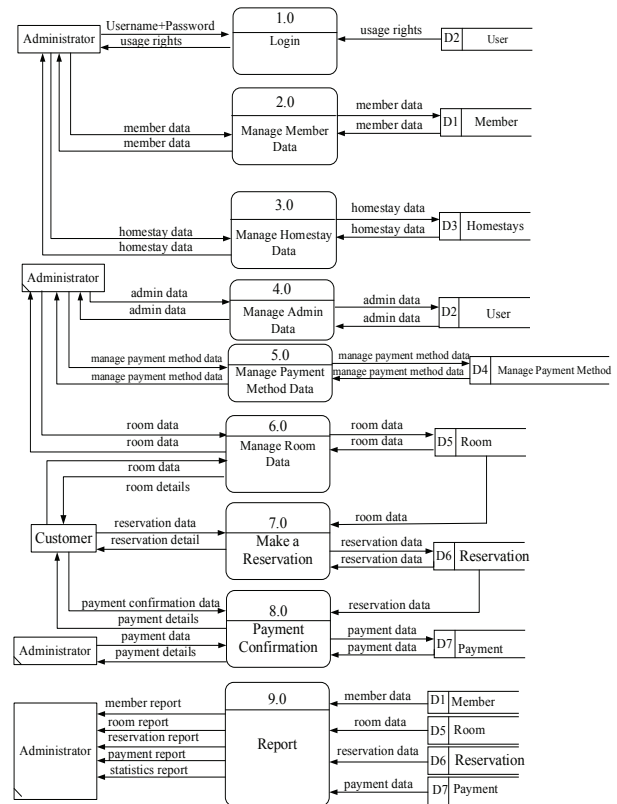


Figure 4 - Data Flow Diagram.

Figure 4 shows a data flow diagram of the information system for homestay publicity and reservations 9 processes are as follows:

- 1) Process 1.0 Login process. The system will bring the member ID and password to verify to determine the right to access the system further.
- 1) Process 2.0 Manage Member Data Process. It is a section for general people to apply for membership and a member's area to edit personal information and passwords. In addition, administrators can work on adding/editing/deleting member information.
- 2) Process 3.0 Manage Homestay Data Process. It is the administrator's part to perform the task of adding / editing / deleting homestay information.
- 3) Process 4.0 Manage Administration Data Process. It is the administrator's part to perform the task of adding / editing / deleting administrator information, editing personal information, and editing passwords.
- 4) Process 5.0 Manage Payment Method process. The admin section performs the task of adding / editing / deleting payment information.
- 5) Process 6.0 Manage Room Data process. It is the administrator's part to perform the task of adding / editing / deleting room information.
- 6) Process 7.0 Reservation process. It is the admin and

customer part to perform the task of adding / editing / deleting reservation information.

- 1) Process 8.0 Payment Confirmation Process. It is the admin and customer part of the payment confirmation process.
- 1) Process 9.0 Report process. There are 2 types of reports designed in this process; the first is a tabular report, namely the member information report, the room information report, the booking information, and the payment information, and the second is a statistical report.

Database Design

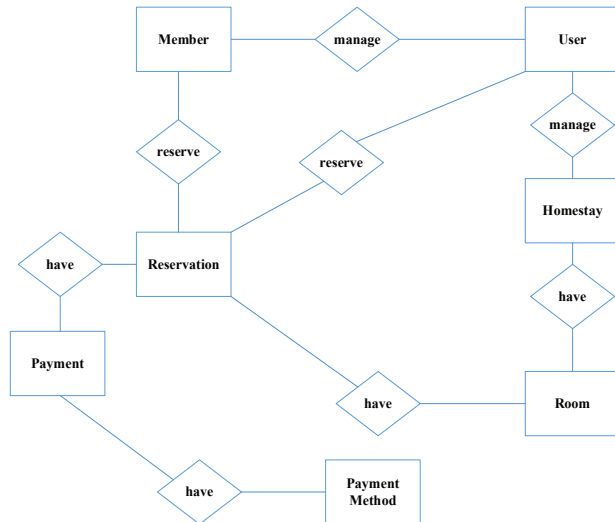


Figure 5 - Entity Relationship Diagram

From the Entity relationship diagram [8], the ability to convert the data connection into a data table may be utilized to store the system's data, shown in Table 1.

Table 1 – List the tables in the database.

Table	Data
Member	Collect data on members
User	Collect data on users
Home-stay	Collect data on homestays
Room	Collect data on rooms
Reservation	Collect data on reservations
Payment method	Collect data on the payment method
Payment	Collect data on the payment

C. Implementation.

Develop a database system for community-based tourist management and homestay groups using a web-based application accessible over the Internet with a browser such as Internet Explorer or Chrome, PHP programming language, and MongoDB database system, open-source software. Moreover, evaluate the accuracy of Language and Processing by experimenting with accurate data based on the working procedure. Then, create a user manual for general users.

D. System Validation and Maintenance.

They are implementing the created information system in the homestay community. The homestay committee and youth in each homestay will serve as users.

Experimental Results

This research investigated a prototype model database system for community-based tourism management and homestay. Design and create an information system for homestay advertising and booking of homestay accommodation by presenting it as a Web Application utilizing PHP programming language and MongoDB database system, which is an open-source software to develop in this presentation; the researcher has used the website name "hill-tribe homestay" with the URL: <https://hilltribehomestay.com/>. The website presents the information as follows.

- 1) Homepage of the information system for homestay promotion and homestay booking

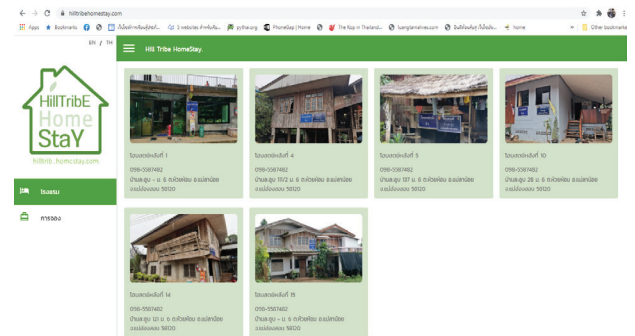


Figure 6 - Homepage.

- 2) Information Management System for Administrators



Figure 7 - Show the page of the data management system for system administrators.

- 3) Community data recording system

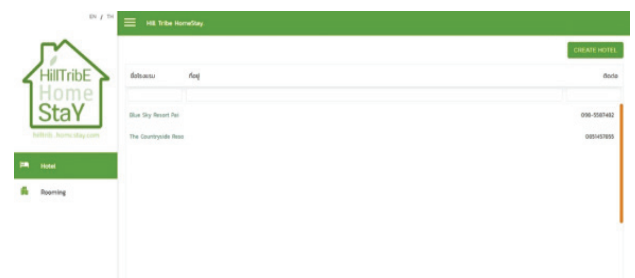


Figure 8 - Show the page of the data recording system for the community.

4) Page showing a room data recording

Figure 9 - Show the page of recording room information.

5) Data booking system for administrators

Room Name	Address	Size	Type	Location	Status
Blue Sky Resort No. 1	Chiang Mai	10	Single	10 September 2021	Booked
Blue Sky Resort No. 2	Chiang Mai	10	Single	10 September 2021	Booked
Blue Sky Resort No. 3	Chiang Mai	10	Single	10 September 2021	Booked
Blue Sky Resort No. 4	Chiang Mai	10	Single	10 September 2021	Booked
Blue Sky Resort No. 5	Chiang Mai	10	Single	10 September 2021	Booked
Blue Sky Resort No. 6	Chiang Mai	10	Single	10 September 2021	Booked
Blue Sky Resort No. 7	Chiang Mai	10	Single	10 September 2021	Booked
Blue Sky Resort No. 8	Chiang Mai	10	Single	10 September 2021	Booked
Blue Sky Resort No. 9	Chiang Mai	10	Single	10 September 2021	Booked
Blue Sky Resort No. 10	Chiang Mai	10	Single	10 September 2021	Booked

Figure 10 - Reservation system for administrators.

6) Room reservation and payment verification system

Figure 11 - Reservation and payment verification system.

8) The homestay booking system for tourists

Figure 12 - Tourist homestay booking system.

Conclusion and future research

A model of an information system for homestay advertising and reservation of homestay accommodations was derived from the research by presenting it as a Web application developed using PHP and the MongoDB database system. Used the name of the website “hill-tribe homestay” under the URL: <https://hilltribehomestay.com/>, which the researcher offered as a sample to attempt to use this system with the result that the users are pleased. However, there are still hurdles in use owing to the Users’ poor knowledge of the technology. Individuals in each group are restricted in terms of technology usage, and the age range of that group is middle-aged, with people who are interested in using it. Single-person technology at the same time, each group of homestay operators needs more technological equipment to communicate, thus hindering access and continuous access to this system.

Develop a prototype of an information system for homestay publicity and booking. The researcher has suggestions for conducting the research: 1) The website should be continually developed and improved. 2) There should be an encouragement for youth in various groups to take part in developing knowledge and helping to be leaders in using technology for further benefits.

Further research should develop a system to identify homestay geographic coordinates and provide a payment gateway.

Acknowledgments

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Does Nepal Prosper using Mountains Optimally in Tourism for Generating Income?

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Abstract

Being thoughtless towards the resources to generate economy is the chief reason for a country, like Nepal, to remain in lowly economic status. In this connection, this article aims to analyze whether Nepal has been able to use its mountain for tourism to generate income and develop the local level. The method adopted is to review the government policies and enquire at local levels to infer how far the country has been able to use the most valuable natural resources, mountains which are abundantly availed in Nepal by virtue. The approach taken in the study is the approach the country has adopted to develop mountainous areas for tourism purposes. The preliminary findings reveal that they lack a bottom-up approach because rural people are not participated in making policies.

Keywords

Mountain tourism, bottom-up approach

Introduction

Mountains are the symbols of strength, freedom, eternity and cultural diversity and social change. In the last twentieth century, tourism has influenced the globe rapidly in the form of Industry. This potential of tourism has attracted the attention of several mountainous naturally including those of the Hindus Kush-Himalayas. There are four key components of tourism namely attraction, accessibility, accommodation, and amenities, all of which are equally important and required for the development of tourism (Bhatia, 1996).

Though the mountains are fragile in nature, Nepal is considered as a hot cake destination for the adventurous lovers globally in the context of exploring several Mountain tourism activities like expedition, Trekking, Hiking, Rock Climbing, Bungee Jumping, Heli-skiing, Snowboarding, Ice climbing, Bush walking, Mountain Biking, mountain flights etc. The mountain tourism is regarded as one of the most valuable assets for promoting adventurous tourism industry in Nepal. Tourism in Nepal has just started to get exposure only after the successful expedition attempt was made by climbing the highest peak in the world, Mount Everest on 29th May 1953 AD by a Nepali guide Tenzing Norgay Sherpa and Sir Edmund Hillary from New Zealand. The main purpose of this study is not only to analyze whether Nepal could prosper using mountains optimally in tourism for generating income or

not. This research also focuses in explaining how Nepal is obtaining prosperity through promoting its fragile mountains globally. The study equally focuses how the trekking and expeditions activities supports in economic growth by generating the employment maintaining the theme of environmentally sustainable by eradicating poverty from the root level uplifting the livelihood of mountain society. This study is based on exploratory research. Most of the data were derived from multiple sources such as: field observation, review of multiple private & public sectors tourism institution's policy and plan documents, questionnaire opinion collected from domestic and international tourists and in-depth open-end interviews taken with influential tourism stakeholders. Several attempts are made to emphasis the empirical study the activities related to Mountain tourism in Nepal. The study also focuses in providing the recommendation and suggestion to both private and public sectors to seek prosperity through the exploitation of Mountain tourism that are scattered to the major part of land mass in the context of Nepal.

Nepal is considered as a yam between two gigantic boulders namely China and India. It is officially the Federal Democratic Republic Himalayan country in the Asia Pacific Region (South Asia) extending its wide wings of prosperity through the promotion of its pristine snow-capped Mountains all over the world with multi-

lingual, multi-ethnic, multi-religion, and multi-cultural state. The total area of Nepal is 147,516 Sq Km. Among the total landmass, approximately 83% of the landmass is covered with Mountain landscape. **Upadhyaya 'Upreti, (2008)** has mentioned that Nepal has covered approx. 800 Sq. Km. beginning from Byas rishi Himal in Darchula in the West to Kanchenjunga in the East. It is a landlocked country with several snowcapped Himalayas ranges, deepest gorges, beautiful landscapes, amazing flora, and fauna, preferable cool climatic condition variations, diverse traditions, cultures, rituals, and rites along with innumerable colorful festivals all year around. Nepal has officially opened its gate to Mountain lovers in 1949. Mountains are the symbols of strength, freedom, eternity and cultural diversity, and social change. The Sherpa of Everest region, Gurungs of Western Annapurna Regions, Rais of Eastern Regions specially Makalu and Kanchenjunga regions as the key local players and indispensable parts of handling and promoting Mountain tourism being a good host in Nepal. Mountain Tourism is the best way for harvesting huge foreign currencies, generating huge employment by reducing youth brain drain to other countries, the rise of income, productions, enhancing local cultures, traditions, etc to the international level. It not only benefits nature lovers, adventurers to explore the amazing exotic unknown Mountains, landscapes, off-the-beaten trails, and winding trails but also exposes several diverse topography and unique climatic behaviors. Since the Mountain Tourism business in Nepal is a sunrise sector in the present context of Nepal in the Twenty-first Century, there are several high opportunities to tap the attention of global youth who are seeking adventurous and wilderness activities to explore once in their lifetime. Nepal can be their best touristic destination for those thrillers.

Porters who support all Mountain travelers by carrying their loads to and from the mountain who are from the extreme economic background are transforming their families and societies into prosperous by earning from Mountain Tourism. Since 83% of the total landmass is covered by Mountains and hills in Nepal, there is no other prosperous business other than developing Mountain Tourism as sustainable economic development of the Nation rather than adopting traditional agriculture and other means of business practices. The 800 km stretch of the Nepal Himalayan is the greatest in the world with eight peaks that rise above 8000 m. including Mt Everest. Kathmandu itself possesses 7 World Heritage Sites within a radius of 7 Km within its territory. Mountain Tourism is the only solo exporting business that has no second competitor to bit globally is a solid form of business to transform the name and fame of Nepal culturally and economically. Walking along the beaten trails or virgin tracks, encounter the dense Rhododendron Forest, isolated hamlets and unique mountain villages, amazing flora, and fauna with pristine, lakes, ever flowing springs, and gorges as well as breathtaking glaciers and Himalayan white-water rivers with a fascinating glimpse of traditional rural lifestyles

that are directly connected with Mountain Tourism.

Most of the developed countries are in the race of innovating several artificial Mountain activities for fun and a means of revenue collections. We are born with the lap of Himalayas. We always beg the world for economic support rather than feeling blessed to utilize the potential of Mountains. It is our bad luck to wait for the donors and supporters rather than identifying our strengths of promoting Mountain tourism as a source of poverty alleviation and the main source that brings drastic changes in national GDPS too.

Literature review

it is yet difficult to find updated research and articles regarding the issues of Mountain Tourism in the context of Nepali Tourism research. Literature on Mountain-specific Tourism is lacking. Mountain Tourism comes along with several synonyms as natural tourism, ecotourism, sustainable tourism, etc. The Himalayas are one of the planet's youngest mountain ranges and their coupled natural and human ecosystem is highly vulnerable to human induced changes occurring at local, national, regional, and international scales, and including, for example, institutional policies and economic market forces (**Gurung et al. 2010**).

Trekking Agencies Association of Nepal TAAN (2008AD) has mentioned that in around 1,792 mountain peaks existed in Nepal, 1,310 peaks are above 6,000 meters and only 326 peaks have been opened for climbing. There are several yet to be explored and promoted lying behind the curtain of explorers for identifications.

(Dhakal, 2015) has mentioned that in 1951, Nepal has opened its wings to international tourists and gained international recognition in the 1950s after two climbers reached Mount Everest in 1953. By 2019, 6,509 climbers had conquered the peak (**MoCTCA, 2020a**). **United Nations , Pew research Centre** has justified that there are 2.3 Billion population covering 29.9 % of the world's total populations in 2020 are between the age of 20 to 39 who are cent percent potential tourist that can be diverted for visiting and exploring the mountain tourism and its adventurous activities in Nepal.

Nepal Tourism Board in 2009 A.D. has also mentioned Mountain tourism as the pioneer of all the tourism in Nepal though it has started just in 1949, the year Nepal opened for tourists. It often relates to mountain tourism while talking about Nepalese tourism. Nepal has earned its identity as the mountainous country in the world. It is always treated as a holy Himalayan country by foreigners. The image of Nepal as a beautiful Himalayan country cannot be ignored but, in the meantime, it is important as well to look into the diverse culture of this country.

The direct contribution of Travel & Tourism to GDP was NPR85.2billion (USD0.8 billion), 3.6% of total GDP in 2016, and is raised by 6.8% in 2017, and to rise by 4.3% per annum, from 2017-2027 to NPR138.9 billion (USD1.3 billion), 4.0% of total GDP in 2027. Similarly, Tourism

and Travel: Economic Impact 2017, Nepal; World Travel and Tourism Council in 2016 Travel & Tourism directly supported 427,000 jobs (2.9% of total employment). This figure is increased by 6.0% in 2017 and rise by 2.9% per annum to 604,000 jobs (3.2% of total employment) in 2027 Mountaineering expedition is among the main facets of mountain tourism. Every year hundreds of climbers visit Nepal to climb mountains. Associated with the expedition, various economic activities and products namely porter, insurance, helicopter services, hotels and tea- shops, foodstuffs, helping people, mountain guides are operated (**Mountain Tourism in Nepal, Shrestha, H.P.**).

According to the Tourism Employment Survey 2014 conducted by the Ministry of Culture, Tourism and Civil Aviation (MoCTCA, 2014), a quarter (24%) of the total number of employees in the sector were seasonal workers. In addition, 80% were male and about one-third (32%) had a second job as well. In the tourism sector, economic growth and financial development are co-integrated because of an increase in international tourism revenues by 1%. Nepal’s GDP is projected to grow by an average of 0.2% in the long run (**Kumar, 2019**). Furthermore, the tourism sector has the potential to make a major contribution to the green economy through more sustainable practices, climate change mitigation, and ecotourism (**Reddy & Wilkes, 2015**).

