

18th International Conference on IT Applications and Management

Theme: Smart Life and Dynamic Changes

August 4 - 6, 2017

International IT Applications
and Management Society

(IITAMS)



復旦大學 管理学院
SCHOOL OF MANAGEMENT
FUDAN UNIVERSITY



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Host and venue: Fudan University, Shanghai, China

Supported by Korea Database Society, Korea Database Agency

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Foreword to ITAM-18



Namjae Cho

Chairman, International ITAM Society

Professor, Hanyang University, Seoul, Korea

It is my great pleasure to have 18th International Conference on IT Applications and Management (ITAM-18) at the great city of Shanghai, China. As the world is moving fast into a society driven by intelligent technology, we will have the conference with such a fabulous theme as “Smart Life and Dynamic Changes”. The use of interconnected smart technologies affects not only industrial competitiveness but also people’s everyday life and the change is dramatic. We are expected to adapt to the dynamic changes ahead of us globally. The 18th ITAM international conference will be a good opportunity to share knowledge, experience, and research outcomes across all scholars and students in Asian region as well as those interested in the changes in Asian region.

As this conference is hosted by the representative prestigious Fudan University of China, we will also have a chance to discuss the new Chinese initiative of Belt and Road (Silk Road Economic Belt and the 21st Century Maritime Silk Road) which will become the beginning of a new change in global economy.

We will have participants from Korea, Vietnam, Taiwan, Thailand, Indonesia, Nepal, India, Iran, and Turkey as well as China. The shaking of hand of delegates from these countries also largely represents the Belt of Road. As we have done in our previous conferences, we will have a post-conference symposium under the title of “the Future of Asia”, which will also be a very interesting discussion in this vein.

My special thanks to Professor Dai Weihui, Fudan University, who led the preparation of this wonderful conference as the chairman of hosting organizing committee. As one most active executive participant of ITAM conferences, all the ITAM members will join me to appreciate his contribution. My appreciation also goes to Director Hong Ling of Fudan University, Vice Chairman Xin Wang of Shanghai Chapter of China Computer Society, and Vice Director Yunjie Xu and Professor Zhengchuan Xu of Fudan University for their support as well.

Hope all the respected delegates, colleagues, and students participants join me to enjoy this academic event of ITAM-18 at Fudan University, Shanghai, China to be held during 4-6 of August, 2017.

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Korea Data Base Society

The Society of Neuromanagement and Neuroengineering, Management

Science and Engineering Society of China

Shanghai Chapter, China Computer Society

Date Time Activiti	Time	Activies
Aug.3	Morning-23:30	Pick up guests from airport to hotel, and have the welcome dinner at Muslim restaurant and enjoy watching of Sinkiang dancing Reception and conference registration at Hotel
Aug.4	9:00-11:00	Visit Siasun Robotics Company and MIGU Cultural Science and Technology Company in Shanghai Free Trade Zone
	11:50-13: 20	Campus tour, dinner, and DBMS donation at Shanghai Jiaotong University
	13:50-15:20	Campus tour, and DBMS donation at East China Normal University
	16:00-21:00	Town God's Temple tour, dinner, and night cruise sightseeing on Huangpu River
Aug.5	9:00-9:4	Conference opening announcement Starr Building, AIG Hall 1.Welcome greeting , Chair: Weihui Dai (Conference General Chair, Fudan University, China) Hong Ling (Chairman and Director, Fudan University, China) 2. Congratulatory speech , Chair: Yunjie Xu(Vice director, Fudan University, China) Weihui Dai (President, The Society of Neuromanagement and Neuroengineering, Management Science and Engineering Society of China) Xin Wang (Vice Chairman, Shanghai Chapter, China Computer Society) 3.DBMS donation speech , Chair: Weihui Dai (Conference General Chair, Fudan University, China) Junghyun Lee, (General manager, Korea Data Agency), Hong Ling (Fudan University, China)
	9:40-10:00	Photograph, coffee and tea break
	10:00-12:00	Keynote Speech , Chair: Namjae Cho (Chair of IITAMS, Hanyang University, Korea) Keynote Speech1 , The Affect of Privatization Programs and Applications on the Functioning and Aims of the Universities, by Mehmet Ali Gurol(Conference Emeritus, Turkey) Keynote Speech2 , Massive Open Online Courses: International Experiences and Implications for Vietnam, China, & Silk Road Developing Areas, by Watts Sean (RMIT University, Canada) Keynote Speech3 , Business Analytics in Action: Investigations in User Profiling and Risk Management, by Yunjie Xu (Fudan University, China)
	12:00-13:30	Lunch in the campus of Fudan University