Nepal Tourism Board NTB declares that in 2020, Nepal’s tourism earnings totaled USD 217 million which was USD 801 million in 2019. The earnings plummeted by 48.2 percent to a meager USD 112.5 million in 2021. Similarly, average expenses per visitor per day plunged to USD 48 in 2021 which was USD 65 in 2020.

Table 1: Tourist Arrivals in Nepal

Year	Number	% Increase
2019	1197191	
2020	230085	-81%
2021	150962	-34%
2022	614148	307%

Source: Nepal Tourism Board NTB



Figure 1: International tourist arrival

According to the report of **Ministry of Culture, Tourism & Civil Aviation of Nepal (May 22,2022)**, Out of 53 airports in Nepal 34 airports are in operations which includes three international airports. One domestic is under construction and 19 are as non-functional. Twenty-Two international airlines carried 1,456,929 passengers out of which 748,327 were outbound and 708,602 in-bound by 11,760 flights. The number of countries having civil aviation contract reached to 41. There are 20 airlines company for domestic movement

Statement of problem

Many countries have branded mountains an attractive destination for tourists. Does Nepal prosper economically selling mountainous products globally? This is the main issue of this article. Having resources but not being able to develop them is the problem of management. This study is designed to analyze the empirical study to transform Nepal into prosperity through Mountain Tourism. Though the topic seems very common, there are several opportunities as well as challenges that are yet to be addressed. However, it is very hard to get the scholars’ articles, journals, or other resources of the current time that adds input in researching the details about Mountain Tourism since the researches are lacking. Development of Mountain Tourism in Nepal is the major means to transform the current downfall economic and social condition of Nepalese communities into prosperous and sustainable. It is only the means to manipulate the resources from bottom to top leveled people.

Research questions

The researcher wants to know the following research questions in this study.

- 1.How Nepal can get prosperity utilizing Mountains as tourism product?
- 2.What are the major opportunities and challenges in developing Mountain Tourism to prosper Nepal?

The objective of the study

- i) To identify the major opportunities factors on Mountain Tourism that can prosper Nepal.
- ii) To transform Challenging factor into opportunities promoting Mountain Tourism in Nepal.

Opportunities on mountain tourism:

Mountain tourism doesn’t only mean to climb and conquer the top. It includes several non- consumptive recreations as trekking, hiking, camping, rock and cliff climbing, bungee jumping, mountain Biking, wildlife observations, white water rafting, Kayaking, canoeing, skiing, etc. It not only explores the natural beauties of the world but also supports poverty alleviations too uplifting the downfall economy of Nepalese societies especially to those communities who are living under poverty and extreme economic conditions all over mountain areas of Nepal. The people especially those living around Mountain

areas who are from an extreme economic background as Sherpas, Tamang, porters, guides, and several other mountain communities are getting sustainable livelihood through the movement of Mountain Tourism activities. Sustainable tourism development is an important vehicle for poverty alleviation in Nepal (Kafle, 2011).

These attractions present Nepal a fascinating mountain tourist destination for varied forms of mountain tourism activities. These activities ranges in terrestrial (trekking, mountaineering, pony trekking, Ski diving, rock climbing, bird watching), aerial (Bungi Jumping, Hot Air Ballooning, Paragliding, Ultra Light Aircraft, Mountain Flight, Cable Car, etc.), and aquatic (Rafting, /Kayaking, Boating, Fishing, Swimming, ware Running, etc.) spheres, all of which are full of adventures.

Ministry of Foreign Affairs Nepal has open door for mountainous tourism for the following 12 activities [MOFA, 2022] .

1. Mountain climbing

The 800 km stretch of the Nepal Himalayan is the greatest in the world with eight peaks that rise above 8,000m including the highest in the world, Mt. Everest. Ever since the country opened its peaks to climbers in 1994, the Nepal Himalayan has become a great theatre of mountaineering activity and the drama of success and failure have provided impetus to thousands of men



and women to meet the ultimate challenge. The Nepal Himalayan has been an attraction to many people, be they saints, philosophers, researchers or adventures.

2. Trekking

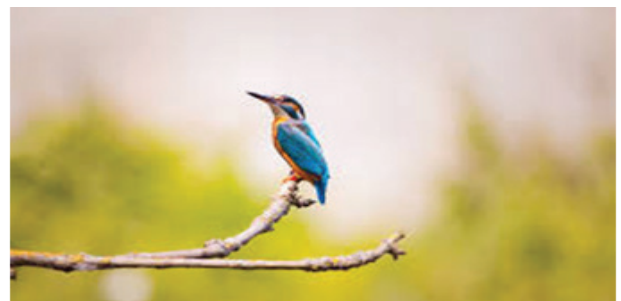
The best way to experience Nepal's unbeatable combination of natural beauty and culture riches is to walk through them. One can walk along the beaten trails or



virgin tracks. Either way you are in for an experience for a lifetime. Along with forests of rhododendron, isolated hamlets, and small mountain villages, birds, animals, temple, monasteries and breathtaking landscapes, you will also encounter friendly people of different cultures offering a fascinating glimpse of traditional rural life. [MOFA, 2022]

3. Bird watching

nepal is a paradise for bird lovers with over 646 species (almost 8% of the world total) of birds, and among them almost 500 hundred species are found in Kathmandu Valley alone. The most popular bird watching spots in Kathmandu are Phulchoki, Godavari, Nagarjun, Bagmatiriver, Taudaha and so on. Get your binoculars and look forward to a rewarding experience. [MOFA, 2022]



4. Rafting/kayaking/canyoning

rafting is one of the best ways to explore the typical cross section of natural as well as ethno-cultural heritage of the country. There are numerous rivers in Nepal which offer excellent rafting or canoeing experience. You can glide on calm jade waters with munificent scenery all about or rush through roaring white rapids, in the care of expert river-men employed by government authorized agencies. One can opt for day of river running or more. So far, the government has opened sections of 10 rivers for commercial rafting. The Trisuliriver is one of the most popular of Nepal's raftable rivers. The Kali Gandaki winds through remote canyons and deep gorges for five days of intense rapids. The BhoteKoshi is 26km of continuous white water and the raging Marshyanghi is four days of uninterrupted white water. The Karnaliriver provides some of the most challenging rapids in the world. The Sun Koshi , 27km, requiring 8-10 days to complete, is a big and challenging river. Adventurers are provided with world-class services by rafting agents. Agencies here provide life jackets, camping and the standard rafting paraphernalia needed by world-class rafting. An extremely popular sport in Europe, canning is now available in Nepal. Canning gives you the freedom to explore some of the most ruggedly beautiful, yet forbidden places in the world. [MOFA, 2022]

5. Hot air ballooning

Hot air ballooning is very popular with tourists for it affords the most spectacular bird's-eye view of the

Kathmandu valley and the Himalayan ranges towering in the background. On a clear day it's a superb way to view the Himalayan (from over 6000m up), and the view of the valley is equally breathtaking. [MOFA, 2022]

6. Bungee Jumping

The ultimate thrill of a bungee jump can now be experienced in Nepal at one of the best sites that this sport can boast of anywhere in the world. Nepal's first bungee jumping site is situated 160m. Over the BhoteKoshi river, inviting you to experience the ultimate adrenaline rush in the surroundings of this amazing place. The jump, at 160m., is staffed and operated by some of the most experienced jumpmasters in the business. [MOFA, 2022]



7. Paragliding

Paragliding in Nepal can be a truly wonderful and fulfilling experience for the adventure seeking. A trip will take you over some of the best scenery on earth, as you share airspace with Himalayan griffins vultures, eagles, kites and float over villages, monasteries, temples, lakes and jungle, with a fantastic view of the majestic Himalayas. [MOFA, 2022]



8. Ultralight aircraft

ultralight aircraft take off from Pokhara and offer spectacular views of the lakes, mountains and villages. This is an ideal way to see life from a new perspective. The choice of Pokhara Valley for ultra-light aircraft is appropriate chiefly because of the proximity of the mountains, and the scenic lakes. For those who wished they could fly birds when growing up, this flight is a must. It might be lonely at the top, but this flight is a must. It might be lonely at the top, but the spectacular view from up high certainly makes it all worth it. Flights are from the Pokhara airport beginning September through June. The

flights take place from sunrise to 11 a.m. and from 3 p.m. to sunset every day during these months. [MOFA, 2022]



9. Mountain biking

the best way to explore the Kathmandu Valley is on a mountain bike. Nepal's diverse terrain is a mountain biker's dream adventure comes true. Mountain biking offers an environmentally sound way of exploring this magnificent country, its landscape and living heritage. There are plenty of dirty roads and trails in Nepal to meet every mountain biker's wildest fantasy. Mountain biking is specially recommended if you wish to explore urban centers of Nepal such as Pokhara and Kathmandu as well as the countryside. Adventurous souls may plan extended trips to such exotic locals as Namche Bazaar, and western Nepal. You could even do the entire length of Nepal across the plains. Mountain bikes are available for rent by the day or longer in many of the bicycle rental outlets in Nepal and around the city. [MOFA, 2022]

10. Jungle safari

National Parks located specially in the Terai region in Nepal attract visitors from all over the world. A visit to these parks involves game- stalking by a variety of means-foot, dugout canoe, jeep, and elephant back. One is bound to sight a one – horned rhino or two at every elephant safari. Besides the rhinos, wild boars, samburs, spotted deer, sloth bear, four-horned antelope are also usually seen. A Royal Bengal tiger may surprise you by his majestic appearance. [MOFA, 2022]

11. Mountain flight

Only awe-stricken silence can come close to matching the experience of going on a mountain flight to encounter the tallest mountains on earth. Mountain flights offer the closest possible aerial views of Mt. Everest, Kanchenjunga and the Tibetan Plateau. Mountain flights appeal to all category of travelers and have become a popular tourist attraction of Nepal. For those who are restricted by time



or other considerations from going for a trek, these flights offer a panoramic view of the Himalayan in just one hour. [MOFA, 2022]

12. Rock climbing

for all those cliffhangers out there, Kathmandu offers a roster of stone walls that make for an experience of a lifetime. Now of late, Rock climbing has become a popular sport in Kathmandu, which offers some really terrific places for rock climbing. Nagarjun, Balaju, Shivapuri and Budhanilkantha are some of the places where you can try this sport. [MOFA, 2022]

The government of Nepal is generating notable foreign revenue from the movement of Mountain Tourism activities. Several tour agencies and host communities are generating prosperity through the movement of Mountain Tourism activities. Though Nepal is a very poor, landlocked tiny country economically and geographically, it is the highest exporter of Mountain tourism products globally without any second competitors. The pristine natural features, the diverse and colorful cultures also with the spectacular scenery are the major iconic attractions to the Mountain lovers that make all spellbound. Mountain Tourism promotion is only the best practice to hold the brain drain of youth creating several skilled and unskilled job opportunities inside the country. Mountain tourism promotion globally stimulates the vibrant flow of international tourists from all corners of the world that will support branding Nepal as one of the unique destinations for mountain lovers. This will support new Nepal to transform socially, culturally, and economically into peace and prosperity. The natural and cultural diversity phenomena of tourism in Nepal can easily draw the attention of nature and adventure lovers all over the world.

Challenges on Mountain Tourism: There are several challenges in branding Mountain tourism as a source of tourism destinations. Since Mountains are always fragile, global warmings and climate changes are the unwarranted reality of the modern world. This sector also supports spoiling the global environmental crisis to some extent. Since Mountains are not only tourist destinations but are also water towers to the world. If the solid wastes are not properly maintained, the world will face the terrible issue of clean drinking water shortly. (Jones, 2013) has arosed an issue mentioning that the gateway to Everest, Lukla, has faced massive challenges with waste management and insufficient water availability. The following few issues are the major indicators that are creating huge challenges for developing Nepal as a Mountainous destination. The following factors are the key players creating challenges on promoting Mountain Tourism in the context of Nepal:

Poor infrastructure and services: Very primitive and low quality of trekking trails lacking proper signage boards, mismanagement of roads, unreliable domestic

flights and airports with hassle full services, fluctuation in price with very basic services are the major issues that are creating huge challenges in developing mountain Tourism especially in Nepal. It is very challenging to get good supply of adequate drinking water, electricity, comfortable means of transportations, sanitations etc. in Mountain regions.

Access to information: It is very serious challenge in developing the good access to information especially in the Himalayan areas of Nepal. There are several incidents that can be found denoting the casualties of trekkers and mountain climbers due to poor access of information for the purpose of rescue. A recent example is an avalanche in Annapurna Conservation Area in 2019 where seven people including four Korean tourists lost their life (THT, 2019). The tourist who visits the mountain regions face several difficulties in getting access to warning and weather forecasts information resulting in losing their lives because of sudden natural hazards like avalanches, snow storms, un predictable rain fall etc.

Climate change & Visibility issues: The developed countries all over the world are in a race of setting up several atomic and other energy formation plants as well as industries and factories in the race of prosperity. This results in the massive increase of greenhouse gases such as Carbon dioxide, methane, Ozone nitrous oxide, and water vapor in the atmosphere resulting from deforestation and burning of fossils fuels while producing industrial energy and operations of transportations globally. Poor visibility days, due to haze and fog, during the winter season have been significantly increasing over the Indo-Gangetic Plains, with serious impacts on air and road travel, as well as on tourism (ICIMOD, 2019).

Challenges of land and water pollutions: The proliferation of mass Tourism creates direct negative impact to the local Mountain communities from direct noise and visual pollutions, solid waste management issues, overcrowding, disturbance in carrying capacity issues, extractions of valuable resources randomly for e.g.: consumptions of firewood and fossils, stamping rare medicinal herbs, grazing pack stock, fire hazards, sewage outflow issues as well as severs threat in wildlife too. It is also threatening the sustainability of Mountain tourism destinations creating several ecological footprints of tourism activities.

Primitive adaptation of technology: Price war and illegal operations, planning digital marketing strategies, promotion and management of product, weak international air connectivity, linked road access, adaptation information Technologies as E-tourism mobilities, and adoptions of new innovative technologies are other great challenges in developing mountain tourism as a global product.

Unstable Political condition: The continuous change in the formation of government is also another major

challenges in Developing prosperous mountain tourism in Nepal. This scenario keeps on changing the key department heads who are liable to understand and formulate the favorable plans and policies related to Mountain Tourism. The unstable movement of politics creates severe threat to the international tourist due to continuous protest, civil war, strikes and other issues.

Lack of alternative destinations: The major reports of Mountain tourism show high visiting graphs only in limited regions specially Everest, Annapurna and Langtang etc. There are several other virgin mountains and unique destinations inside Nepal that are yet to be explored which may attract the attention of mountain lovers globally. Lacking the planning of alternative destinations are key factors in losing the tourists. In the last 34 years, the average length of stay of tourism in Nepal has been between 10 and 13 days (**MoCTCA, 2020a**). Despite an increase in the number of tourists from less than 0.1 million in 1975 to more than 1.1 million in 2019, their length of stay could not be increased much. This is mainly because of limited recreational activities and alternative destinations. Therefore, the government needs to focus on building and promoting alternative destinations specially in mountain regions.

Unsafe Skies: The continuous plane crashes are threatening the tourists. 27 fatal plane crashes have occurred here in 30 years. There are many reasons behind this. But the biggest reason is the geographical location of Nepal. Since there are 8 of the 14 highest peaks in the world within the territories of Nepal. Therefore, landing a plane in a hilly area is very risky. Most of the runways are constructed in the middle of the mountains and the valleys. Moreover, the sudden change in weather also complicates the flight.

Infectious Diseases Threats: The outbreak of Covid-19 has put the world into the lockdown for more than two years. Since the movement of people only can stimulate the tourism industries, infectious diseases create huge obstacles among tourism intermediaries. The massive hit of several other infectious diseases as AIDS, TB, Malaria, Dengue, Cholera, influenza, plague, Rubella, Zika virus etc. are the major components creating gaps in Mountain tourism.

Scope and limitations

The major scope of this research is to identify the major opportunities in promoting Mountain Tourism in Nepal for the prosperity along with its possible challenges and suggest the best practices to the upcoming researchers to analyze the problems creating issues in promoting and branding Mountain tourism in Nepal. The unavailability of specific data made the research bit complicated. The study is largely based on secondary information. Therefore, it has not quantified the impact of mountain tourism accurately. It requires a huge budget and specific

manpower to visit all parts of Nepal that possess Mountains and conduct research to rectify the variables affecting analyzing the title. The Covid-19 pandemic and the global economic crisis has shrunk the regular income source and ruined every human activity compelling the world to remain locked inside in one corner of the home making it difficult to go out to the targeting group or destination for conducting research and data collection procedures in a specific time bond.

Methods

It is a descriptive study. The researcher has followed qualitative techniques. The study is based on review of literature available, consultation with experience people working in the area of mountain tourism areas for many years (more than 5 years). Researcher's own experience in the field also is used as complement to the literature review and face to face interactions with the people working in this field.

Results

There are several issues found that are to be seriously considered into action by both government and non-government authorities to make Nepal prosper through Mountain Tourism. The following recommendations are the major findings of this research.

- i. Several opportunities are lying vacant in the sector of Mountain Tourism in Nepal especially in the sector of trekking, expeditions, rock-climbing, white-water activities, bungee jumping, Mountain Biking, Bushwalking, skiing, etc. which are yet to be explored globally.
- ii. While exploring this fragile phenomenon, there needs to be maintained specific consideration otherwise there may occur several challenging issues like the destruction of nature as well as natural hazards.
- iii. Formation of specific praise and punishment Mountain tourism policy including the welfare of local communities is a major issue taking consideration of investors, operators, service providers as well as consumers. Locals are only the initiators who can control the optimum exploitation of natural resources if they are guided and supported by the concerned authorities.
- iv. The government should adopt bottom-up approach to establish ownership among host communities and operators rather than following top to bottom approach.
- v. Branding mountains and their values globally accepting the trend of latest innovative information of technologies etc.

Discussion

Reviewing the Literature Review part, it is very clear that Nepal no doubt is a mountainous country carrying abundant opportunities for catering Mountain Tourism

activities globally to prosper Nepal but there is no essence of mountain if there is no movement of tourist. There are several factors that are affecting to identify those opportunities as well as the challenges. There are no such serious studies and researches neither the government nor the concern authorities have shown any serious concentration to formulate the specific rules and regulations for the empirical studies on Mountain Tourism as well as to grab the opportunities that are just gifted by the nature free of cost. There are no such tools in applications that can draw the attentions of the thirsty youths globally who are in search of adventurous activities. Product positioning is very essential part to be adopted quicker for branding and promoting the potentialities of Mountain activities. All virgin mountains should be opened for those record keepers who have very keen interest to explore new mountains. Due to the lack of proper study and adaptation of innovative information technologies, we are only holding valuable Mountains but without tourists means they are ugly and meaningless.

Conclusions

It is previously discussed that the geographical feature of Nepal is only suitable for operating several Mountain tourism activities since the major portion of the territory is covered by huge mountains and hills. Most of the land-locked countries with such fragile land are harvesting good revenue from all over the world branding and promoting their strengths of Mountain Tourism as a major livelihood means. Nepal needs to identify its strength of Mountain Tourism promotions globally. Since there are several huge opportunities and challenges in doing these activities, there are also several precautions that may not ruin the movement if consciousness is applied before destruction. Need to develop strategies with solutions to some of its potential adverse impact. It is only one way to uplift the down-falling status of a nation economically and socially by generating foreign currencies. It is also one best sector to engage the skilled and unskilled manpower supporting to stop the draining of youth manpower out of the country. It is only one best business that doesn't require huge money to operate and sustain livelihood. The concept of developing Mountain Tourism in international standards is the major concern of this research. We should not always carry the tag of poverty in our chest. Mountains can be an iconic tourism destination to those adventure thrillers around the world who have a great dream to explore natural Nepal once in their lifetime. We should identify the strength of our natural resources and transform ourselves in the independent list of the world as prosperous and wise Nepalese by promoting and branding Mountain Tourism activities globally.

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Analysis of Determinant of Owner Mind in Family Business Successor

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Abstract

This study focused on the Owner Mind that emerges as the core value of corporate management. The purpose of this study was to verify the hypothesis of the formation factor of Owner Mind and the influence and mediating effect on the successor's willingness of succession for a total of 100 family business that are preparing or in progress for succession with two or more generations, from the perspective of successors of family business through an empirical study.

As a result of the analysis, it was confirmed that Trust of the current manager, personal motivation in family business had a positive correlation with Owner Mind in direct effect, and Owner Mind confirmed that there was a positive correlation with Successor's willingness of succession. Owner Mind was found to play a mediating role in the relationship between Trust of the current manager, personal motivation in family business, and Successor's willingness of success. Expectations for future compression confirmed that there was a positive correlation in the direct effect on Successor's willingness of succession, and self-efficacy did not confirm a significant relationship between Owner Mind and Successor's willingness of succession.

Keywords

Family Business, Succession, Successor, Owner Mind, Willingness Succession

Introduction

Instead of just following instructions, the company's successor should be handling business matters according to the prevailing situation. To this end, the successor must be provided with a much stronger management situation than the authority for simple tasks in the succession process (Jo, 2017).

A working system and culture must be well-established to actively respond in the field by quickly gathering the opinions of organization members with expertise in a variety of fields and synthesizing them. Creative solutions must be developed to react to changes in the industry (VR, AR, etc.) in the virtual world rather than reality, in particular due to the growth of high-tech innovations like artificial intelligence and robotics in the fourth industry.

When organizational members act willingly based on entrepreneurship, they will be reborn as a surviving and developing company in the present and the future. Entrepreneurship will gradually extend to organizational members, starting with managers. It is believed that the induction of entrepreneurial activity in organizational

members begins when each person fundamentally feels a strong Owner Mind (Jo, 2017).

Prior to the start of succession, successors do not have legal ownership, and if they have Owner Mind, this will play a significant role in their voluntarily entrepreneurial conduct (Mustafa et al., 2016). Therefore, it is anticipated that Owner Mind will be crucial in encouraging the entrepreneurial activity of family business successor. According to earlier research, the first step in encouraging entrepreneurial behavior among organizational members is Owner Mind.

The psychological state of feeling "own" to the object without having legal possession is referred to as the Owner Mind (Pierce 2001). In contrast, if there is no Owner Mind, it may result in issues for the object of ownership, such as "this is not mine" or "this work is not within my scope." To put it another way, if the successor who would later run a family business does not develop a strong feeling of Owner Mind, their commitment to the family business will be reduced, and there will be a lack of leadership. Additionally, if ownership is inherited without Owner Mind, it may go against organizational

rules against the firm, endanger the safety of organization members, and dispose of the company by valuing it solely according to its financial position regardless of its worth, tradition, or vision.

So, this study focused on the owner mind that emerges as the core value of corporate management.

A study on the variables influencing the successors of family businesses who would carry on to the next generation to have Owner Mind was deemed required.

On the other hand, Approximately, only 30% of family companies survive through succession up to the second generation, and only about 14% through succession over the third generation (Handler, 1992; Ward, 1987).

According to predictions, Korea will become an older society in 2000, an older society in 2018, and a super-older society in 2025. (Lee, 2022). First of all, the Japanese Economy, Trade and Industry Department estimates that two-thirds of all Japanese enterprises have yet to decide on a successor and struggle to identify a successor to a family business as the country has entered an aging society (Sa, 2018).

In Korea, it was decided that a study on the factors impacting the successor's willingness succession was important considering the possibility that finding a successor to a family business may be challenging due to an aging society.

The factors influencing the Owner Mind of family business successors and their impact on succession were therefore deemed vital to be examined, and this is the focus of this article.

In the paper of Lee, J.H.(2023), the difference between the Owner Mind of successors of family business and the psychological ownership of employees was argued. If the employee's psychological ownership is an effort to pursue the business efficiency, which is a basic characteristic of business member, and business performance. However, the successor's Owner Mind includes additional family welfare and responsibility to all concerned, including management efficiency and business performance. So, this paper conducted a study on the Owner Mind of successors of family business, not the employee's psychological ownership.

Literature review

Owner mind forming factor

In general, it is suggested that people will try to take better care of, maintain, and nurture their possessions. An Owner Mind is defined as the state of mind or psychology that one feels as one's own even if one has no legal ownership of the object (Pierce, Furo, 1991; Van de Walle et al., 1995). This Owner Mind arises from human instinct and is a psychological state or mind that naturally occurs in both material and non-material things (Avey et al., 2009; Pierce et al., 2001).

When confirming the factors of the formation of Owner Mind through previous papers, First, Diffie, Couch (1984) explained that trust between people in an organization has a major influence on the attitude and behavior of members, and that not trusting members of a company without justifiable reasons or grounds reduces commitment to organizational work, lowers job satisfaction, and increases turnover. Seo, Y. P.(2016) said, "The trust of the current manager promotes the growth of family companies and the development of successors, creating the power to actively generate the actions and attitudes of successors and to find and maintain sustainable goal-oriented points. Through this process, it was suggested that it would affect the formation of the successor's Owner Mind. Seo, Y. P. and Lee, J. G. (2019) confirmed the effect of the trust of the current manager on Owner Mind through research. In this paper, the Trust of the Current Manager was defined as Degree of belief that the current manager will succeed the family business to the successor himself.

The secondly synchronized individual wants the cause of an individual's behavior to be his own initiative and autonomy, so it shows a creative, productive, and consistent high job level as an effect on this (Deci, Ryan, 1985; Amabile, 1993). Individuals with motivation are more likely to perceive valuable and important experiences in their work by forming positive emotions and pursuing the fundamental pleasure of action. In addition, it was suggested that motivation for self-realization related to the individual's self is a purposeful behavior in the activity itself, making the judgment of identifying the object smoother, and that synchronized individuals will have more ownership in their jobs (Choi, 2016). In this paper, Personal Motivation in family company was defined as the degree to which the successor wants to be succeeded and the goals (opportunities provided) pursued by the family business are close.

Third, expectations for future compensation act as a variable that causes the behavior of family business successors (Choi, Cho, 2010). Hubler (2009) explained that long-term psychological compensation is the best way to unite the organization by forming a common value of the organization. Lee, Y. A.(2015) confirmed that psychological compensation has a positive effect on the owner's consciousness, and Jeon, M.J.(2019) confirmed that compensation has a positive effect on the owner's consciousness. In this paper, Expectations for future compensation was defined as the reward that the successor will receive if he/she participates in the succession of the family business and the positive outlook for the family business in successor's opinion.

Fourth, Bandura (1977) suggested that self-efficacy has a positive effect on successors' behavioral goals and performance expectations, anticipates behavioral outcomes, and creates a motivation to change and sustain behavior according to expectations. Self-efficacy induces

commitment and spontaneous behavior because it affects where self-expression, consistency, and value are enhanced (Shamir, House, Arthur, 1993). Strong belief in the object under one's own judgment can affect owner mind (Kwon, I. S., 2017). In this paper, self-efficacy was defined as confidence in one's ability that one's successor feels.

Through the literature review above, a total of four factors, the Trust of the Current Manager, Personal Motivation in family company, Expectations for future compensation, and self-efficacy, were identified as the forming factors of Owner Mind, and the following hypothesis was established.

H1-1: the Trust of the current manager is associated with the Owner Mind.

H1-2: Personal Motivation in family business is associated with the Owner Mind.

H1-3: Expectations for future compensation is associated with the Owner Mind.

H1-4: Self-efficacy is associated with the Owner Mind.

Influence of Owner Mind

When confirming the effect of Owner Mind on successors of family companies through previous papers, Owner mind has the effect of increasing organizational performance by having a positive effect on organizational attitudes and improving responsibility and ability to perform duties (Barry, 1975). Owner mind has a positive effect on adaptation to organizational change, organizational commitment, and job satisfaction (Pierce et al., 1991; Kang, H. M., 1999). Bae, S. Y.(2016) suggested that the Owner Mind will affect the attitude and will to act on the object in that it forms an attachment to the object and forms a will to know the object more and a deep sense of belonging. The higher the Owner Mind, the more immersed you are in the emotional change of the object, and Owner Mind is an important leading variable of satisfaction and immersion (Derrick, Phipps, 1969). Bok, T. G.(2022) explained that the higher the Owner Mind, the more positively it has on the intention to continue the relationship. Through previous papers, Owner Mind forms attachment to the object, induces interest to know more, feels a sense of belonging, forms intentions for follow-up actions, and leads to satisfaction and immersion in the job. When applied to successors of family companies, this is expected to have a positive effect on the successor's willingness of succession by forming an interest in owning family companies and an internal desire to act voluntarily and consciously to realize their purpose.

In this paper, Successors Willingness of Succession was defined as Interest in having management rights of a family business and internal desire to act voluntarily and consciously to realize its purpose. The following hypothesis was established.

H2: Owner Mind is associated with the Successor's Willingness of Succession.

The mediating role of Owner Mind

If each independent variable the Trust of the Current Manager, Personal Motivation in family company, Expectations for future compensation, and self-efficacy affects the owner mind and Owner Mind affects the successor's willingness of succession, it can be assumed that there is a possibility of a mediating role between the set independent variable and the successor's willingness of succession. In addition, confirming this becomes a research process to confirm the importance and role of owner mind.

To confirm this process, it is checked whether each independent variable directly affects the successor's willingness of succession. Even if it does not have a direct effect, if variables that have an indirect effect are identified through the mediating role of owner mind, a new path can be discovered through parameters rather than excluding variables that have not found a direct meaningful relationship. It is judged that various implications and practical directions and strategies for the formation of the successor's willingness of succession can be formed.

Thus, the following hypothesis was established.

H3-1: the relationship of Owner Mind would mediate Trust of the current manager and Successor's Willingness of Succession.

H3-2: the relationship of Owner Mind would mediate Personal Motivation in family company and Successor's Willingness of Succession.

H3-3: the relationship of Owner Mind would mediate Expectations for future compensation and Successor's Willingness of Succession.

H3-4: the relationship of Owner Mind would mediate Self-efficacy and Successor's Willingness of Succession.

In addition, the following hypothesis was established because confirming the direct effect of independent and dependent variables in the absence of Owner Mind is an important path to confirming the role of Owner Mind.

H3-5: Trust of the current manager is associated direct effect with the Successor's Willingness of Succession.

H3-6: Personal Motivation in family business is associated direct effect with the Successor's Willingness of Succession.

H3-7: Expectations for future compensation is associated direct effect with the Successor's Willingness of Succession.

H3-8: Self-efficacy is associated direct effect with the Successor's Willingness of Succession.

Research model & method

Research model

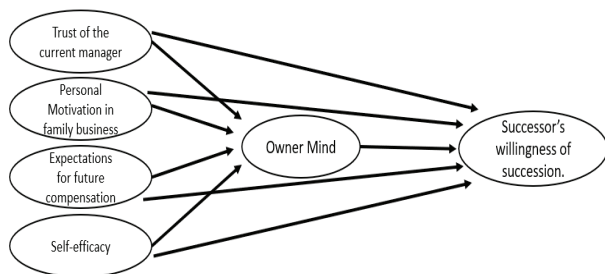


Figure 1 – Research Model

In the research model, Trust of the current manager, personal motivation in family business, expectations for future compensation, and Self-efficacy were set as independent variables, and Owner Mind was set as parameters. Successor's Willingness of succession was set as the dependent variable.

The path of the research model consists of setting the path of the research model to confirm the relationship between the independent variable and owner mind, setting the path of the research model to confirm the relationship between owner mind and successor's willingness of succession.

Research method

In accordance with the background of this study, two aspects of research were conducted in parallel to properly achieve the purpose of the study. First, a literature study was conducted that examined domestic and foreign professional books, periodicals, previous research papers, and other related materials. Second, an empirical study was conducted to verify the hypothesis based on the selection of subjects suitable for the purpose of the study, and a survey was conducted. For empirical research, factor analysis, reliability analysis, correlation analysis, regression analysis, and mediating effect analysis were conducted using SPSS 21.0, a tool for statistical analysis, and Amos 21.0, a tool suitable for analyzing structural equation models.

Table 1 - Composition and content of the questionnaire

Variables		Qty	The quarry of questions
Independent Variables	Trust of the current manger	8	Handler(1989) Yu(2020) Kim(2018)
	Personal Motivation in family company	17	Venter(2005) Kang(2012)
	Expectations for future compensation	10	Park(2013)
	Self-efficacy	8	Bandura(1997) Han(2021)

Mediating Variable	Owner Mind	7	Avey et al.(2009)
Dependent Variable	Successor's willingness of succession.	8	Venter(2005) Kim(2018)

From June to September 2022, a total of 103 family business successors who are currently preparing or undergoing succession were surveyed using self-entry methods through visiting interviews, and three ineligible papers were identified and a total of 100 questionnaires were used.

Table 2 – the Characteristics of Samples

Classification	Category		Frequency	Rate (%)
Gender	Male		70	70
	Female		30	30
Age	20~25 age		1	1
	26~30 age		26	26
	31~35 age		37	37
	36~40 age		30	30
	40 or older		6	6
Succession Status	Not Applicable		1	1
	Experience considering succession		28	28
	seriously considering succession		33	33
	firmness of succession		38	38
Industry	Manufacturing		48	48
	Service (44)	Construction	15	15
		Distribution	19	19
		Service	9	9
		Finance	1	1
	Other		8	8
Position	The other		11	11
	Assistant Manager		7	7
	Manager		35	35
	General Manager		17	17
	Director		30	30

Research result

Exploratory Factor Analysis is shown in Table 3. The Cronbach's alpha value, which means the internal consistency of each variable, the result is TRU .909, MOT .890, VIS .891, SSE .842, Owner Mind .775, Successor's Willingness of Succession .905, and overall, a sufficient value was obtained for the progress of the study. In the case of the Total Explained Variance, the result was 78.780%, and the KMO measurement value was .828, so it can be said that the correlation between variables is sufficiently explained. Bartlett sphericity verification also showed a significant value at the 0.000 level.

In the case of factor loading, an appropriate value of .6 or more was derived. However, in the case of OM2 tool, A value of less than 6 was obtained, but it was judged to be an important tool in this study, so the study was not removed and included in the analysis.

Table 3 – Exploratory Factor Analysis

Variable		Name of Variable	Factor Loading	Cronbach's alpha	Total Explained Variance (%)
Independent Variable	TRU	TRU3	.863	.909	78.780
		TRU4	.818		
		TRU5	.773		
		TRU6	.754		
	MOT	MOT4	.884	.890	
		MOT6	.906		
		MOT7	.880		
	VIS	VIS4	.796	.891	
		VIS5	.867		
		VIS6	.855		
	SSE	SSE1	.733	.842	
		SSE4	.771		
SSE6		.772			
SSE8		.845			
Mediating Variable	Owner Mind	OM1	.860	.775	
		OM2	.568		
		OM3	.831		
Dependent Variable	Willingness Succession	WSU1	.836	.905	
		WSU2	.873		
		WSU5	.791		
		WSU6	.632		

Concentrated validity and discriminant validity were confirmed through confirmatory factor analysis, as shown in table 4. The standardization coefficient must be 0.5 or more, and if it is 0.7 or more, it can be interpreted as ideal, and the concentrated validity regression coefficients of this study are suitable for this, so the concentrated validity was secured. In addition, the significance level of the concentrated validity regression coefficients can be confirmed by the C.R value, and the C.R value should be 1.96 or higher. All the C.R. values in this study were 1.96 or higher, and all the regression coefficients of concentrated validity secured a significance level. The reliability of the concentrated validity regression coefficients is verified through the average variance extraction (AVE) value and conceptual reliability, and the reference value of this is AVE value .5 or higher, conceptual reliability is .7 or higher. Reliability could be secured by securing the standard value.