13.30-15	A1: Chair Sean Watts Room # 205 The Effect of the Attractiveness of Mobile Music Applications on the Level of User Loyalty <i>Dong Mengyu, and Namjae Cho</i> Challenges and Measures of Competitive Development of Nepalese Tourism Sector <i>Surya Bahadur Ghimirea; PrashantaBabu, Neupane, and Binita Rijal</i> Can Augmented Technology Enhance CSR / Sustainability Reporting? <i>Aim-ornJaikengkit and UthaiTanlamai</i> Design of Dynamic Information System in Smart Logistics using Internet of Things <i>Iraj Mahdavi and Hamed Fazlollahabtar</i> What should Using a Software Product and Usability of the Software Product Be? <i>Seokha Koh and Jialei Jiang</i>	B1: Chair Chih-Chien Wang Room # 301 Building Relational Contract through Compassion: Evidence from Indian Manufacturing Sector <i>NishantSingh and Santosh Rangnekar</i> Distorted Graphs Used in Listed Companies from Six ASEAN Countries <i>Uthai Tanlamai and Jitsama Kurusakdapong</i> Contemplating Overiect Workplaces With Gender Biases:actualities, Workablesolutions And Comments <i>Mehmet Ali GuroI</i> International Collaboration In Research And Education: Benefits And Burdens <i>Mehmet Ali GuroI</i> An Analysis of the Customer Satisfaction from Service Quality of Himalayan Airlines <i>Bishnu Prasad Jamkatel</i>	C1 Chair : Yanki Hartijasti Room # 302 Challenges of Tourism Management of Nepal <i>Tej Bahadur Gurung</i> Jatayu Restaurant in Vulture Conservation a Complete Home to Nature: it's Potential and Threat <i>Neupane Chanda,</i> Toward Harnessing Web-Based Technology in Developing Distance Education in Nepal: Reviewing the Barriers and Opportunities <i>Pradeep Bastola</i> Audiences' Motive for Watching live Video Streaming <i>Chih-Chien Wang and Feng-Sha Chou</i> Modeling and Statistical Analysis of Big Data for Cosmetics Marketing <i>Zebin Wanga, Shuchun Chengb, Tong Wuc, Xinshuang Zhao, Weihui Daid</i>
	A2: chair UthaiTanlamai Room # 205 Human Resource Practice and Employees' Commitment: Evidence from Nepalese Insurance Companies <i>Sateesh Kumar Ojha, and Raju Kumar Rai</i> Training Culture and Employees Performance in Nepalese Banking Industry <i>Sateesh Kumar Ojha, Prakash Kumar Gautam</i> E-readiness to Implement Branchless Banking for Social Cash Transfer in Nepal <i>Mahesh Maharjana and Subarna Shakya</i> Managing Cyber Security Risks in Nepalese Organizations <i>Dwarika Upreti, Sudarshan Giri, and Pradeep Bhusal</i> Challenges to Transform the E-governance for Nepalese Labour Migrants <i>Pratima Pradhana and Subarna Shakya</i>	B2: Chair Mehmet Ali GuroI Room # 301 Application of Training for Employees Working in Rural Zone (Study on Banking Business in Nepal) <i>Deepak Bahadur Gubhaju</i> Employees Motivation, Satisfaction and Productivity In Hotel Radisson. <i>RoopeshShrestha</i> Multi-Generational Differences: Bridging Learning Gap in the Classrooms <i>Yanki Hartijasti</i> Neuromanagement: Development Pattern and Research Paradigm <i>Weihui Dai, ZebinWangb,Xuan Zhouc, JinzhaoWanga, Bixuan Fud, Shuyi Wanga, and Tzu-Chieh Lina</i> Research on CyberPsychology Computation of Customers' Online Shopping Behavior Using EEG Analysis <i>Tian Wanga, Xinyu Yuana,Wenhui Hanb, Chungheng Wang, and Weihui Dai</i>	C2: Chair: Santosh Rangnekar Room # 302 Methodological Issues of Business Research: Challenges for Meeting Reliability and Validity <i>Sateesh Kumar Ojha</i> Perceived Role of Parents in Children's Learning Process of Nepalese Institutional Secondary School of Kathmandu District <i>Yashodham Tripathi</i> Understanding of Internal Control and its practice in Nepalese NGOs <i>Sateesh Kumar Ojha and Sarika Amatya</i> The Prediction of Corporate Failure in Nepal <i>Bibhav Neupane</i>
17:00-8.00	Conference closing ceremony, Starr Building, AIG Hall Chair: Namjae Cho (Chair of IITAMS, Hanyang University, Korea)		
18:-21:00	Visit Oriental Pearl Tower and Shanghai Urban Development History Museum, farewell banquet		
21:00-2:00	Travel registration at Hotel		

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The Effect of the Attractiveness of Mobile Music Applications on the Level of User Loyalty

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Professor, School of Business, Hanyang University

Abstract

The purpose of this study is to investigate the relationship between application attractiveness and loyalty to mobile music applications. The application attractiveness is operationalized into four dimensions: richness of music contents, music app design quality, music app functionality, and promotion. The hypotheses are postulated and tested using a sample of 370 student respondents from Henan Polytechnic University and Henan Institute of Technology, China. The result shows that there is a positive correlation between loyalty and three application attractiveness aspects: richness of music contents, music app design quality and music app functionality. Based on the results of this study, the research put forward constructive suggestions about improving mobile music application loyalty. Finally, several conclusions, managerial suggestions, limitations and future research are proposed.