Table 4 – Confirmatory Factor Analysis

Variable	Estimates	Error coefficient	AVE	C.R.
TRU3 $\leftarrow$ TRU	.872	.256	.7198	.9112
TRU4 $\leftarrow$ TRU	.858	.272		
TRU5 $\leftarrow$ TRU	.820	.311		
TRU6 $\leftarrow$ TRU	.834	.276		
MOT4 $\leftarrow$ MOT	.891	.321	.6059	.8216
MOT6 $\leftarrow$ MOT	.870	.414		
MOT7 $\leftarrow$ MOT	.808	.698		
VIS4 $\leftarrow$ VIS	.893	.205	.7473	.8984
VIS5 $\leftarrow$ VIS	.875	.215		
VIS6 $\leftarrow$ VIS	.798	.324		

SSE1 $\leftarrow$ SSE	.734	.248	.7231	.9117
SSE4 $\leftarrow$ SSE	.639	.290		
SSE6 $\leftarrow$ SSE	.796	.194		
SSE8 $\leftarrow$ SSE	.855	.153	.5806	.8054
OM1 $\leftarrow$ OM	.805	.301		
OM2 $\leftarrow$ OM	.705	.517		
OM3 $\leftarrow$ OM	.715	.378	.7284	.9141
WSU1 $\leftarrow$ WSU	.892	.208		
WSU2 $\leftarrow$ WSU	.933	.132		
WSU5 $\leftarrow$ WSU	.799	.396		
WSU6 $\leftarrow$ WSU	.750	.333		

According to Bassellier et al (2003) and Gefen & Straub (2000), CFI, an indicator that compensates for the shortcomings of the standard fit index, is less affected by the complexity of the model and the size of the sample, and generally, 0.9 or more can be judged as good fit. In addition, it was argued that the TLI, also called the non-standard conformity index, was also 0.8 to 0.9 or higher and was good. RMSEA, a model fitness index that is frequently utilized as an advantage of being less affected by sample size, can be evaluated as a good fit if it is less than 0.5 and a normal fit if it is less than 0.10 (Browne & Cudeck, 1993). Considering the fact that variables and causal relationships used in quantitative studies have not been universally studied in the past, the results of the factor model showed that there was no major problem in the progress of this study.

Table 5 – Model Fit

RMSEA	NFI	CFI	TLI	RMR
.078	.821	.923	.907	.066

The results of the correlation analysis between variables are as follows. Successor's Willingness of Succession and personal motivation in family business, trust of the current manager and personal motivation in family business, personal motivation in family business, and experiments for future computing, and self-effectiveness were found to be somewhat unrelated. It was judged that it was not a serious problem, so the following analysis was conducted.

Table 6 – Correlation Analysis

Variable	1	2	3	4	5	6
WSU	1					
OM	.536**	1				
TRU	.499**	.388**	1			
MOT	.171	.211*	-.103	1		
VIS	.506**	.208*	.455**	.191	1	
SSE	.421**	.238*	.497**	-.018	.352**	1

Owner Mind and Successor's Willingness of Succession were found to have a significant relationship at the 99% level and had a positive effect of 6.285. The VIF was also found to be 1.000, less than 10, and there was no problem with multicollinearity. Thus, hypothesis H2 was adopted.

Table 7 – Regression Analysis

Model	Non-Standardized Coefficient		Standardized Coefficient	t	Sig.
	β	S.E.	β		
(Constant Value)	1.540	.382		4.034	.000
Owner Mind	.598	.095	.536	6.285	.000

*Dependent Variable: Successor's Willingness of Succession

In the direct effect with Owner Mind set as the dependent variable, TRU was found to have a significant effect at the 99% level (0.481), and MOT was found to have a significant effect at the 95% level (0.299). VIS and SSE showed insignificant results. Thus, hypotheses H1-1 and H1-2 were accepted, and H1-3 and H1-4 were rejected.

Table 8 – Direct Effect of Owner Mind

Variable	Estimate	SE	95% C.I.		P
			Lower	Upper	
TRU	.481	.178	.172	.873	.003
MOT	.299	.137	.008	.547	.045
VIS	-.118	.163	-.413	.209	.562
SSE	.103	.197	-.327	.461	.611

*Dependent Variable: Owner Mind

TRU, MOT, and SSE set as independent variables did not have a direct effect on the Successor's Willingness of Succession set as dependent variables. VIS, set as an independent variable, was found to have a significant effect on Successor's Willingness of Success at the 95% level (0.297). so, H3-7 was accepted. H3-5,6,8 was rejected.

Table 7 – Direct Effect of Successor's Willingness of Succession

Variable	Estimate	SE	95% C.I.		P
			Lower	Upper	
WSU $\leftarrow$ TRU	.082	.178	-.315	.385	.690
WSU $\leftarrow$ MOT	.044	.109	-.197	.239	.742
WSU $\leftarrow$ VIS	.297	.134	.041	.563	.023
WSU $\leftarrow$ SSE	.146	.157	-.211	.436	.351

In the case of Indirect effect, TRU was found to have a significant effect at the 99% level (0.212) through the variable Owner Mind, and MOT was found to have a significant effect at the 95% level (0.132) through the variable Owner Mind. VIS and SSE were found to have no significant effect through the Owner Mind variable. As a result, the Owner Mind variable was found to have a mediating effect between TRU and MOT, and the dependent variable, Successor's Willingness of Succession.

Table 9 – Indirect Effect of Successor's Willingness of Succession

Variable	Estimate	SE	95% C.I.		P
			Lower	Upper	
WSU $\leftarrow$ OM $\leftarrow$ TRU	.212	.140	.047	.599	.004
WSU $\leftarrow$ OM $\leftarrow$ MOT	.132	.083	.004	.332	.045
WSU $\leftarrow$ OM $\leftarrow$ VIS	-.052	.078	-.206	.115	.562
WSU $\leftarrow$ OM $\leftarrow$ SSE	.045	.101	-.152	.259	.611

Table 10 – the result of Hypothesis analysis

	Hypothesis	Result
H.1-1	Trust of the Current manager is associated with the Owner Mind	Accepted
H.1-2	Personal Motivation in family company is associated with the Owner Mind	Accepted
H.1-3	Expectations for future compensation is associated with the Owner Mind	Rejected
H.1-4	Self-efficacy is associated with the Owner Mind	Rejected
H.2	Owner Mind is associated with the Successor's Willingness Succession	Accepted
H.3-1	Trust of the Current manager is associated direct effect with the Successor's Willingness Succession	Rejected
H.3-2	Personal Motivation in family company is associated direct effect with the Successor's Willingness Succession	Rejected
H.3-3	Expectations for future compensation is associated direct effect with the Successor's Willingness Succession	Accepted
H.3-4	Self-efficacy is associated direct effect with the Successor's Willingness Succession	Rejected
H.3-5	The relationship of Owner Mind would mediate Trust of the current manager and successor's willingness succession	Accepted
H.3-6	The relationship of Owner Mind would mediate personal motivation in family company and successor's willingness succession	Accepted
H.3-7	The relationship of Owner Mind would mediate expectations for future compensation and successor's willingness succession	Rejected
H.3-8	The relationship of Owner Mind would mediate self-efficacy and successor's willingness succession	Rejected

Conclusion

The potential of a lack of a successor is anticipated in the process of succession of family businesses, which form the major axis of the economy, because of an aging society. There should be many preparations made

accordingly (Lee, 2022). The Owner Mind of family business successors was the focus of this study. This study confirmed the formation factors and effects of Owner Mind of successors of family companies and the mediating role.

First, it was found that the trust of the current manager, personal motivation in family business influenced the formation of Owner Mind of the successors of the family business. Through numerous conversations with the successor, it appears that the current manager can sense the successor's trust. Recognizing the successor's motivation and the consistency of the opportunities and goals provided by the family business also plays a significant role in forming the successor's Owner Mind.

Second, Self-Efficiency did not confirm a significant relationship with Owner Mind. In previous papers, the results were contrary to the content that Self-Efficiency and Owner Mind had a significant relationship. From this, it is judged that the relationship between self-efficiency and Owner Mind can be expected that the secondary relationship, not the linear relationship, can predict the possibility of a log relationship. Therefore, I think further research is needed on the relationship between self-efficiency and Owner Mind. In addition, I think it is necessary to study Self-Efficiency by dividing it into general Self-Efficiency, Self-Efficiency for family companies, and Self-Efficiency for succession.

Third, it was discovered that the successor's willingness succession is influenced by their Owner Mind. Successors of family businesses may be exposed to a great deal of knowledge and circumstances relating to family businesses as early as childhood. Additionally, it is possible to develop an Owner Mind for family businesses by learning about and experiencing them through talks with current managers since childhood. It is believed that improving the successor's willingness succession in the process of preparing for the actual succession of the company will increase the successor's Owner Mind in the long-term succession.

Fourth, it was discovered that Owner Mind played a mediating function in the interaction between the trust of current manager, the personal motivation in family business, and the successor's willingness succession. These findings support the significance of Owner Mind. If the family business successor is a family and a member of the company, but there is no ownership, in this situation, the more The belief that the current manager will succeed the company to himself is established, And the more the successor personally thinks the motive of succession and the opportunities or goals provided by the family company match, and then, The successor can be judged that the stronger the owner mind is formed and the stronger the degree of identification, the more positive the successor's willingness succession.

Sinek(2009) proposed the Golden Circle as an operating principle that moves the mind and creates achievement on its own. The Golden Circle suggested that it could form independent achievement by knowing why to do this and finding how to do the job and what to do. This study, like the Golden Circle theory, learns why succession should be received through personal motivation. Then, it can be confirmed that it will form an owner mind on how to do it and lead to the successor's willingness of succession to what to do.

Fifth, the expectation for future compensation is that the successor receives when continuing the succession, as well as is what the successor believes will ensure the family business's long-term stability and value preservation. The study's findings proved that the anticipation of future pay has a direct impact on the successor's willingness succession. So, using this result, If Owner Mind is required, it would be best to emphasize the current manager's trust and try to discuss the personal motivation in family business. And if the successor's willingness succession is directly necessary, the current manager try to discuss the expectations for future compensation. It is judged that it can have a strategy suitable for the succession situation.

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A Case Study on the Conflict Between an Incumbent CEO and a Successor

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Abstract

Family businesses play a significant role in the overall economy of all countries, and the importance and weight of family businesses are increasing in various fields. Many factors are essential for a family business to grow into a long-lived business, that is, a sustainable business, but the most important one is succession. TRUST Lab at Hanyang University studied the importance of factors influencing the succession of the family business from the standpoint of the successor. As a result, it was confirmed that mutual trust is the most crucial factor, and conflict can destroy that trust. Therefore, in this study, we research conflict as a central topic for successful succession, which is the most fundamental reason for family businesses. This study was conducted as a qualitative research case study. By setting criteria suitable for the purpose of the study, we conducted interviews with ten successors who either worked or planned to work in a family-related company. Through this study, conflict management of key players is the most important to achieve a continuous succession of family businesses.

Keywords

Family business, Family business succession, Conflict, Case study

Introduction

1. Background and necessity of research

The type of business that continues and maintains a long history worldwide can be explained as a family business (Lea, 1991). Generally, a company in which family members of the founder carry out the supervision and control of business operations is referred to as a family business (Churchill & Hatten, 1987). The form of family businesses appears in various industries. According to a survey targeting several countries, there is a study that more than half of businesses in each country are family businesses (Davis Peter, 1983). Family businesses contribute a lot to the stability of Korea's local economy and influence the local community and economy (Kim, 2015). Succession is a representative problem that family businesses face in order to have continuity, and the importance of succession has been proven through various preceding studies. For a family business to have continuity through succession, the role of family members is also vital (Kim, 1998). On the other hand, one of the disadvantages of family businesses is that there is discord between family members due to disputes (Ibrahim et al., 1994). Ward (1987) mentioned that about one-third of preceding studies on family businesses directly deal with succession-related issues. As a result, they may

face the worst, even leading to bankruptcy (Westhead, 2003). Suppose there is a good relationship between the successor and the successor. In that Case, the successor is highly willing to respond to the Incumbent CEO's request for succession and inherit the family business, no matter where and when. The successor's discussion of the family business's future management plan, goals, and vision with the successor can also have a positive effect on the Incumbent CEO's will to succeed (Cho et al., 2021).

The TRUST Lab at Hanyang University studied the importance of factors influencing family business succession from the perspective of the successor of a family business. As a result, it was confirmed that mutual trust is the most critical factor (Cho et al., 2019). Suppose the trust formed before the start of succession is based on the special relationship between parents and children after the start of succession. In that case, trust between parents and children shows the aspect of changing into managerial trust. In the succession process, the influence of the relationship of trust between the successor and the successor was found to be more important than several variables (Yu, 2020). However, among various factors, conflict is a representative factor that destroys trust. In other words, conflict is as important as trust in the succession process. Therefore, in this study, to

obtain successful results in succession, which is the most problematic issue in family businesses, the conflict between the Incumbent CEO and the successor, a key stakeholder in the succession process, is selected as a central theme to conduct research. Based on previous studies, we plan to research the characteristics and effects of conflicts between Incumbent CEO (current managers) and successors in family businesses.

2. Purpose of the research

Academic research on conflict within family businesses needs to be more comprehensive. It means the need to clarify the conflict between Incumbent CEO and successors in family businesses. Investigating the characteristics of conflict in family businesses can be defined as the starting point of this study. This study aims to identify the types of conflicts in family businesses, what causes each type of conflict, and how the conflict develops. Depending on the type of conflict in the family business, there will be several solutions, and the purpose of this study is to identify the strategy for resolving the conflict.

The purpose of this study is summarized as follows:

- 1. Determining what kind of conflicts occur in family businesses and why they occur, what types of conflicts exist during the succession process between Incumbent CEO and successors, and how they affect succession are analyzed.*
- 2. In the context of the succession of the family business, we analyze the difference in viewpoints and problems of the conflict through interviews with the successor and suggest a solution to the conflict.*
- 3. For the following study based on the results derived from the qualitative study, a quantitative research model on the relationship between conflict and resolution strategy will be created, and the following study will be conducted.*

Literature review

1. Definition of family business

A family business is defined very differently by various scholars and countries, and it is defined in various forms. In a study by Hwang (2008), he argued that the various definitions of various scholars who studied family businesses meant a need for more consistency in the definitions of family businesses. Many scholars have done much research to come up with various concepts and definitions of family businesses. However, it was confirmed that there are many difficulties in deriving a generally agreed concept and different opinions among researchers in deriving the definition. It means that each researcher uses the definition of family business appropriately for his or her research purposes. Even if different definitions are used, the definitions are similar and include some differences. According to previous studies, family businesses are mainly classified into three

important factors. A family-owned and directly managed company, a company owned by a family member but managed by another professional manager, and a public company where a small family member does not control management. (Morris et al, 1997).

1.1 Succession & importance of succession

Succession is used under various names according to each researcher. The meaning may be slightly different if it is called family business succession, business succession, and management succession. However, the general meaning is the same. Ward (1987) defined succession as the most crucial task facing a family business and the transfer of management rights and ownership of the business to the successor of the next generation. In the preceding study by Churchill & Hatten (1987), the criteria for succession were presented in detail. The family business succession is not a succession according to what the company pursues or the management ability of the manager, but to the members of the family who consist of the concept of family and ownership was defined as succession. In other words, succession transfers the company's management rights. At this time, the manager of the family business, or the successor, transfers the general management rights, decision-making rights, and ownership of the company to the next generation's successor. According to a study by Park (2009), it was explained that family businesses need help managing family members' plans, family business strategic plans, and family business succession plans in addition to those managed by other non-family businesses. In other words, since family businesses require more management than non-family businesses, continuous succession management is essential. We know that succession is an important issue and recognizes that succession is vital from many perspectives in many difficulties in family businesses. From the perspective of family members, successful succession has the importance of continuously maintaining the values that companies pursue and solving problems of survival and compensation of family members (Kim, 2015). In a family business, if the successor thoroughly prepares for the succession plan, problems may arise during the succession process, and it may cause the successor to lose credibility (Shin, 2014). Therefore, in order to successfully execute the succession of the family business, the successor must have systematic and thorough standards for selecting a reasonable successor, when to start the succession, the role of the successor at the time when the succession is completed, communication during the succession process, and fostering and training the successor. Succession planning needs to be prepared.

2. Definition of conflict

Conflict is when a person feels terrible feelings toward other members when a person plans for what a person wants to do or goals. Furthermore, conflicts arise in a variety of situations. For example, when conducting a

project between team members or departments within a company, a situation that occurs when an organization member suffers damage or damages the other party's opinion can be called conflict. The concept of conflict is defined in many different ways according to the research purpose, the research method pursued by the researcher, and the academic nature. Nevertheless, the definition of various researchers defined that there are many commonalities. However, there must be an experiencing person-to-person conflict. Furthermore, the parties experiencing the conflict must have low interdependence and interaction with each other, and the parties feel that their goals are different (Cormier & Gordon, 2001).

Table 1 - Definition of Conflict by Researcher

Researcher	Definition
Litterer (1970)	When groups inside or outside the company, different groups of individuals or groups interact with each other Disagreements, quarrels due to disagreement of values, process of confrontation due to mutual decision-making
Miles (1980)	A state in which the goals pursued by family members and the expectations that follow are hindered by members of other companies or organizations.
Robbins (1984)	A situation in which a company is progressing towards an enduring goal, but is interrupted by others A state in which individuals or departments of a company become hostile to each other due to disputes caused by disagreement
Thomas (1992)	When individuals have negative influences on each other due to their different interests, hobbies, differences in thoughts, etc., or when they feel that way
March & Simon (1996)	A situation experienced when the opinions, work methods, and styles of each member differ when making decisions on policies within the company or when the company makes decisions

2.1 Causes of conflict

The concept and definition of conflict are defined in various ways, as each researcher has a different perspective depending on the purpose or need of research. In addition, the causes of conflict are also studied in various ways according to the researcher's point of view and position.

Table 2 - Definitions of causes of conflict by Researcher

Researcher	Definition
Thomas & Schmidt (1976)	Difficulties in communication, avoidance of responsibility, disobedience to management, lack of cooperation between departments, limited resource values and differences in goals
Dessler (1980)	Differences in work methods, values and perceptions according to roles Disputes due to communication barriers, disagreements among executives, differences in corporate goals, managers' work styles, compensation for work performance, and different natures between the parties involved in the work
Robbins (1984)	Instability of communication, difference in corporate vision and misunderstanding Qualifications of corporate members, unsatisfactory work orders, interdependency, reward system for performance, dissatisfaction with roles according to work
Jehn et al.(1999)	Diversity of goals that companies have, diversity of information that companies have
Luthans (1985)	The difference in the degree of recognition of each other's problems, the lack of resources that are a means for companies to achieve their goals and the difficulty of distributing those resources, the problem of inappropriate positions, dissatisfaction with each role, communication barriers, and different decision-making
Robbins et al.(2011)	Conflicts in communication due to decision-making when the structure of the company that each thinks of is different

2.2 Types of conflict

Conflict types can be classified into several types depending on the classification criteria. In this study, we will examine the types of social and individual conflicts mentioned in many studies. Conflict types are classified in various ways because each individual has a different ability to cope with conflict and a different way to deal with it. Therefore, it is classified into various types of conflict depending on which classification standard is focused on in this study.