Key Words mobile music applications, loyalty, application attractiveness

1. Introduction

1.1 Background

With the rapid growth of the pool of smartphone users, and the transition of music industry medium into the mobile Internet, smartphones have quickly become the most important carrier of music. Ease of access to network of music transferred from the traditional PC desktops to mobile music apps, together with the seamless integration of online listening, downloading, sharing and other flourishing rich features of mobile music applications gradually changes the way people listen to music. According to IiMedia Research's "Q3 China Mobile Music Client Market Research", data shows that in the third quarter of 2014, the number of Chinese Mobile Music clients has reached 317 million, an increase of 7.8% over the previous quarter. The active users of mobile music applications follow a steady growth trend.

However, compared to the situation in traditional business environment, in the network environment, consumers' brand loyalty has become ever more fragile. Networks, as a transparent and open information space, give users a richer brand choice. Such changes make it easy to transfer the desire for continual use or purchase. For this reason, establishing and maintaining brand loyalty in the network environment has become a serious problem that must be addressed by management. [1].

2. Literature Review

At present, there is no unified definition of mobile music applications in the industry. Service provider (SP) mainly refers directly to those businesses that provide digital music services to users. Online music market service providers include major digital music sites, such as Xiami, a music network, which offers a service platform where providers integrate music content and orient artists (as original content creators) to issue and sell their digital music. In the mobile music market, value-added service providers include Network-based players such as QQ Music, Kugou Music, Xiami Music, NetEase Cloud Music, which provide users with diverse digital music experiences. User experience elements, from the perspective of a website designer, include such dimensions as user experience strategy, scope, structure, skeleton, and surface.

2.1 Richness of Music Contents

In the context of web design, contents have been identified as the most important characteristic contributor to the loyalty of web sites and as one of the key reasons that users repeat to use a site (Lohse and Spiller 1998, Nielsen 1999, Ranganathan and Ganapathy 2002)

[2, 3, 4]. Agarwal and Venkatesh found that content was weighted as the most important MUG (Microsoft Usability Guidelines) category contributing to loyalty of web sites across multiple industries both among customers and investors [5, 6].

Lohse and Spiller suggest that the availability of relevant content is one of the key reasons for a user's return to a web site. In the context of mobile sites, the ability to locate relevant content quickly has been identified as the single most important factor in mobile service use (Lohse and Spiller 1998, Ballard and Miller 2001) [2, 7].

2.2 Music App Design Quality

User interface design is an essential element in Web application development. Design quality of a web site has been a subject of extensive study. Kaikkonen and Ruto found that users of mobile phones preferred a flatter hierarchy to a deeper hierarchy, and tended to make extensive use of keyword search despite the input limitations of the devices [8].

A brand is helpful in maintaining customer loyalty and the long-term operation of a company. High service quality will increase customer satisfaction and make the users more willing to recommend the website to other people and generate the effect of public praise marketing [9, 10, 11].

2.3 Music App Functionality

The decision-making process of online shopping will affect the complicity of shopping behavior. Therefore, good recommendation function will help consumers to make decisions. The most popular supporting search functions of online music stores are songs or music ranking, album category, and the introduction of the album or singer, and real time recommendations [12]. For a music search system, the music content buyers can also get indirect benefits by getting segmented ranking slots that may reduce search costs [14].

2.4 Promotion

A well-planned trial and service promotion can attract more users. In addition, in relation to membership activity & discounts, a better member discount program and member activities can enhance the loyalty of members [15, 16].

2.5 Loyalty

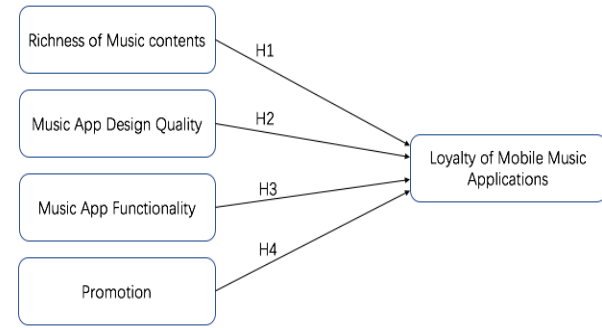
Because of the growing importance of Internet services, several researchers have attempted to find ways to improve website fidelity and increase consumer's intention to buy (Abbott, Chiang et al. 2000)

[17]. Jacoby and Chestnut (1978) explore the meaning of loyalty by distinguishing the psychological loyalty from behavioral loyalty. However, it is not enough to explain loyalty only by the theory of attitude or behavioral loyalty. Oliver subsequently defines brand loyalty as "a consumer's deep commitment to the brand that will

continue to re-purchase or re-visit the product or service in the future) [18]"..

Following Oliver's view this research accepts that loyalty includes both behavioral loyalty and attitude loyalty, that is, customers' preference of products, their behavior of continued use, and intention to promote purchase via word of mouth.

3. Research Model and Hypothesis



Hypothesis

H1: Richness of Music Contents has positive effects on Loyalty of Mobile Music Applications

H2: Music App Design Quality has positive effects on Loyalty of Mobile Music Applications

H3: Music App Functionality has positive effects on Loyalty of Mobile Music Applications

H4: Promotion has positive effects on Loyalty of Mobile Music Applications

4. Method and Results

The questionnaire was designed with two major categories of five variables, in which four variables measure the attractiveness index as the independent variables and the measurement of the loyalty as the dependent variable and measured by the five-point Likert scale. From 1 to 5 points, respectively, are strongly disagree, disagree, indifferent, agree, and strongly agree.

4.1 Data Collection

Questionnaires were issued on May 6, 2017 through online questionnaire survey (<https://www.sojump.com/>)

. Respondents are undergraduate students and aged 19~24 years old from Henan Polytechnic University and Henan Institute of Technology in Henan province, China. Usable sample size was 370.

4.2 Data Analysis

Sample characteristics

Gender distribution: As can be seen from Table 1 and Figure 1, there are 218 male samples and 152 female samples. The number of female samples is lower than that of male samples, accounting for 41.1% of the total number of samples.

Table 1

		Gender			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	218	58.9	58.9	58.9
	Female	152	41.1	41.1	100.0
	Total	370	100.0	100.0	

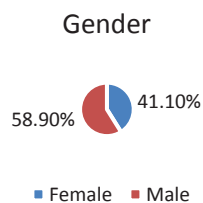


Figure 1

Distribution of the most frequently used mobile music APP: In terms of the frequency of the use of music App, the rank of the use of applications sites are as follows: from largest to smallest share, QQ Music, NetEase Cloud Music, Kugou Music, Kuwo Music, and Xiami Music.

Table 2

		MusicApp			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	QQ Music	116	31.4	31.4	31.4
	NetEase Cloud Music	107	28.9	28.9	60.3
	Kugou	91	24.6	24.6	84.9
	Kuwo	28	7.6	7.6	92.4
	Xiami Music	15	4.1	4.1	96.5
	Others	12	3.2	3.2	99.7
	Apple Music	1	.3	.3	100.0
	Total	370	100.0	100.0	

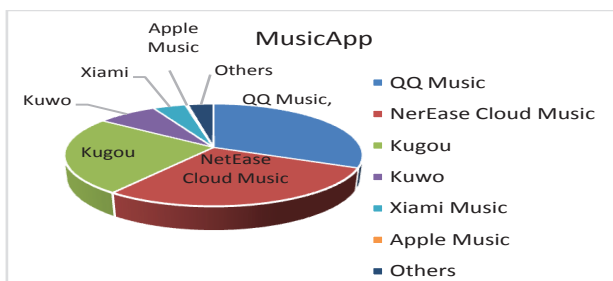


Figure 2

Distribution of duration of use: The median duration of use of the respondents is 1 year to 3 years, the number of samples is 113, accounting for 30.54% of the total sample, followed by 6-12 months, 98 users accounting for 26.49%. The number of users of more than 3 years of use is 88, accounting for 23.78%. The results are shown in Figure 3.

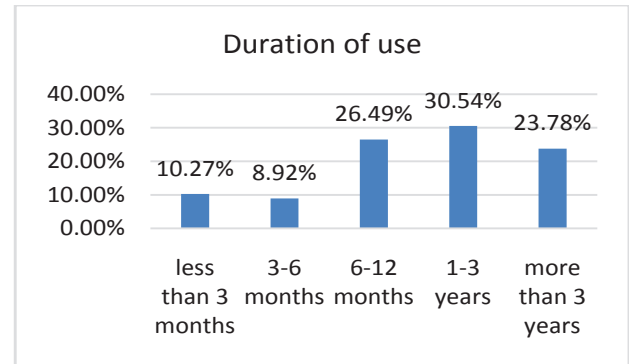


Figure 3

Distribution of amount of daily use: For the average daily use time of the respondents from 1 hour to 2 hours, the number of samples is 166, accounting for 44.86% of the total sample, followed by 2-3 hours, the number of samples was 105, accounting for 28.38%. The number of samples per day for more than 2 hours is only 15, accounting for 4.05%. The results are shown in Figure 4.

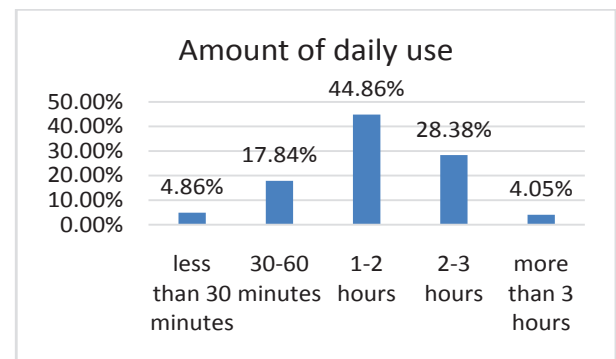


Figure 4

In terms of the frequency of mobile music APP usage per day, the median was 3 times (156 samples, accounting for 42.2% of the total number of samples). It's not hard to see that most of respondents use mobile music APP more than one time a day. The results are shown in Figure 5.