First, in this study, a type of conflict can be classified according to the subject of the conflict. Whether the subject of the conflict is an individual, a department, or the organization of a company, it can be divided into social and interpersonal conflict. Looking at previous studies on types of conflicts, Guetzkow and Gyr (1954) divided conflicts between departments in a company and conflicts caused by individual emotions, centering on the work being performed by departments in a company. Conflicts arise when the types of conflicts are divided into social and personal conflicts and different goals are pursued. This study will be conducted by dividing two types of social conflict and personal conflict. The detailed factors of social conflict are divided into three types: work conflict, process conflict, and relationship conflict. The detailed factor of personal conflict is desire. The research will be conducted by dividing it into frustration conflict, goal conflict, role conflict, and decision-making conflict.

2.3 Conflict management methods

Conflict management is the provision of structures or conditions that help prevent conflicts from escalating and allow conflicts to produce favorable outcomes (Ahn, 2005: 33-34). If the level of conflict is too low, the manager needs to be encouraged to strengthen the level of conflict. In other words, because conflicts in organizations occur frequently and require continuous management, we face conflicts. Such an environment can be interpreted as a challenging task for managers who have to manage conflicts. Conflict managers must distinguish the types of conflicts well, and managers must continuously learn so that positive conflicts can be well maintained and dysfunctional conflicts can be resolved. Managers need to be more aware that the causes of conflict are very different due to the differences in various situations, so the appropriate solution is also different according to the situation. Looking at the previous research by Thomas and Kilmann (1992), conflict management types were divided into five types: competition, cooperation, concession, compromise, and avoidance, based on various criteria such as individual tendencies and the degree to which the other party wanted to resolve conflicts. The types were classified and defined. Because conflict can be resolved depending on which type of management is used for which conflict among the five conflict management methods, managers must continuously learn. First, the competition type is a technique of dealing with conflict by strongly pressing the other party to amplify the interest of the conflicting party. It is used when not yielding when discussing important issues, when making decisions firmly, and when enforcing laws and regulations necessary to maintain order and culture in organizational life. Second, the suitable type is a type of cooperative behavior to achieve mutual benefit together, without making decisions arbitrarily and making the other person understand the situation. Third, the compromising type corresponds to the concessions to each other by finding a compromise between individual and organizational needs. This compromise occurs when conflicting parties have different goals but similar issues (Kim et al., 2008). Fourth, avoidance is a way for the parties to the conflict to say 'I do not know' without dealing with the problem of the conflict. It is an avoidance strategy used to recover the feelings of anger and excitement of the other person experiencing conflict. Lastly, the conformity type is a conflict resolution strategy that shows behaviors of cooperating with the other person's opinion rather than trying to make the other person understand their opinion. In other words, it is a technique of judging and implementing that satisfying the other person's desire rather than one's assertion is a wiser method than exacerbating the conflict (Kim et al., 2008).

Research methodology

1. Qualitative research methodology (Case study)

To achieve the aim in the study, Eisenhardt's methodology was selected, and the study was conducted according to the procedure suggested by Eisenhardt. A *case study* is a study that establishes a thorough plan and analyzes a situation that the researcher is aware of or a similar event to a subject (individual, company, organization, or specific event) suitable for the study. It is a research methodology to understand similar cases through in-depth analysis and find a way to achieve the research purpose. Case studies aim at detailed descriptions of phenomena, various explanations, and evaluations of phenomena. Case studies have been developed in various research methods by many researchers. Different scholars have different definitions of case studies. A research method that creates overall meaningful features through 'cases' of events at present (Yin, 2016) or collects detailed and in-depth data in the flow of situations, and through this, *interest* within a differentiated system. It is a research method (Creswell, 1988) that searches for cases. In this study, the conversation analysis method was applied to analyze the collected data: the interview contents. The conversational analysis method is mainly used when setting up and recognizing episodes during a conversation with a researcher when conducting an interview (Lee et al., 2006). The reason for this episodic-based analysis is that conversations are not generated and progress in random chaos but are organized actions generated within specific social rules (Have, 1999). Conversation analysis is mainly classified into three types based on the analysis method and subject (Bak, 2001). First, it is a method of identifying mutually shared and indistinguishable qualities with a specific purpose, and second, a method of identifying and analyzing the structural units of dialogue and the meanings to be produced during the development of dialogue. Lastly, there is a method to analyze the composition and development process of communication between the researcher and the subject. So, in this study, the second method, the analysis method of grasping all the overall meanings of the interview, was applied to create an episode, and the episode was analyzed to determine its meaning. The interview subjects were the Incumbent CEO, who runs the family business, or the successors who work or will work in the business. Graduates and current students of Hanyang University Business School's YES MBA track, people who have a personal relationship with the researcher, and the Incumbent CEO, who is holding a meeting for the second generation, were selected as subjects. Ten successors who expressed their willingness to discuss the conflict in detail through a meeting in advance were selected. Although it was planned to interview both the successor and the successor, there were many cases in which the successor refused to be interviewed about the conflict, so ten successors were finally selected as interview subjects, and the study was conducted.

Table 3 - Successor Interviewee Profile

Case	Company name	Name	Industry	Established year	Succession
Case 1	DONDI Korea	Geun * Choi	Bedding Distributors	Since 2000	Succession in Progress
Case 2	Taeyeong Farm	Yu * Jung	Livestock Industry	Since 1980	Succession Complete
Case 3	Seongwon Farm	Seong * Hwang	Livestock Industry	Since 1988	Succession in Progress
Case 4	KOWON Metal	Seung * Go	Automobile Parts Manufacturing	Since 1985	Succession in Progress
Case 5	ALL's	Seong * Kang	Kitchen Utensils Manufacturing	Since 1985	Succession in Progress
Case 6	SAMMI Restaurant	Joo * Heo	Restaurant	Since 2000	Succession Complete
Case 7	E-GUN Pharm	Young * Lim	Korean Medicine Manufacturing	Since 1983	Succession in Progress
Case 8	BANDO STS	Chih * Won	Kitchen Utensils Manufacturing	Since 1980	Succession in Progress
Case 9	DAESANG	Su * Lim	Plastic Manufacturing	Since 1997	Succession Complete
Case 10	D.N Corporation	Kyungh * Kim	Clothing Manufacturing	Since 2001	Succession Complete

Result

In this chapter, we analyzed the results of 10 interview studies conducted to achieve the purpose of qualitative research, and the results are as follows. This study focuses on companies controlled or managed by family members (Churchill and Hatten, 1987), companies in the process of succeeding in a family business, plans to succeed in a family business in the future, or companies that want to inherit and realize the vision of a family business (Chua, et al., 1999) was established, and ten successors who fit the criteria were selected, and interviews were conducted. In order to research the causes of conflicts between Incumbent CEOs and successors in family businesses and strategies for resolving them, an interview questionnaire was created, and interviews were conducted. In order to secure the validity of the category concept, an analysis team was formed, and the analysis was conducted. In the analysis process, first, the researcher selected episodes that were judged to be meaningful among the collected data. Then, the upper category was set as the category of conflict type, conflict resolution strategy category, and third-party intervention category. Among the category of conflict types, the episode was classified into two categories: social conflict and personal conflict. Conflict resolution strategy categories were divided into four categories: cooperation strategy category, compromise strategy category, avoidance strategy category, and conformity strategy category. Finally, third-party intervention (surrounding influence) was considered the mediator role category. A total of 7 categories (social conflict, personal conflict, cooperation strategy, compromise strategy, avoidance strategy, compliance strategy, and third-party intervention) were classified and used for analysis. The subcategories that describe this category are set up to facilitate analysis by independent coders. A total of 197 episodes were used for analysis.

Table 4 - Successor Categories and Subcategories

Category1	Category2	Category3	Category4	Category5	Category6	Category7
Cause of Conflict	Cause of Conflict	Conflict Resolution Strategies	Conflict Resolution Strategies	Conflict Resolution Strategies	Conflict Resolution Strategies	Third Party Intervention
Social Conflict	Personal Conflict	Cooperation Strategy	Compromise Strategy	Avoidance Strategy	Compliance Strategy	Mediator Role
Work Conflict Process Conflict Relationship Conflict	Need Frustration Conflict					
	Goal Conflict					
	Role Conflict					
	Decision-Making Conflict					

As a result of episode analysis with independent coders, the consensus among 197 episodes was 168, and the reliability and validity values were 0.852. This result means that the episode classified by the researcher has sufficient reliability and validity, which means there is no problem proceeding to the next stage of the study. On the other hand, 29 episodes disagreed with each other. After reading through the episodes again, the corresponding sentences were interpreted as they were, and the first classification was carried out. If an agreement was not reached, the detailed context of the episode was explained in detail, the coders were given a brief time, and the consensus process was carried out again. In this case, the next episode was analyzed regardless of the consensus of the coders.

Table 5 - Definition of Conflict by Researcher

	Episodes	Matching Episodes	Result	Disagreement
Total	197	168	0.852	23

Checking the summary table by category, the reliability value for each category was 0.880 with 66 episodes out of 75 total episodes in the social conflict (category 1) category and the personal conflict (category 2) category out of 35 total episodes, 32 episodes were matched, yielding a result value of 0.914. The cooperation strategy (category 3) category obtained a value of 0.789, with 15 episodes out of 19 in total matching. Compromise strategy (category 4) category obtained a value of 0.766 with 23 out of 30 episodes matching, and the avoidance strategy (category 5) category obtained a value of 0.800 with 8 out of 10 episodes matching. In the category of adaptation strategy (category 6), 11 out of 14 episodes were matched, resulting in a value of 0.785. Finally, in the third-party intervention (category 7) category, 13 out of 14 episodes were matched, resulting in a value of 0.928. got it. As for the type of conflict, the distribution of social conflict was higher than that of personal conflict, but the reliability result value was similar. However, the personal conflict was slightly higher, and the distribution of conflict resolution strategies was in the order (compromise -> cooperation -> compliance -> avoidance). Therefore, it can be inferred that the result is in the order of the successor's preferred conflict resolution strategy. The reliability value of the conflict resolution strategy was high for the avoidance strategy because each successor tried other strategies and judged that his or her strategy did not help resolve the conflict.

Table 6 - Definition of Conflict by Researcher

	Social Conflict	Personal Conflict	Cooperation Strategy	Compromise Strategy	Avoidance Strategy	Compliance Strategy	Mediator Role	Total
Total Episodes	75	35	19	30	10	14	14	197
Matching Episodes	66	32	15	23	8	11	13	168
Result Value	0.880	0.914	0.789	0.766	0.800	0.785	0.928	

Discrepant episodes were separately classified, and the researcher identified the inconsistent episodes and confirmed the episode's context through the interview text to prepare for coders to understand. Then the researcher rescheduled the date with the coders and ran a reanalysis. As a result of reanalysis with the coders with 29 mismatched episodes, all 29 episodes were matched. Furthermore, the before and after contexts of the episodes adopted as discrepancies were explained in detail. The coders' understanding of the context was improved to match all the episodes.

Conclusion

The comprehensive conclusions of the qualitative research applicable to this study are as follows. In the interview, most of the Incumbent CEOs responded that they were not pessimistic about the conflict with the successor but recognized it as a problem that should be accepted as a matter of course when managing a company and that a company can develop into a company with permanence only when the problem is well resolved. As such, the conflict variable is critical in family businesses. Through the interview, it was possible to identify the causes of conflicts that the successor is experiencing, which are disagreements, differences in goals, differences in work methods, the successor's management style, differences in role recognition, communication problems, and unsatisfactory work. They were experiencing conflicts due to the development of prior conflicts that were not resolved. Disagreement (difference in goals) was the most common cause of conflict experienced by most Incumbent CEOs, followed by differences in work methods and the successor's management style. In other words, A responded that there were many conflicts from the successor's authority and unreasonable demands, and it was found that he complained of psychological anxiety and difficulties due to this situation. Various conflict resolution strategies were developed to resolve the conflicts experienced by the Incumbent CEO. Conflict

resolution methods preferred by the Incumbent CEO were conversation, the same hobbies, and avoidance of situations. All Incumbent CEOs knew that dialogue was a tool to resolve the causes of conflict.

Of course, not all conflicts can be resolved through dialogue. However, if they discuss it through dialogue, they can find some compromise, and rather than when the successor is sensitive, it can be resolved if they lead the conversation through the same hobby or a meal. Confirmed that there is looking at the most preferred compromise strategy through interviews, it can be inferred that dialogue plays an essential role in resolving conflicts. It was confirmed that the Incumbent CEO preferred the conflict resolution strategy in the order of compromise strategy, cooperation strategy, compliance strategy, and avoidance strategy. Most of the Incumbent CEOs make efforts to resolve the conflict. However, if the successor does not respond, it is confirmed that the cooperation strategy is switched to the avoidance strategy. It was mentioned that the intervention of a third party, the role of a mediator, had a tremendously positive effect on the process of conversation. Many Incumbent CEOs especially emphasized the importance of the mother's mediator role and explained that the mediator had a more significant effect on the resolution strategy involved. Some Incumbent CEOs referred to siblings or executives rather than the mother's role, and all Incumbent CEOs emphasized the importance of the mediator's role in resolving conflicts. Since Incumbent CEO and Incumbent CEO within family businesses are generally based on the relationship between parents and children, it is judged that the positive development of the relationship or the improvement of trust will be realized only when conflicts in the private and public areas are resolved. Therefore, there is a possibility that the successor has the perception that the conflict that has arisen must be resolved. From the point of view of conflict resolution, it can be seen as a positive meaning. However, if the psychological burden of conflict resolution increases for the successor, it is likely to have a negative impact, so it is judged that an appropriate approach is needed.

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Antecedents to Entrepreneurship Behavior: Moderating Role of Social Support and Entrepreneurial Self Efficacy among Business Students.

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Abstract

Considerable agreement exists about the importance of promoting entrepreneurship in both developed and developing countries. In less developed countries, governments see entrepreneurship as a way to stimulate economic development and tackle serious economic and social challenges. So how can countries encourage young people to become entrepreneurs? Research confirms that intentions play an important role in the decision to start a new firm and many factors influence that intentions. The purpose of the study was to investigate the antecedents to entrepreneurship behavior with particular attention to moderating role of social support and entrepreneur self-efficacy. The study covered 116 business students of undergraduate and post graduate level studying under different universities in Kathmandu, Nepal. The questionnaire for data collection was distributed in college groups via WhatsApp and viber with the support and permission from the college administration. The study design used was correlational with a sampling procedure of convenience. The study only showed the impact of attitude to entrepreneurship behavior as well as moderating effect of social support was also observed.

Keywords

Entrepreneurial behavior, social support, personality attributes and entrepreneurial self-efficacy

1.Introduction

The economic condition at present for most countries has been depressing as they are facing great economic problems and the key factors to blame are inequality in wealth distribution, poor governance, natural disasters, global economic downturns, trade conflicts, pandemics etc to name some. Similar, is also the case with Nepal as its current economic situation is a quite challenging one indicated with high inflation, a trade deficit and a large public debt. Despite the current scenario which is depressing enough the country has a young and growing population, a diverse and untapped natural resource base and a growing tourism industry. These factors present with the opportunities for entrepreneurs who are willing to take on the challenges and seize the opportunities of doing business in Nepal. Researchers have indicated the factors that stimulates the entrepreneurial inclination in an individual to be personal traits and attitudes, social and cultural norms, economic conditions, experiential factor, attitude towards entrepreneurship etc. but it is worth noting that these factors can interact and have a cumulative effect on an individual's entrepreneurial

intentional and the impact of each factor may vary from person to person. Antecedent in entrepreneurial intention refers to be a preceding event or a condition that influences an individual's decision to start a business or pursue entrepreneurship as a career which may be attitudes and beliefs towards entrepreneurship, skills and abilities, influence of role models, social networks, education, economic and social conditions etc. Further, these antecedents can interact and have an influence over the entrepreneurial inclination and decision making. According to (Mueller & Thomas, 2001) while innovative activity is explicit in Schumpeter's description of the entrepreneur. Entrepreneurial traits have been studied extensively in the United States. However, cross-cultural studies and studies in non-U.S. contexts are rare and in most cases limited to comparisons between one or two countries or cultures. Thus the question is raised: do entrepreneurial traits vary systematically across cultures and if so, why? Culture, as the underlying system of values peculiar to a specific group or society, shapes the development of certain personality traits and motivates individuals in a society to engage in behaviors that

may not be evident in other societies. Hofstede's (1980) culture of a country influences the values, attitudes, and beliefs of the individuals residing there so we can assume that there is a mix of people with the entrepreneurial potential across cultures. Furthermore, Mueller and Thomas (2001) cited in (Ozaralli & Rivenburgh, 2016) indicated that entrepreneurial behaviors of individuals are stimulated by their personality traits and socio-cultural history. Personality differences have been investigated by several researchers by including entrepreneurs and non-entrepreneurs, and particular personality traits have been shown to be prerequisite characteristics for entrepreneurship (Utsch & Rauch, 2000). In context of entrepreneurship, intention regarding being an entrepreneur is a significant construct and such process is significantly related with personality traits that determines the process of creating venture (Zhao & Seibert, 2006, Zhao et al., 2005) cited in (Ozaralli & Rivenburgh, 2016). It has been proven that personality traits are imperfect but remarkable in predicting entrepreneurial process including intention to start-up and venture creation (Shaver & Scott, 1991) cited in (Çolakoğlu & Gözükar, 2016). As discussed by (Chye Koh, 1996) most frequently itemized characteristics for entrepreneurship are need for achievement, internal locus of control, tolerance for ambiguity, risk taking propensity, innovativeness, control and self-confidence. Based on this perspective the present study tends to analyze the antecedents to entrepreneurship behavior with the moderating role of social support and entrepreneurship self-efficacy among business students.