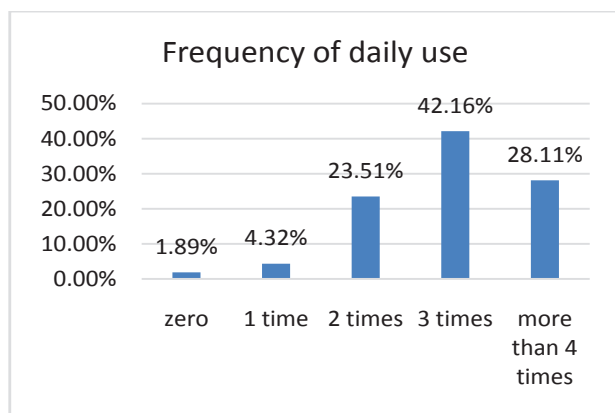


Figure 5

Factor analysis

Table 4 is a summary of the result of factor analysis of the attractiveness and loyalty of mobile music applications. L2, L3, L5, L6 are items of Loyalty of mobile music APP. R1, R2, R4 are items of richness of music contents. D1, D2, D3 are items of mobile music design quality. F4, F5 are items of mobile music functionality. P1, P2, P3 are items of promotion.

Table 4

	Component				
	1	2	3	4	5
L3	0.813	0.285	0.169	0.208	0.146
L2	0.799	0.205	0.108	0.255	0.197
L6	0.706	0.355	0.106	0.237	0.204
L5	0.697	0.472	0.129	0.226	0.133
D2	0.373	0.784	0.179	0.179	0.220
D3	0.382	0.739	0.169	0.306	0.155
D1	0.454	0.703	0.159	0.309	0.209
P3	0.136	0.070	0.837	0.210	0.038
P2	0.126	0.235	0.833	0.067	0.136
P1	0.075	0.071	0.778	0.181	0.424
R1	0.321	0.255	0.252	0.799	0.188
R2	0.434	0.290	0.264	0.690	0.203
R4	0.296	0.510	0.196	0.615	0.256
F5	0.288	0.224	0.377	0.194	0.748
F4	0.326	0.376	0.231	0.320	0.662

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Reliability Analysis

The Cronbach's alpha values for the Loyalty scale is 0.904, Richness is 0.910, Design Quality is 0.921, Functionality is 0.834 and Promotion is 0.839. It's indicating that the entire scale had a very high internal consistency and that the data had a very high reliability. At the same time, the CITC (the total correlation of the corrected items)

of each item is more than 0.5, which indicates that the questionnaire has high reliability and conforms to the accepted reliability test standard. The results are shown in Table 5.

Table 5

	Cronbach's Alpha	N of items
Loyalty	.904	4
Richness	.910	3
Design Quality	.921	3
Functionality	.834	2
Promotion	.839	3

Correlation Analysis

It can be seen from Table 6 that 3 factors of correlation coefficient between attractiveness and loyalty is greater than 0.7 and the significance level is above 0.01, indicating that 3 factors are significantly correlated with loyalty and have a very large positive impact on loyalty of mobile music application.

Based on above results, H1, H2, H3 are supported, while H4 suggesting promotion has positive effects on Loyalty of Mobile Music Applications is not supported.

Table 6

		Richness	DesignQuality	Functionality	Promotion	Loyalty
Richness	Pearson Correlation	1	.776**	.784**	.532**	.751**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	370	370	370	370	370
DesignQuality	Pearson Correlation	.776**	1	.831**	.437**	.805**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	370	370	370	370	370
Functionality	Pearson Correlation	.784**	.831**	1	.591**	.769**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	370	370	370	370	370
Promotion	Pearson Correlation	.532**	.437**	.591**	1	.391**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	370	370	370	370	370
Loyalty	Pearson Correlation	.751**	.805**	.769**	.391**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	370	370	370	370	370

** . Correlation is significant at the 0.01 level (2-tailed).

Regression Analysis

From table 7, we can find that R (multivariate correlation coefficient) of the four independent variables and loyalty variables is 0.839, R-squared is 0.705, which means that the four variables can explain 70.5% of the loyalty variables Variance. The normalized regression coefficients of the three independent variables are positive numbers, indicating that the influence of the three factors on loyalty

is positive and the hypothesis 1,2,3 are proved to be accepted again.

Table 7

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			
						F Change	df1	df2	Sig. F Change
1	.839 ^a	.705	.702	.462	.705	217.798	4	365	.000

a. Predictors: (Constant), Promotion, DesignQuality, Richness, Functionality

Table 8

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	.435	.116		3.765
	Richness	.242	.046	.267	5.325
	DesignQuality	.396	.054	.412	7.373
	Functionality	.271	.060	.272	4.532
	Promotion	-.076	.030	-.092	2.541

a. Dependent Variable: Loyalty

5. Conclusions

Application attractiveness have significant impact on loyalty of mobile music applications. The results show that there is a positive correlation between loyalty and three application attractiveness dimensions: richness of music contents, music app design quality and music app functionality.

5.1 Practical Implications

In any industry, the development of new markets, and access to new users is often expensive. However, if users maintain brand loyalty, then the costs can be greatly reduced. Brand loyalty is the core component of brand equity, which can reduce marketing costs, create trading leverage, attract new users and compete for business to win time. High quality music enjoyment, friendly and comfortable visual presentation, easy to use interface, vast online library resources are the suggested dimensions that will lead user's desire to remain as a loyal user and prevent transfer to different sites.

With the music APP market gradually maturing, the future of mobile music application competition will change from focusing on user experience to focusing on copyright and content dispute. At the beginning of this contest, QQ Music seems to have occupied the best position. Earlier this year, NetEase Cloud music got banned by QQ music, music on this application cannot be shared to the QQ space and WeChat friends. At the same time QQ music and South Korea's top entertainment companies: YG Entertainment, etc. are cooperating so that many exclusive music resources were seized first by QQ. The current giant is approaching a grim situation: the other digital music service providers are identifying their own advantages and disadvantages, clearing their own

products and brand positioning, and are finding flexible ways to deal with challenges to secure their own loyal customer base.

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Challenges and Measures of Competitive Development of Nepalese Tourism Sector

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Abstract

Nepal, a landlocked country in southern Asia is a country of diverse natural existence. However, even with its diverse and rich natural heritages and offerings, the tourism sector in this country hasn't seen what it is actually capable of achieving. We have tried, by the means of research, to explore the major causes or challenges in the field of Nepalese tourism and the possible measures of competitive development of Nepalese Tourism Sector. We have listed some major challenges which we found to be most prominent in the tourism sector of Nepal. Similarly, with direct unstructured interviews and secondary data review, we have suggested some measures and ways with which the challenges can be overcome and competitive development of Nepalese Tourism Sector can be done.

Keywords Tourism, competitive advantage, tourism products, measures, Nepal

Introduction

The federal democratic republic of Nepal, a country of uncountable wonders and unending adventures. Placed between the two mega power neighbors India and China, Nepal has a naturally gifted placement for tourist inflow. Further, the natural beauty of Nepal adds to its capability to attract more tourists. However, Nepal is not short of challenges. The ten-year long armed conflict and constant shift of power have proven to be costly. The instability of political environment coupled with snail paced development of basic infrastructures has made it even harder for the tourism sector to flourish.

Tourism has been one of the most contributing element of national development in Nepal. According to World Travel and Tourism Council, the direct contribution of Nepal's travel and tourism to its Gross Domestic Product (GDP) stood at 4%. Nepal has been crowned 'Best Value Destination' and ranked fifth in the top 10 countries in the world to visit in 2017, according to Lonely Planet's annual Best in Travel list.

The Nepalese government's efforts for promoting tourism in Nepal are commendable too. Visit Nepal Year 1998, Destination Nepal initiative of 2002/03, Visit Pokhara Year 2003, Nepal Tourism Year 2011, and Visit Lumbini

Year 2012, all have had an incremental effect on the flow of tourists. According to latest 'Economic Survey' of Nepal, the total tourist arrival during the year 2016 was 753,002. Of the total arrival, major arrival was from India, comprising of 15.7%, followed by China (13.8%), Sri Lanka (7.6%), United States (7%), United Kingdom (6.1%) and other countries (49.8%). Additionally, of the total tourist inflow, 65% of the tourist visited Nepal for vacation, entertainment or travel. To put into perspective how much tourism actually affects the economy of Nepal, in the first eight months of Nepali fiscal year (16 July 2016 to 13 March 2017) the total foreign currency earning from tourism sector was approximately Nepali Rupees 36.19 billion. The increment in the number of tourists visiting Nepal during 2016 was 40%. Similarly, the same publication also provided an estimation that the average stay of tourist in 2016 was 13.4 days.

Nepal boasts a wide variety of flora and fauna coupled with the diverse weather. In addition, the rich culture, shrines, cultural heritages, temples, monasteries, and other natural or human made wonders are assets to Nepal. They act as natural enticers to travelers, explorers, and other visitors from all around the world. The eight of the world's ten highest peaks stand majestically here. The natural beauty of Nepal is the outcome of its outstanding placement in

the right climatic region. This gives Nepal richness of nature and abundance of various flora and fauna.

To add to the gifted geographical disparity of Nepal, there is the exuberant cultural diversity in its population. Throughout the country, the local population boasts a wide variety of culture. The manifestation of such culture is done through music, dance, art, craft, folklore, wooden and iron sculptors, festivities, celebrations, food and drinks exclusive to that individual culture and ethnicities. Such abundance of cultural diversity, naturally occurring panoramas, diverse flora and fauna allures tourists, and explorers from all around the world.