2. Literature review

2.1 Psychological entrepreneurship theories

Psychological entrepreneurship theories refer to the psychological and behavioral perspectives that aims to explain why individuals become entrepreneurs and how they behave and make decisions in entrepreneurial ventures. These theories consider factors as personality traits, risk taking behavior, cognitive biases and motivation among others to understand the psychological factors that influence entrepreneurial behavior

Personality Trait Theories

A trait is a way of thinking and behaving that defines an individual's unique character and determines how they interact with and respond to the world around them. As per Coon (2004) cited in (Simpeh, 2011) personality traits is defined as stable qualities that an individual's display in most of the situations. Trait theorist believe that there are many inborn qualities in an individual that naturally differentiate between entrepreneur and non-entrepreneur. So what are the traits? The answer to the questions seems to be not so easy as specific traits for being an entrepreneur cannot be pinpointed. Trait theory however provides some insight to the qualities that a person inherits as a trait by birth identifying the individualities that makes

them different from others. Characteristics as to be more opportunity driven, demonstrating high level of creativity and innovation and show high level of management skills and business know-how, being optimistic, emotionally resilient, hardworking, high commitment level, desire to excel, perseverance, transformational in nature, having integrity, visionary are shown in behaviors of entrepreneurs. However, trait model is not highly supported by research evidence (Simpeh, 2011).

Locus of Control Theory

Locus of Control of Reinforcement is related to expectation of success or failure in a judgmental task: judgments following earlier behavior. The theory states that human behavior is not only a function of reinforcement, but also depends on people's conception of Locus of Control of Reinforcement. People will attribute the reason for an occurrence either to themselves or to the external environment. Those who experience having control over occurrences have an internal Locus of Control and will be referred to as internal (Hansemark, 2003).

Need for Achievement Theory

Need for Achievement seems to entail expectations of doing something better or faster than anybody else or better than the persons own earlier accomplishments. It could be learned and may develop according to how the individuals existing frame of reference is put against the individuals own desire to achieve (McClelland, 1990). In that way, the achievement motive will be a process of planning and striving for excellence

Psychological Capital Theory

Psychological capital refers to a set of resources a person can use to help improve their performance on the job and their success and the concept of positive psychological capital originates in "postmodern positive psychology" and includes the strengths and positive aspect of human behavior. Psychological capital theory is a psychological perspective that studies the psychological resources and optimistic attitudes that can help individual succeed in various life domains, including entrepreneurship. This theory posits that psychological capital, consisting of four interrelated positive psychological constructs (self-efficacy, hope, optimism and resilience) is a key factor in explaining success and well-being. PCT suggests that individuals with high levels of psychological capital are more likely to engage in entrepreneurial activities and are better equipped to overcome the challenges and stressors associated with entrepreneurship. The theory has been applied in various field and has been used to enhance entrepreneurial success, innovation and overall wellbeing. As demonstrated by (Luthans et al., 2004) psychological capital emphasizes personal psychological sources with their basic four components (self-efficacy, hope, optimism, and resiliency), also termed as positive psychological capital it emphasizes on positive

approaches, meanings, and results, and are described as “a common underlying capacity considered critical to human motivation, cognitive processing, striving for success, and resulting performance in the workplace” . Furthermore, in theory-based research, psychological is described as “a higher-order core construct consisting of four positive psychological resource (Luthans et al., 2007) which define the features of psychological capital such as hope, resiliency, self-efficacy, and optimism.

Theory of Planned Behavior

Theory of planned behavior is a psychological theory that seeks to explain human behavior and decision the decision making process that underlies it. It proposes that an individual’s behavior is determined by their intention to perform the behavior which is influenced by their attitudes towards the behavior, their perceived social norms and their perceived control over performing the behavior. It suggests that these factors plays a role in shaping an individual’s intention to engage in a particular behavior, which in turn predicts the likelihood of the behavior being performed. Godin, G & Kok, G (1996) insisted that theory of planned behavior extends the beyond the theory if reasoned action to include the concept of perceived behavioral control. Perceived behavioral control can influence intention, as can the attitudinal and normative components. It ca also influence behavior directly in parallel with the potential influence of intention in situations where behavior is not under the total control of the person. Attitude towards the behavior is an expression of one’s positive or negative evaluation of performing a given behavior. The perceived subjective social norm reflects personal perception of the social expectations of social expectations to adopt a given behavior. Perceived behavioral control(PBC) reflects personal beliefs as to how easy or difficulty performing the behavior is likely to be. It is assumed to reflect external factors as availability of time or money, social support as well as internal factors as ability, skill , information (Ajzen & Timko, 1986).

Entrepreneurial Orientation Theory

Entrepreneurial orientation theory is a concept in the field of management and entrepreneurship that refers to a set of values, beliefs and behaviors that drive an organization to pursue opportunities and engage in entrepreneurial activities. The theory posits that organizations with an entrepreneurial orientation are more likely to be innovative, proactive and responsive to changes in the market. This approach to business is characterized by willingness to take risks, pursue growth and opportunities and continuously adapt to changing market conditions. As conceptualized by (Miller, 1983) there are three dimensions of EO have been identified and used consistently in the literature: Innovativeness, risk taking, and proactiveness. Innovativeness is the predisposition to engage in creativity and experimentation through the introduction of new products/services as well as technological leadership via

R&D in new processes. Risk taking involves taking bold actions by venturing into the unknown, borrowing heavily, and/or committing significant resources to ventures in uncertain environments. Proactiveness is an opportunity-seeking, forward-looking perspective characterized by the introduction of new products and services ahead of the competition and acting in anticipation of future demand(Rauch et al., 2009).

3. Research framework and hypothesis

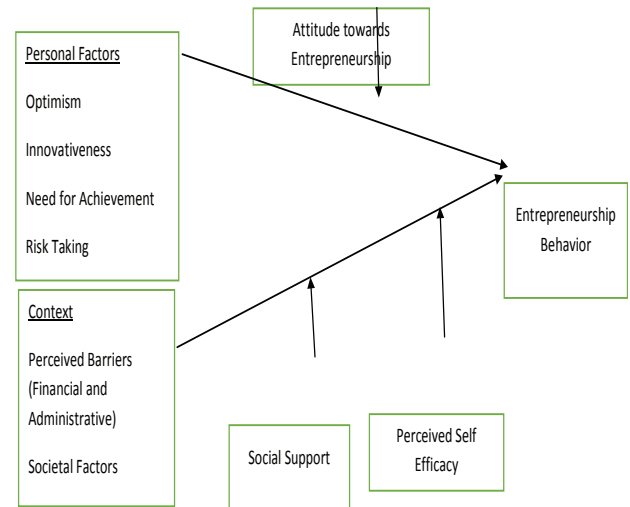


Figure 1: Conceptual Framework

Link Between Optimism and Entrepreneurship Behavior

Optimism refers to a positive and optimistic outlook towards the future. People having optimism have faith in future and believe that things will turn out well. Optimism can influence and individual’s behavior and decision making as they are more likely to take risks and pursue new opportunities. Unlike overconfidence which is usually mistaken as optimism is related to evaluation of one’s skill (Moore & Healy, 2008), dispositional optimism is the tendency to believe that one is more likely to experience favorable than unfavorable events (Scheier and Carver 1985) cited in (Amore et al., 2021). In the context to entrepreneurship two aspect has been focused by researcher on dispositional optimism first is whether optimism drives self-selection into entrepreneurship more as compared to other occupation and second whether a direct relationship exists between dispositional optimism and economic behaviors as saving, investing and exerting effort (Amore et al., 2021) as well as during the study conducted by (Amore et al., 2021) positive relation between optimism and entrepreneurial activities like product innovation was found.

H1: Among business students there is a significant positive influence of optimism to entrepreneurship behavior.

Innovativeness and Entrepreneurship Behavior

Innovativeness refers to an individual’s tendency to think creatively, embrace change and generate new ideas. It

is often described as a combination of characteristics such as curiosity, open-mindedness, risk taking behavior and a willingness to experiment. People who are highly innovative are often seen as imaginative, spontaneous, and non-conventional in their thinking and approach to problem solving. As a personality trait innovativeness can influence a person's behavior in many areas including their career choices, leadership styles and personal relationships. As stated by (Ali, 2019) theory of personality traits suggests that people tend to treat different situations and interact with the environment differently in a natural manner. From a management perspective, information about an individual's personality can provide valuable information pertaining to what is the best method of communicating with them and what types of jobs and tasks they are most suitable for. However, personality traits may also be key indicators of other facets of an individual's life including innovativeness. As demonstrated by (Buchanan, 1998; Hsieh et al., 2011) cited in (Ali, 2019) many existing literatures have primary focused on the relationship between innovativeness as a personality traits on employees innovative performance or individuals propensity to accept innovative products only but only a handful of studies have focused on innovativeness in the context of an individual's willingness develop new ideas and experience new things. As per (Nimrod, 2008) cited in (Ali, 2019) demonstrate that fewer studies have addressed its influence on satisfaction with life, despite innovativeness being a significant predictor of satisfaction with life. We can distinguish between an entrepreneur and a non- entrepreneur in a way they sense opportunities before others and creative way to solve a problem. An entrepreneur is both an innovative thinker and doer. Mueller (2004) also described innovativeness as a significant component of entrepreneurship. Innovation is the process of making new ideas a reality, resulting in creative ideas and thereby induces innovative events. Innovation is about creating a new value. This process involves both ideas and knowledge. Similarly, (Chye Koh, 1996) found that entrepreneurial intention is positively correlated with innovativeness.

H2: Business students with personality trait of innovativeness have positive impact on entrepreneurship behaviors.

Need for Achievement and Entrepreneurship Behavior

Need for achievement (N-Ach) is a personality trait that refers to an individual's desire for personal success and accomplishment. People with high N-Ach have a strong drive to succeed and a need to constantly improve their performance. They set high standards for themselves and are motivated to meet those standards through hard work and determination. N-Ach can influence an individual's behavior in various areas including their work, education and personal relationships. As stated by (Utsch & Rauch, 2000) cited in (Çolakoglu & Gözükar, 2016) individuals

with strong need for achievement wish to solve issues on their own, they establish some goals and then make personal efforts to achieve these goals, and perform better when tasks are challenging, and they find creative approaches toward better performance. According to (Hansemark, 2003) need for achievement has been shown to change and develop over time, referring to a learned characteristic. In the entrepreneurship context, need for achievement is a driving motive determining the extent of entrepreneurial activities. Entrepreneurs have high need for achievement, driving them to strive for fulfilling this need through success in business. (Hansemark, 2003) also shows positive relation between need for achievement and entrepreneurial inclination.

H3: Need for achievement among business students have a positive impact on entrepreneurship behavior.

Risk Taking and Entrepreneurship Behaviour

Risk propensity in personality, is defined as an individual predisposition to take or avoid risks that is, whether an individual is risk-averse or risk-tolerant, and determines how individuals handle situations involving uncertainty and risk. Risk aversion is the tendency to prefer certainty rather than the uncertainty of outcomes (Link et al., 2017). Studies have shown that risk construct dominates literature on entrepreneurship and the ability to bear risk has been identified as the primary characteristic facing entrepreneurs (Van Praag and Cramer, 2001; McClelland, 1987 and Koh, 1995). According to Hofstede (1980) societies with low uncertainty avoidance encourage individuals to be ambitious and competitive, to strive for material success, and to take risk for material gain. On the other hand, societies with high uncertainty avoidance expect the individuals to avoid risk-taking behavior for a material gain. Differences in an individual's risk attitude influence not only the occupational choice but also the entrepreneur's decision to employ labour and capital and thus the scale of production. (Block et al., 2015) thus, requires a risk-taking attitude. The concept of risk and entrepreneurship has been widely discussed in the entrepreneurship literature; most studies compare entrepreneurs with nonentrepreneurs such as managers or bankers. So far, little research exists on the risk attitudes of the different types of entrepreneurs-those who pursue a new business because of opportunity and those who do so through necessity. This study aims to fill this gap. Our particular focus is on individuals' motivations to start their businesses and the nonmonetary returns from entrepreneurship. The results show that opportunity entrepreneurs are more willing to take risks than necessity entrepreneurs. In addition, those who are motivated by creativity are more risk tolerant than other entrepreneurs. The study contributes to the literature about both risk attitudes of entrepreneurs and necessity and opportunity entrepreneurship. (Block et al., 2015) observe that hardly any research exists on the risk attitudes of different

types of entrepreneurs. They find that an entrepreneur's motivation at venture start-up is associated with their risk attitude. More specifically, individuals starting a venture out of necessity are found to be more risk averse than individuals starting a venture to take advantage of a perceived opportunity (Block et al. 2015). Entrepreneurs Genuine uncertainty is inherent in environmental and societal issues addressed by sustainable entrepreneurs, such as human-induced climate change, where the consequences cannot be predicted because they depend on future actions that are currently unknown (York & Venkataraman, 2010).

H4: Risk taking has a positive impact on entrepreneurship behavior among business students.

Locus of control

(Chaudhary, 2017) social and personal dispositional factors on determining the entrepreneurial inclination. Specifically, the author examined the role of gender, age, stream of study, family business background and six psychological traits of locus of control, tolerance for ambiguity, propensity to take risk, self-confidence and innovation in differentiating entrepreneurs from non-entrepreneurs. Design/methodology/approach: As university students constitute pool of potential entrepreneurs, participants for the study consisted of 274 students from two new and upcoming universities in an emerging economy of India. The sample included students from both business and non-business schools. Data were reported and analysed using descriptive statistics, frequency distribution, t-test and stepwise logistic regression Findings: The study results suggest that the traits of locus of control, tolerance for ambiguity, self-confidence and innovativeness were significant in differentiating entrepreneurs from non-entrepreneurs. At the same time it was also observed that need for achievement and risk-taking propensity were not found to be significantly different for these two groups which was contradictory to the expectations. In addition to these six psychological traits, the study results also underlined the role of family background and school in predicting entrepreneurial inclination. Practical implications: The study carries huge public policy implications for education system in India which largely prepares the students for jobs in public and private sectors rather than entrepreneurship. Originality/value: The study discusses some of the missing links in the entrepreneurship research by providing new insights from India.” (Chaudhary, 2017 defines locus of control refers to an individuals' belief about the extent to which they can control various events in their lives which has been conceptually been categorized into internal and external locus of control. People having internal locus of control believe that they are able to control everything in their life, whereas people with external locus of control believe that there is an external power controlling their life. This belief has

significant effects on entrepreneurial behaviors. People with a higher internal focus of control are more likely to exercise entrepreneurial behaviors and to have a higher need for achievement compared to those with a lower internal locus of control (Diaz & Rodriguez, 2003) cited in (Çolakoglu & Gözükar, 2016). Study by Ang and Hong (2000) showed that internal locus of control could determine entrepreneurial intention. locus of control has consistently been reported as an important constituent of an entrepreneurs' personality in the entrepreneurship literature (Mueller and Thomas, 2000; Hansemark, 1998; Utsch and Rauch, 2000).

H5: Locus of control among business students have a positive impact on display of entrepreneurship behavior.

Perceived Barriers

Many studies have highlighted the economic value of entrepreneurship and its importance for development and stability of any business. Lack of access to capital and other resources is a severe barrier to the establishment of, and growth in, new ventures. Financial barriers are a constraint to any new and/or small business, but especially so in developing economies where the financial markets tend to be underdeveloped or dysfunctional (Morewagae et al. 1995). Literature has shown that resources, especially financial resources, are the universal need of entrepreneurs to start a venture. Lack of financial resources is the biggest hurdle in establishing a new firm (Atieno, 2009, Pretorius & Shaw, 2004). At the initial stage, entrepreneurs need financial assistance from internal as well as external sources in order to survive and prosper. Lack of funds is a major barrier in making intention for entrepreneurship (Fatoki, 2011). In developing countries, having personal and family savings is a not a trend and there are also great difficulties in acquiring financial assistance (Lingelbach, de la Vina & Asel, 2005). Administrative complexities play a significant role in explaining entrepreneurial drive. They find that relative to never having considered setting up a business, the odds of “thinking about it” or “having thought about it and given up” are not significantly affected by the perception of administrative complexity. However, the odds of other more active entrepreneurial positions (“about to start up a business” or “recently set up a business”) are significantly negatively affected by a perception of administrative complexity. Administrative complexity causes more effort on behalf of the entrepreneur. Many potential entrepreneurs could lose interest in setting up a business because of the complexities associated with starting a firm. We therefore expect “administrative complexity” to have a negative impact on entrepreneurial activity (Van Stel & Stunnenberg, 2006).

H6: Perceived barriers has a negative impact on entrepreneurial behaviour among business students.

Societal Factors

According to (Gürol & Atsan, 2006) the economic, social

and political instability in the country may lead people to prefer salaried jobs in public or private sectors instead of running their own business and is mostly observed amongst the university students. Cultural norms and values which is reflected in attitudes towards entrepreneurship, risk taking and innovation vary across cultures and can influence entrepreneurship behavior. Whereas, strong economy can provide opportunities for entrepreneurship while a weak economy may limit them. Similarly, legal and regulatory environment that protects property rights, encourage competition and facilitate business formation and operation and can support entrepreneurship further political stability also effects the entrepreneurship behavior. As stated by (Ozaralli & Rivenburgh, 2016) intention and market-oriented behaviors of an entrepreneur is also influenced by the existing and anticipated economic and political infrastructure of the home country. (Aldrich & Wiedenmayer, 2019) claims that the socio-political environment of a country can be so powerful that it may create or destroy entrepreneurship. For example, a “hostile” economic environment, characterized by severe market fluctuations, high inflation and unemployment rates and economic instability may produce skepticism and discourage the potential entrepreneur from taking action. Economic instability in a country usually goes together with political instability as well. The lack of intellectual property rights, bureaucratic barriers, corruption, lack of corporation law and proper tax arrangements are factors among many others that undermine entrepreneurial activity. Environment characterized by supportive political and business leaders, latent entrepreneurs become motivated to act. (Ozaralli & Rivenburgh, 2016)

H7: Societal factors affects the entrepreneurship behavior among business students.

Attitude towards Entrepreneurship and Entrepreneurial Behaviour

Behavioral attitudes are a function of possible outcomes of the target behavior. Among the three determinants of intentions in the TPB model, entrepreneurial attitude tends to be the most proximal to entrepreneurial intentions. In comparison to other predictors of entrepreneurial behavior, it has been suggested that attitudes have a greater effect than personality or demographic variables (Robinson et al., 1991). According to (Tornikoski & Maalaoui, 2019) the strength of the effects of attitudes on entrepreneurial intentions and behavior derives from the compatibility principle, whereby behavior is better predicted by specific attitudes towards the behavior Hence, individuals are likely to engage in behavior if the envisaged outcomes are positive and of value to them. This is congruent with the utility assumptions that individuals chose decisions or behaviours that are perceived to offer the highest value. When an individual perceives entrepreneurship to offer good outcomes, then the individual will have a more positive entrepreneurial attitude, which results in stronger

entrepreneurial intentions. Moreover, an entrepreneurial attitude influences outcome expectations and consequently interest or disinterest in entrepreneurship (Baluku et al., 2021).

H8: The is a significant impact of attitude towards entrepreneurship and entrepreneurship behavior among business students.

Social Support and Entrepreneurship Behaviour

As defined by (Sahban et al., 2014) social support is a perceived belief and prospects that an individual has in terms of advice, guidance and assistance that they will receive from their social groups. Further, (Ismail et al. 2013; Rani 2012; Sahban, Ramalu, and Syahputra 2016) cited in (Neneh, 2022) have categorized social support in two parts (support by family; and support by peer groups). social support can be obtained in the form of instrumental support (e.g. tangible resources, material aid), appraisal/informational support (e.g. advice, guidance, feedback), emotional support (e.g. expression of care, the reassurance of worth, empathy, affection) or financial support (e.g. financial assistance in the form of loans or gifts) Levesque (2014). (Imbaya, 2012) states that family support has a significant effect in the life of every person as it provides and offers an indispensable support system throughout one's life. There are two reasons to expect that the ESE to intentions path will be moderated by social support, thus affecting the passion to intentions association via the mediating role of ESE. Firstly, while individuals will generally assess whether they have the necessary skills to start a business before deciding to do so, it is also a known fact that there are several risk and challenges associated with an entrepreneurial career (Fitzsimmons and Douglas 2011) cited in (Neneh, 2022). With the risk that comes with risk and uncertainty that is associated with career as an entrepreneur social support from friends as well as family is may be required. Such social support can lead to the provision of financial, instrumental and emotional support which could foster the development of entrepreneurial intentions amidst the uncertainty (Levesque 2014)

H9: Social support has an impact upon entrepreneurship behavior among business students.

Link Between Entrepreneurial Self-Efficacy and Entrepreneurship Behavior

The term self-efficacy is social learning theory and refers to a person's belief in his or her capability to perform a given task. According to (Boyd & Vozikis, 1994), self-perception, or the way in which a person perceives his or her abilities and tendencies, plays a role in the development of intentions. Similarly, self-efficacy affects a person's beliefs regarding whether or not certain goals may be attained. Choices, aspirations, effort, and perseverance in the face of setbacks are all influenced by the self-perception of one's own capabilities. Self-efficacy is also an outcome of these

cognitive thought processes, and the development of self-efficacy is particularly influenced by mastery experiences, observational learning, social persuasion, and perceptions of physiological well-being that have been derived from the personal and contextual variables. Ajzen's (1985) states that attitudes toward entrepreneurship and perceived self-efficacy beliefs regarding the likelihood of success or failure will subsequently influence the development of entrepreneurial intentions. Beginning a new venture itself is full of challenges so an individual makes a self-judgment about their abilities to perform the projected task. Bandura (1997) cited in (Neneh, 2022) states that the self-efficacy is a context-specific construct, that leads to a higher predictive level of the outcome when the focus is on a specific task. (Neneh, 2022) in his study argues that individuals, who are passionate about starting a new business (entrepreneurial passion), will persist in finding ways to develop the needed skills and capabilities to deal with the roles and challenges necessary to be an entrepreneur (ESE) and thus be more motivated to engage in entrepreneurial action (EI).

H10: Entrepreneurial self-efficacy effects entrepreneurship behavior among business students.

Moderating Relationship

H11: There is a moderating effect of attitude on the relationship between optimism and entrepreneurship behavior.

H12: There is a moderating effect of attitude on the relationship between innovativeness and entrepreneurship behavior.

H13: There is a moderating effect of attitude on the relationship between need for achievement and entrepreneurship behavior.

H14: There is a moderating effect of attitude on the relationship between risk taking and entrepreneurship behavior.

H15: There is a moderating effect of attitude on the relationship between locus of control and entrepreneurship behavior.

H16: There is a moderating effect of entrepreneurial self-efficacy on the relationship between perceived barriers and entrepreneurship behavior.

H17: There is a moderating of attitude social support on the relationship between societal factors and entrepreneurship behavior.

4. Research methodology

4.1 Research design

Quantitative approach utilizing a descriptive research design as well as correlational research design will be used for conducting the study. Descriptive study design are useful for describing the desired characteristics of the sampled that is being studied (Omair, 2015) that is, case report, case series, correlational, and cross-sectional study designs. The requirements for selecting these study designs are discussed along with the advantages and disadvantages

of each study design. The descriptive studies are similar in the context that they are based on a single sample with no comparative group within the study design. Their basic purpose is to describe the characteristics of the sample with regards to the characteristics that are present and so are useful in generating a hypothesis. The absence of a comparative group is the main limitation of the descriptive studies, and this is the reason they cannot be used to determine an association by testing a hypothesis showing a relationship between a risk factor and disease. The analytical study designs will be discussed in the next article in this series.,"author":[{"dropping-particle":","family":"Omair","given":"Aamir","non-dropping-particle":","parse-names":false,"suffix":""}],container-title":"Journal of Health Specialties","id":"ITEM-1","issue":"3","issued":{"date-parts":[["2015"]]},page":"153","title":"Selecting the appropriate study design for your research: Descriptive study designs","type":"article-journal","volume":"3"},"uris":["http://www.mendeley.com/documents/?uuid=946abca7-e1b8-48fb-9ee8-2fcd655f7dd4"]},"mendeley":{"formattedCitation":"(Omair, 2015. Correlational research has an conceptions in which the direction and strength of the relationship between two or more variables with no influence from any extraneous factor is intended to be found (Creswell, 2012; Johnson and Christensen, 2010) cited in (Şentürk & Zeybek, 2019). The main purpose of this type of research is to enlighten the conceptions of important phenomena by revealing the relationships between the variables (Fraenkel and Wallen, 2006).

4.2 Sample and Procedure

While conducting research it is rarely possible to collect data of the whole population instead sample is chosen. The sample is the group of individuals who will actually participate in the research. To draw valid conclusions from the results, choosing a sample should be deliberate enough about how to collect the sample so that it is representative to group as a whole. The total population for the study constitutes of the students of both Bachelors and Masters studying under universities. Convenience sampling procedure were used to come to the sample size. With the context of growing interest in student entrepreneurship the study has focused on students who are continuing their masters and bachelor's degree. Questionnaire were distributed by electronic media using viber and whatsapp (college group) with the help of the college administration. The total number of students approached through the group was 250 but only 116 completed the questionnaires and was used in the study. There was almost equal respondents in terms of gender representing 49.1% female and 50.9% male with 7.8% in age group of 18-22 years, 27 and above being 21.6% and majority of them being of age group 23-27 years 70.7 %. In addition 56 % of respondents being masters level students representing 56 % and rest 44% being students of bachelors degree.

4.3 Measures

Entrepreneurial self-efficacy

Entrepreneurial Self-Efficacy was measured by a 6-item self-assessment scale. All the items on this scale represents the competencies related to business/entrepreneurship behavior and were developed (Marlino & Wilson, 2003) cited in (Wilson et al., 2008). In each statement the respondents were asked to compare themselves to their peers. The items included “being able to solve problems,” “making decisions,” “managing money,” “being creative,” “getting people to agree with you,” and “being a leader.” The respondents in all samples rated their self-efficacy level on a 5-point Likert scale (1 = a lot worse; 5 = much better). Further, self efficacy in terms of lack of confidence in personal skills was measured by asking the bachelors and masters degrees students to rate themselves in terms of confidence in their own skills on a 5-point Likert scale (1 = strongly agree ; 5 = strongly disagree). The scales developed were on the basis of different literary sources and stated as I don’t have the necessary skills and capabilities; I am unable to recognize potential opportunities for doing business. Similarly, students were also asked to response on their lack of confidence in managing challenges of entrepreneurship based on statements as it is hard to balance long work hours with private life, I am scared of the financial risk involved and were measured on a 5-point Likert scale (1 = strongly agree ; 5 = strongly disagree).

Personal factors

All the personal factors as optimism, Need for achievement, risk taking and locus of controls were measured based on the study of different theories and other empirical reviews from different scholars and were measured in 5 point likert scale ranging from 1(Strongly Agree) to 5(strongly disagree). The statement were selected based on different studies (Çavuş & Gökçen, 2015) (Mustapha & Selvaraju, 2015) the influences of personal attributes, family and peer, and entrepreneurship education on the students’ inclination towards entrepreneurship are examined. Self-administered questionnaires were distributed to accounting students at three public universities in Klang Valley. About 178 questionnaires were completed and were found to be usable for the purpose of the study. Hierarchical multiple regression analysis and t-tests were employed to analyse the data. Generally, the results of the study indicate that the respondents have a positive inclination towards entrepreneurship. The hierarchical regression results show that personal characteristics, family influence, entrepreneurial education have positive and significant influence on the students’ intention to be entrepreneurs when the variables are added into the equation. However, gender is not an important factor in influencing the students to choose entrepreneurship as their future career pathway.”, “author”: [“dropping-particle”: “”, “family”: “Mustapha”, “given”: “

Mazlina”, “non-dropping-particle”: “”, “parse-names”: false, “suffix”: “”, {“dropping-particle”: “”, “family”: “Selvaraju”, “given”: “Maitilee”, “non-dropping-particle”: “”, “parse-names”: false, “suffix”: “”}], “container-title”: “Kajian Malaysia”, “id”: “ITEM-1”, “issued”: {“date-parts”: [“2015”]}, “page”: “155-172”, “title”: “Personal attributes, family influences, entrepreneurship education and entrepreneurship inclination among university students”, “type”: “article-journal”, “volume”: “33”}, “uris”: [“http://www.mendeley.com/documents/?uuid=664ef7c1-5f3d-4bce-a4f8-a07c4e047d32”]], “mendeley”: {“formattedCitation”: “(Mustapha & Selvaraju, 2015)(Luthans et al., 2004).

Perceived Contextual Barriers

Financial and administrative difficulties from the perspective of respondents were measured in this variable using 6 items statements as Banks does not readily give credit to start-ups, our society looks down upon entrepreneurs. These scales were measured using in 5 point likert scale ranging from 1(Strongly Agree) to 5(strongly disagree) and societal factors were also measured similarly using 5 point likert scale.

Attitude Towards Entrepreneurship

Business students of masters and bachelors degree were asked to rate their attitude towards entrepreneurship and 4 item scale were constructed based on the study of (Robinson et al., 1991)(Baluku et al., 2021) with the statements as a career as an entrepreneur is totally unattractive to me, being an entrepreneur involves more advantages than disadvantages to me. These statements were measures using in 5 point likert scale ranging from 1(Strongly Agree) to 5(strongly disagree)

Social Support

Based on the study done by (Imbaya, 2012)(Sahban et al., 2014)(Mustapha & Selvaraju, 2015) the influences of personal attributes, family and peer, and entrepreneurship education on the students’ inclination towards entrepreneurship are examined. Self-administered questionnaires were distributed to accounting students at three public universities in Klang Valley. About 178 questionnaires were completed and were found to be usable for the purpose of the study. Hierarchical multiple regression analysis and t-tests were employed to analyse the data. Generally, the results of the study indicate that the respondents have a positive inclination towards entrepreneurship. The hierarchical regression results show that personal characteristics, family influence, entrepreneurial education have positive and significant influence on the students’ intention to be entrepreneurs when the variables are added into the equation. However, gender is not an important factor in influencing the students to choose entrepreneurship as their future career pathway.”, “author”: [“dropping-particle”: “”, “family”: “Mustapha”, “given”: “Mazlina”, “n

on-dropping-particle": "", "parse-names": false, "suffix": ""}, {"dropping-particle": "", "family": "Selvaraju", "given": "Ma itilee", "non-dropping-particle": "", "parse-names": false, "suffix": ""}], "container-title": "Kajian Malaysia", "id": "ITEM-1", "issued": {"date-parts": [[2015]]}, "page": "155-172", "title": "Personal attributes, family influences, entrepreneurship education and entrepreneurship inclination among university students", "type": "article-journal", "volume": "33", "uris": ["http://www.mendeley.com/documents/?uuid=664ef7c1-5f3d-4bce-a4f8-a07c4e047d32"]}, "mendeley": {"formatted Citation": "(Mustapha & Selvaraju, 2015 5 items scale were constructed and business students continuing masters and bachelor's degree were asked to rate their thinking about the support from friends and family. 5 point likert scale ranging from 1(Strongly Agree) to 5(strongly disagree) were used to construct the scale.

Entrepreneurship Behavior

For both the middle/high school and MBA samples, entrepreneurial behaviour were measured by asking participants to rate their interest in starting/ owning their own business on a 5-point Likert scale (1 = strongly agree, 5 =strongly disagree). The statements were presented as I never see myself becoming an entrepreneurship; I prefer job with stable income as compared to start a business of my own. These statements were formed based on different studies (Baluku et al., 2021)(Cohen, 2018)(Miller, 1983).

5. Results and discussion

Table 1 Means and standard deviation calculation for optimism, locus of control, Innovativeness, Need for Achievement, Risk Taking and Entrepreneurship Behavior. The analysis shows that the mean value for optimism among all the personal factors is the highest with mean value of 14.43 meaning that the respondents value optimism more. Similary, the lowest mean value is for locus of control which shows relatively unfavorable inclination towards the factor with a mean value of only 8.35. The standard deviation values show how spread the data set is here, the highest S.D is 3.002 for optimism showing the data for the variable optimism is the most spread out.

Table 1 Descriptive Statistics for personal factors

	Mean	Std. Deviation	N
Optimism	14.4310	3.00210	116
Innovativeness	8.5259	1.95809	116
Need for Achievement	10.8621	2.60400	116
Risk Taking	11.2414	2.98582	116
Locus of Control	8.3448	2.13095	116
Entrepreneurship Behaviour	13.2414	2.46231	116

Table 2: Correlation between personal factors and entrepreneurship behavior

		Opti- mism	Innova- tiveness	Need for Achieve- ment	Risk Tak- ing	Locus of Control	Entrepreneursh Behaviour
Optimism	Pearson Correlation	1	.285**	.059	-.003	.210*	.226*
	Sig. (2-tailed)		.002	.530	.975	.023	.015
	N	116	116	116	116	116	116
Innovativeness	Pearson Correlation	.285**	1	.180	.174	.119	.228*
	Sig. (2-tailed)	.002		.053	.061	.204	.014
	N	116	116	116	116	116	116
Need for Achievement	Pearson Correlation	.059	.180	1	.482**	.178	.221*
	Sig. (2-tailed)	.530	.053		.000	.056	.017
	N	116	116	116	116	116	116
Risk Taking	Pearson Correlation	-.003	.174	.482**	1	.205*	.171
	Sig. (2-tailed)	.975	.061	.000		.027	.067
	N	116	116	116	116	116	116
Locus of Control	Pearson Correlation	.210*	.119	.178	.205*	1	.136
	Sig. (2-tailed)	.023	.204	.056	.027		.144
	N	116	116	116	116	116	116

Entrepreneurship Behaviour	Pearson Correlation	.226*	.228*	.221*	.171	.136	1
	Sig. (2-tailed)	.015	.014	.017	.067	.144	
	N	116	116	116	116	116	116

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 2 shows the relationship between antecedents of entrepreneurship and personal factors. Pearson correlation analyses also showed that innovation and entrepreneurship behavior is positively correlated ($r = 0.228$, $p < 0.05$). It seems that innovativeness as a personal factor plays a strong role in display of entrepreneurship behavior among business students. Similarly, positive correlation was found between need for achievement and entrepreneurial behaviors ($r = 0.221$, $p < 0.05$). Further positive relation between optimism and display of entrepreneurial behavior was found ($r = 0.226$, $p < 0.05$).

Table 3: Means and correlation for societal factors, perceived contextual factors and entrepreneurship behaviour				
		Societal Factors	Perceived Contextual	Entrepreneurship Behaviour
Societal Factors	Pearson Correlation	1	.033	.060
	Sig. (2-tailed)		.728	.519
	Mean 8.79			
Perceived Contextual	Pearson Correlation	.033	1	.181
	Sig. (2-tailed)	.728		.052
	Mean 13.40			
Entrepreneurship Behaviour	Pearson Correlation	.060	.181	1
	Sig. (2-tailed)	.519	.052	
	N Mean 13.24	116	116	116

Table 3 shows the correlation between entrepreneurship behaviors and context in terms of perceived behavioral context and societal factors. The analysis shows mean to be highest for perceived context meaning business students value the financial barriers and well as administrative difficulties more in terms of displaying entrepreneurial behavior. However, no significant correlation found to exist between the variables.