Review of Literature

In order to increase the competitiveness of tourism, a number of factors are considered to be important. Among the various factors some of the most important ones, that have been considered by ASEAN Tourism Strategic Plan 2016-2025 are marketing, product development, investments, quality tourism, human resource development, connectivity, infrastructure and travel facilitation[1](ASEAN Tourism Strategic Plan 2016-2025, 2015)

:capabilities to increase the tourism incomes, capabilities of the constant attraction of tourists, providing pleasure and experience/adventure to cherish, profitability, ensuring life quality for locals and natural environment protection.[2]

As per the World Economic Forum's, Travel and Tourism Competitiveness Report 2017,[3] which ranks countries on the basis of various indicators related to travel and tourism sector, Nepal has been ranked 103rd among 136 countries(Forum, 2017).

The following ratings from the report depict a clear picture of the status of challenges and the possible competitiveness in the tourism sector in Nepal.

Ranked 124th for Tourist service infrastructure, ranked 19th on price, competitiveness, Ranked 105th for Air Transport Infrastructure, Ranked 51st for Prioritization of Travel and Tourism, Ranked 87th for International Openness, Ranked 27th for Natural Resources, Ranked 108th for Business Environment, Ranked 117th for Cultural resources and business travel, Ranked 126th for environmental sustainability, Ranked 85th for Health and Hygiene, Ranked 100th for Safety and Security, Ranked 135th for Ground and Port Infrastructure, Ranked 124th for ICT Readiness

With the review of the above articles and their arguments, we try to portray a clear picture of the challenges prevalent in the Nepalese Tourism Sector and the possible competitive measures to overcome the challenges.

The major challenges seen in the tourism sector of Nepal from the review of various articles and observation are:

Internal Conflict inside the nation, lack of infrastructure in the tourism sector, lack of tourist captivating activities, lack of information, lack of sense of security to tourists

To overcome these challenges, the major competitive areas to be focused on are: Marketing, product development, investments, quality tourism, human resource development, connectivity and infrastructure and travel facilitation

Objective

The objective of the study is to analyze the possible measures that can be taken to gain a competitive advantage in order to overcome such challenges. Further, this article takes into consideration some major issues which have posed a special challenge in the development of the tourism sector. On the basis of the challenges, the article then tries to suggest measures of competitive advantages for the development of the Nepalese Tourism Sector, which may be able to help the tourism sector in Nepal overcome the challenges.

Methodology

While undertaking this study both secondary and primary data were used. Documents and publications from various government and non-government sources relating to tourism sector were collected. Similarly, for the primary sources, convenience interviews were conducted by the

Authors. The subject of the interview were individuals directly or indirectly related to the tourism sector of Nepal, scholars, and experts who have been involved in the tourism sector. However, this research paper is majorly supported by secondary data.

Discussion

With the major political ups and downs in the nation, Nepal has seen and been through a lot. There have been times when this nation has been ground to a startling halt by many things. The most recent one being the undeclared blockade of goods from India into Nepal. Similarly, the political situation in Nepal has proved to be a thorn in the foot of the nation itself. The political instability has had its toll on the nation's development as a whole as well as in fostering the tourism sector.

In the literature review section, we identified the major challenges faced by the Nepalese Tourism Sector. These challenges do not represent an exhaustive list of all the obstacles that are prevalent. We have focused on the major problems that are existing in Nepal and causing the biggest hindrance to the Tourism Sector development.

- Internal Conflict in the Nation

Various events in the nation have attracted unwanted conflicts over the years. The most significant event being the Nepalese Civil war. The Nepalese Civil War was an armed conflict that stretched for 10 years from 1996 to 2006. This not only caused casualties tolling at 17,800 but also tore the nation in half. And, created a situation where tourism sector would suffer for years to come. Visitors and travelers still have the presumption that Nepal as a destination is not safe. It was ranked 100 out of 136 countries in terms of safety and security by the World Economic Forum's, Travel and Tourism Competitiveness Report 2017. In addition, the insecurity can be directly or indirectly linked to the non-stable government and policies.

- Lack of infrastructure in tourism sector

Nepal has come a long way from the days of conflict and conservatism. However, the snail paced development still poses a great challenge to the tourism sector as a whole. One of the major sources of tourist arrival in Nepal is by airway. In fact, around 75% of tourists arrive in Nepal via airway. But Nepal has been ranked 105th for Air Transport Infrastructure and 135th for Ground and Port infrastructure. Not just airport but other various basic infrastructures that foster tourism and vitalise the basic tourist flow by promising them with the amenities they require.

- Lack of tourist captivating activities

Apart from the mesmerizing panorama of mountains, the abundance of wildlife, and other naturally occurring attractions, Nepal doesn't boast other tourist captivating engagements. In fact, Nepal has yet to build such attractions. There are still many possibilities for building major attractions in Nepal. These attractions may include themed entertainment parks like the ones Disney builds or health institutions. These will help to attract more tourists. It shall create such an environment which will then attract other kinds of tourists like business tourists, health tourists, or even cultural tourists.