Testing of Hypothesis

Table 4 Personal factors and entrepreneurship behavior

Hypothesis Results

Hypotheses	Regression Weights	B	t	p-value	Results
H ₁	Optimism → Ent. Behaviour	0.139	1.772	0.079	Rejected
H ₂	Innovativeness → Ent. Behaviour	0.171	1.427	0.156	Rejected
H ₃	Need for Achievement → Ent. Behaviour	0.138	1.413	0.161	Rejected
H ₄	Risk Taking → Ent. Behaviour	0.056	0.653	0.515	Rejected
H ₅	Locus of Control → Ent. Behaviour	0.052	0.477	0.634	Rejected
R	0.345				
F (5, 110)	2.974				

Note * $p < 0.05$

The dependent variable (entrepreneurship behavior) was regressed on predicting variables of optimism, innovativeness, need for achievement, risk taking and locus of control. The independent variables significantly predicted entrepreneurship behavior, $F(5, 110)=2.974$, $p < 0.05$, which indicates that the five factors under the study have a significant impact on entrepreneurship behavior among business students. Moreover, the $R^2 = 0.345$ which depicts that the model explains 34.5% of the variance in entrepreneurship behavior. Additionally, coefficients were further assessed to ascertain the influence of each of the factors on the criterion variable (Entrepreneurship Behavior). H1 evaluates whether optimism has a significant positive impact on entrepreneurship behavior (0.135, $t = 1.77$, $p=0.079$). Hence, H1 was rejected. H2 examines whether innovativeness in business students impacts entrepreneurship behavior (0.171, $t=1.427$, $p=0.156$). H2 was hence rejected. H3 examines the impact of need for achievement and entrepreneurship behavior (0.138, $t=1.413$, $p = 0.161$). Hence H3 was rejected. H4 examines whether risk taking has an impact on entrepreneurship behavior (0.056, $t=0.653$, $p=0.515$). Hence H4 was rejected. H5 examines whether locus of control effects entrepreneurship behavior (0.052, $t=0.477$, $p= 0.634$). Hence H5 was rejected.

Table 5: Context and entrepreneurship behaviour

Hypothesis Results

Hypotheses	Regression Weights			Results
B	t	p-value		
H ₆ Behaviour Rejected	Societal factors	→	E n t .	
	0.061	0.590	0.556	
H ₇ Behaviour Rejected	Perceived barriers	→	Ent.	
	0.128	1.942	0.055	
R	0.189			
F (2, 113)	2.099			

Note * $p < 0.05$

The dependent variable (entrepreneurship behavior) was regressed on predicting variables of societal factors and perceived barriers. The independent variables significantly predicted entrepreneurship behavior, $F(2, 113)=2.099$, $p > 0.05$, which indicates that the two factors under the study do not have a significant impact on entrepreneurship behavior among business students. Moreover, the $R^2 = 0.189$ which depicts that the model explains 18.9% of the variance in entrepreneurship behavior. Additionally, coefficients were further assessed to ascertain the influence of each of the factors on the criterion variable (Entrepreneurship Behavior). H6 evaluates whether societal factors has a significant

positive impact on entrepreneurship behavior (0.061, $t = 0.590$, $p=0.556$). Hence, H6 was rejected. H7 examines whether perceived barriers in business students impacts entrepreneurship behavior (0.128, $t=1.942$, $p=0.055$). H7 was hence rejected.

Table 6: Attitude towards entrepreneurship, entrepreneurial self efficacy, social support

Hypothesis Results

Hypotheses	Regression Weights			Results
B	t	p-value		
H ₈ Behavior Accepted	Attitude	→	E n t .	
	0.267	2.438	0.016	
H ₉ Behavior Rejected	Social Support	→	E n t .	
	0.129	1.686	0.095	
H ₁₀ Behavior Rejected	Entrepreneurial SE	→	Ent.	
	0.082	1.846	0.68	
R	0.381			
F (3, 112)	6.350			

Note * $p < 0.05$

The dependent variable (entrepreneurship behavior) was regressed on predicting variables of optimism, innovativeness, need for achievement, risk taking and locus of control. The independent variables significantly predicted entrepreneurship behavior, $F(3, 112)=6.350$, $p < 0.05$, which indicates that the three factors under the study have a significant impact on entrepreneurship behavior among business students. Moreover, the $R^2 = 0.381$ which depicts that the model explains 38.1% of the variance in entrepreneurship behavior. Additionally, coefficients were further assessed to ascertain the influence of each of the factors on the criterion variable (Entrepreneurship Behavior). H8 examines whether attitude towards entrepreneurship has a significant impact on entrepreneurship behavior (0.267, $t = 2.438$, $p=0.016$). Hence, H8 was accepted. H9 examines whether social support in business students impacts entrepreneurship behavior (0.129, $t=1.686$, $p=0.095$). H9 was hence rejected. H10 examines the effect of entrepreneurial self-efficacy on entrepreneurship behavior (0.082, $t=1.846$, $p = 0.068$). Hence H10 was rejected.

Table 7: Moderating effect Test

To calculate the moderation effect first standardizing(centering) of the variables were done in order to avoid possible multicollinearity which refers to a phenomenon in which one predictor variable in a multiple regression model can be linearly predicted from others with a substantial degree of accuracy.

Hypothesis Results

Hypotheses		Regression Weights		Results
B	t	p-value		
H ₁₁	0.012	0.046	Int1 →	Ent. Behavior Rejected
H ₁₂	-0.131	-0.548	Int2 →	Ent. Behavior Rejected
H ₁₃	-0.425	-1.622	Int3 →	Ent. Behavior Rejected
H ₁₄	-0.250	-0.853	Int4 →	Ent. Behavior Rejected
H ₁₅	0.452	1.772	Int5 →	Ent. Behavior Rejected
H ₁₆	-0.504	-2.268	Int6 →	Ent. Behavior Accepted
H ₁₇	0.095	0.397	Int7 →	Ent. Behavior Rejected
R		0.369		
F (7, 108)		2.434		

Note * $p < 0.05$

Int1(optimism*Attitude),

Int2(Innovativeness*Attitude), Int3(Need for Achievement*Attitude) Int4(Risk Taking*Attitude)
 Int5 (Locus of Control*Attitude) Int6(Perceived barriers*Entrepreneurial Selfefficacy), Int7 (Societal*Societal Support)

The dependent variable (entrepreneurship behavior) was regressed on Interaction variables of optimism*attitude, innovativeness*attitude, need for achievement*attitude, risk taking*attitude, locus of control*attitude, perceived barriers*entrepreneurial self-efficacy and societal factors*societal support. The interaction variables significantly predicted entrepreneurship behavior, $F(7, 108)=2.434$, $p < 0.05$, which indicates that the interaction variables has a moderating effect significant impact on entrepreneurship behavior among business students. Moreover, the $R^2 = 0.369$ which depicts that the model explains 36.9 % of the variance in entrepreneurship behavior. Additionally, coefficients were further assessed to ascertain the influence of each of the factors on the criterion variable (Entrepreneurship Behavior). H11 examines whether there is moderating effect of attitude towards relationship between optimism and entrepreneurship behavior (.012, $t = 0.046$, $p=0.964$). Hence, H11 was rejected. H12 examines whether attitude has a moderating effect on the relationship between innovativeness and entrepreneurship behavior (-0.131, $t=-0.548$, $p=0.585$). H12 was hence rejected. H13 examines the moderating effect of attitude upon the relationship between need for achievement and entrepreneurship behavior (-0.425, $t=-1.622$, $p = 0.108$). Hence H13 was rejected. H14 examines the moderating effect of attitude in the relationship of risk

taking and entrepreneurship behavior (-0.250, $t=-0.853$, $p =-0.395$). Hence H14 was rejected. H15 examines the moderating effect of attitude on the relationship of locus of control and entrepreneurship behaviour (0.452, $t=1.772$, $p=0.079$). Hence H15 was rejected. H16 examines the moderating effect entrepreneurial self efficacy upon the relationship between perceived barriers and entrepreneurship behaviour (-0.504, $t=-2.268$, $p = 0.025$). Hence H16 was accepted. H17 examines the moderating effect of social support on relationship between societal factors and entrepreneurship behaviour (0.095, $t=0.397$, $p=0.693$). Hence H17 was rejected. There was significance for the overall model for personal factors regressed on entrepreneurship behavior predicting that all the factors or variables under personal factors altogether predicts display of entrepreneurship behavior. However, the individual factors under personal factors didn't shoe predictability on the criterion variables. Similarly, the overall model for contextual variables like societal and perceived barriers in total did not predicted the display of entrepreneurship behavior. Furthermore, the overall model for moderating variables and criterion variable was significant and with it the individual factor attitude has a significant effect on the entrepreneurship behavior. For the interaction variables also the overall model was significant and individual factor product of perceived barriers and entrepreneurial self-efficacy was found to be significant. So we can conclude that attitude of an individual have an impact upon the display of entrepreneurship behavior as well as if there is self-efficacy in terms of confidence on one's skills or capabilities perceived barriers impact on entrepreneurship behavior can be moderated.

6. Conclusion

This paper has examined the effect of personal factors, context and the moderating effect of attitude, entrepreneurial self efficacy and social support towards the display of entrepreneurship behavior among the business students studying under different universities. It was noted that attitude in an individual is able influence the behavior displayed irrespective of gender, age and education level. It was also noted that contextual elements as economic condition of the country, culture of one's country has and effect upon entrepreneurial inclination however, if social support is there from family, friends it can moderate the effect. Entrepreneurs play a crucial role in driving economic growth, creating jobs and standard of living. However, the government and private sector needs to provide a supportive environment for entrepreneurship, including providing access to finance, improving infrastructure, reducing bureaucracy and promoting a culture of innovation and risk taking. In conclusion while the economic situation in Nepal presents challenges, it also offers significant opportunities for entrepreneurs who are willing to take on the risks and embrace the possibilities of doing business in the country.

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What does Sustainability at the Individual Level, Organizational Level, National and Super International Level Mean in a Technology-Driven Era

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Abstract

This article tries to reconcile the articles that address sustainability issues at different levels. Such levels are individual, organization, social, national and super international. The method adopted is a content analysis of different articles written on the sustainability issues of the different levels of the organization including individuals. Based on the available literature two models have been suggested for research.

Keywords

Sustainability, technological innovation, social innovation, etc.

Introduction

Background

Technology has the aim of empowering Society, organizations and global people to make them sustain and grow. This is justified by the vision and mission of Microsoft. It said that it believes in what people make possible. The mission it stated was to empower people from all over the world by doing a lot of complicated mathematical problems which people were doing taking long days and hours. Intel in its initial days stated its vision that there will be a billion computers connected through million servers to do the e-business of trillion dollars. Both examples have a future expectation of their business to sustain by serving the people by doing extraordinary service to people.

Sustainable issues in this era are rising everywhere from the world to individuals. Sustainable development goals are announced at the international level in the year. Similarly, such goals have been declared by many organizations. Even such issues have risen at the individual level so suicidal cases are rising everywhere.

Review of literature

The whole world is in the trap of sustaining or not sustaining. United Nations has published an alarming picture of the threatened sustainability in its *Sustainable Development Goals Report 2022*. The sustainability goal encompasses 17 goals and stresses that the 17 aspects related to individuals, organizations, societies and the earth if not improved, then sustainability is threatened. These 17 aspects are the determinants of world peace in one continuum and world violence, threat and destruction in another continuum(*The Sustainable Development Goals Report 2022*). Goals stated to improve the world are related to poverty, hunger, good

health, quality education, gender equality, clean health sanitation, affordable and clean energy, decent work and economic growth, industry innovation and infrastructure, reduced inequalities, sustainable cities and communities, responsible consumption and production, climate action, life below water, life and land, peace justice and strong institutions, and partnership for the goals.

Sustainable issues have been addressed in organizations over the past several decades by different organizations. Capozucca and Sarni(2012) published sustainability 2: using sustainability to drive business innovation and growth. Organizations make sustainability one of the major goals in strategic planning and endeavors innovations to match the wants of customers and their business operations.

Table 1: Typical key process

Components	Analyze the financial impact of each value chain component to each sector	Evaluate the sustainability priority of each value chain component to each sector	Use the resulting heat map to analyze the sustainability risks/opportunities
Design	High		
Source			
Make			
Delivery			
Use/return end-of-life			

Mohsen, Sharmin and Diane(2019) emphasized technology-based cultural practices in organizations. These authors stressed the belief that business value commences with strategy related to productivity, innovation, and competitive advantage as prescribed by Igloo (2017). These authors have investigated how organizations in the

modern technological era sustain and grow. Hamberg(2019) emphasized IT transformation for changing work styles in the workplace and better collaboration with customers, partners, among staff for increased productivity.

On the individual level, sustainability does not exist when a person does not want to continue his/her life or a person is compelled to compromise the quality of life. Individual life with the absent balanced social, economical, intellectual, and emotional states. Researchers and authors call individual sustainability the state of a person if he/she is live his/her life healthily, and happily with own's values in life without compromising his values. A sustained person has social, emotional, intellectual, and economic sustainability(Watson, and Barrella,2016; Pappas, 2013). Maslow(1968) emphasized people with higher-order motivation sustain.

Objective

To investigate the meaning of sustainability in individual life, organization and the country.

Method and material

This article has based its findings on the existing literature available on the publication made by the UN on suitability issues of global problems, various journal articles written to make the organizations sustain and various issues that common people are suffering with remaining behind in the signs of progress and develop a tendency to leave the life before the expected life expectancy.

Result

Table 2: sustainability at different levels and related literature

Level of issues	Related literature	Threatening of Sustainability condition
International issues for sustainability	The Sustainable Development Goals Report 2022	There is destructive impacts on sustainability due to the COVID-19 pandemic for three consecutive years. Food, energy, humanitarian and refugee crises –due to the Ukraine war Many millions more people are now living in extreme poverty and suffering from increased hunger compared to pre-pandemic levels. 147 million children missed more than half of their in-person instruction over the past two years, significantly affecting their learning and well-being Women have been disproportionately affected by the socioeconomic fallout of the pandemic, struggling with lost jobs, increased burdens of unpaid care work, and an intensifying silent epidemic of domestic violence rising inflation, major supply-chain disruptions, growing labor market pressures, and unsustainable debt in developing countries With vaccine distribution grossly unequal across the globe, there is a stark two-tiered COVID-19 recovery, sharpening the growing sense of injustice among people around the world and increasing the urgency to tackle deep and persistent inequalities. Approximately 2 billion people live in conflict-affected countries. Refugees were at the highest number on record in 2021 and forced displacement is continuing to grow, exacerbated by the war in Ukraine. As of the end of May 2022, some 6.5 million refugees had fled Ukraine alone, mostly women and children.
Organizational/ issues	Organization sustainability Capozucca, & Sarni, (2012) Attaran, & Attaran, , (2019) Igloo Software. (2017) Hamburg, (2019). etc	These articles and reports state organizations with advanced digital technology and IT transformation sustain

Social Issues	Oeij, Torre, Vaas, & Dhondt, (2019). Bonnol, Julia , Jens Dorland & Jørgensen (2020)	Any issue in society can be handled through social innovation these are: Path 1: Filling a gap, Path 2: Self-reliant empowerment, Path 3: Incremental progress, Path 5: Powerful people and leadership, Path 6: Resilient goal-getting loosely integrated and locally focused co-creation hubs to globally connected and widely resonating political movements
Individual Issues	Barrella, Spratto , Pappas & Nagel (2018) Howard Gardner's multiple intelligence theories model	A person can progress when one is sound on: (1) Economic, (2) social/intellectual, (3) emotional, and (4) health. Human potential where an individual can develop needs to be identified

Discussion and finding

The articles reviewed in the study have thrown the common theme that technological innovation and social innovation must be integrated. To help the individuals. Any individual living on earth must be empowered if innovation and improvement are to brought. How these two must be integrated is the key issue. High technologies are accessible for one group of people whereas another group of people is far behind the access because they are vulnerable concerning food, clothes, drinking water, health facilities, etc. A person is a bundle of imagination, creativity, and innovation if nurtured based on his/her ability.

The theory of multiple intelligence propounded by Howard Gadner one is attracted here. He or she can contribute to the technological world according to his/her ability. Whatever innovations will be fully utilized and addition of the knowledge is possible when people all over the world fully developed. If only one person in the world is left behind his/her potential development, this society, country and the world have to suffer.

Suggested models

Based on the literature related to global sustainability, organizational sustainability, social sustainability, and individual sustainability, two models of sustainability have been developed. They are given in Figures 1 and 2.

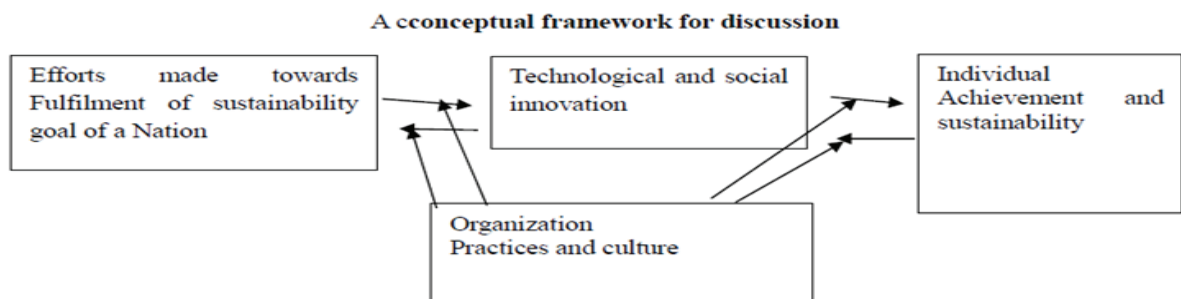


Figure 1: Social-ecological model of sustainability (model 1)

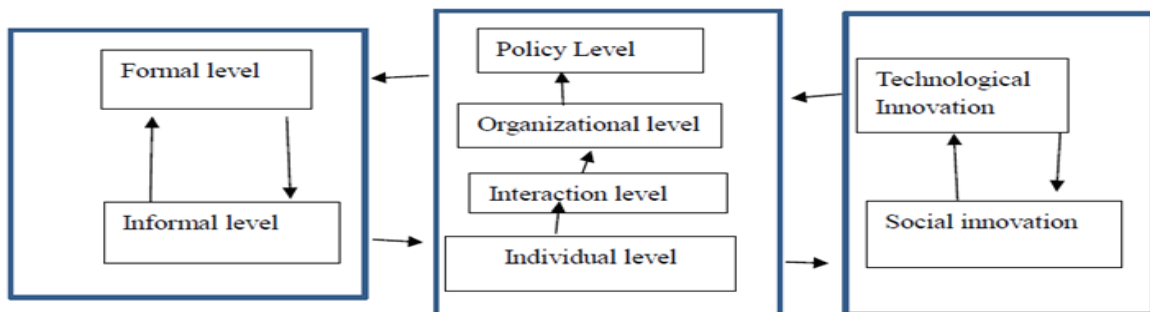


Figure 2: Social-ecological model of sustainability (model 2)

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