- Lack of information

Another major issue has been the lack of information outside and inside the nation. For the tourists to flow into the country, there has to be enough information about Nepal to them first. They have to have the knowledge about existence, and possibilities of Nepal. They need the information about this country. Additionally, the tourist already visiting Nepal are also is a severe lack of information during their visits. They aren't provided with

enough information and proper information centers are non-existent too. This not only shortens their stay length but also makes them feel hectic about the Nation.

- Lack of sense of security to tourists

Another major challenge that Nepali Tourism Sector is facing is the sense of security that tourist wants and need for being able to visit and explore a nation easily. With random interviews with some few foreigner visiting Nepal, we actually found out that they didn't feel very secure while they visited Nepal. The streets with unsafe vehicles, the issue with drinking water when they traveled on foot were some of the many issues they shared.

The major competitive areas to focus on for developing the Nepalese Tourism Sectors are as discussed as follows:

- Marketing 'Nepal'

Nepal needs to be marketed more. It needs to be posed as a nation of wonders with unbounded possibilities. Nepal needs to be promoted for business tourism, health tourism and other diverse areas of tourism. A premium image can be established in the eyes of the world so that tourist of all segments view Nepal as a destination.

- Product development

In addition to the existing natural beauty along with the flora and fauna, newer products should be developed which is in line with creating more inflow of foreigners. Development of new products generally helps in revitalizing the market potential and creating new opportunities.

- Investments

Another important measure to gain a competitive advantage is to increase investment in the tourism sector. With enough funds being pumped into the sector, the sector can see growth. Similarly, it can minimize the constraints of infrastructure development.

- Human resource development

Similarly, Nepal has to focus on the development of human resources that are engaged in the tourism sector. With the development of the human resource involved in the sector, the sector can see radical changes and modernization...

- connectivity and information

Another measure is to remain connected with the whole world. Nepal has to remain connected with the help of

modern technology. It will not only help maintain the image of Nepal but also make the prospective number of tourists larger.

- Easier Travel

Similarly, if easier access to Nepal is provided, then people can be allured to visit Nepal with low cost and easier reachability. Traveling to Nepal should be made easier. International transportation reach should be made easier with the introduction of easier connectivity of air routes and flight paths. Similarly, the connectivity with the bordering nation via roads should be intensified so that the tourist coming in from the road route can have easier access to Nepal.

Conclusion

The theoretical contribution of this paper is to explain what the challenges are and what the possible competitive measures of tourism in Nepal are. In the above discussion, we have seen that the factors considered important by ASEAN's Tourism Strategic Plan 2016-2025 can actually be taken as a base and can actually be used as the competitive measure for overcoming the challenges in the tourism sector of Nepal. Additionally, the economic, socio-political and cognitive factors play important roles in the adaptation of such factors to gain

a competitive advantage over the challenges in the context of the developing world like Nepal. There definitely exists challenges. However, these challenges can be overcome by the measures of competitive developments. The competitive measures involve marketing, product development, investments, quality tourism, human resource development, connectivity, infrastructure and travel facilitation.

Clearly, there is much to be learned about tourism in a country like Nepal. There are thus a number of avenues for tourism in Nepal.

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Can Augmented Technology Enhance CSR / Sustainability Reporting?

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Abstract

The everyday use of augmented technology has grown in importance in many industries, including education and entertainment. However, the use of such technology in business for data communication, especially social and environmental information, is still limited. With the potential to enhance the viewing and understanding of content and images related to CSR data, this study investigates the twofold application of this technology in CSR data presentation: first, to study how the use of such technology would help in communicating information more efficiently and effectively; whether it helps the reader analyze the data more quickly and more accurately, when compared to using traditional EXCEL based presentation methods? Second, to assess the feasibility of its adoption based on the acceptance and benefit of this application from the readers' point of view. Convenience samples of thirty students were used and data were collected through self-assessed questionnaires. The results show that in the use of augmented technology as an alternative visualization for CSR data analysis, although the time spent in analysis does not decrease, the accuracy of the analysis is greater when compared to using traditional presentation techniques. In addition, the overall usability score is above average, thereby demonstrating the opportunities to implement this technology from the point of view of the subjects.

Keywords Corporate Social Responsibility, CSR, CSR Report, CSR presentation, Company Analysis, Industry Comparisons, Augmented Reality, Learning Usability

Introduction

The concept of Corporate Social Responsibility (CSR) is widely accepted. Considering legitimacy (The Legitimacy Theory), the organization has to take some responsibility for the society and the environment. Because the right to take advantage of natural resources as well as human resources come from society, the organization, thus, should meet the expectations of society as a whole. The society will always monitor the organization. So, if the organization wants to progress and survive, it must meet the expectations of society. This is consistent with the concept of Stakeholder Theory, which suggests that the organization can exist and how much progress it makes depends on the satisfaction of all stakeholders of the organization, whether they be shareholders, customers, employees, competitors, government or the community. The organization must be responsive to all stakeholders, including the community, society or public (Public Responsibility). In addition, just like a citizen or a resident, an organization is a unit of society as well. Consequently, an organization should also play a good civic role—same as that expected of a citizen—in the state as well.

No matter how one looks at it, all organizations need to focus on CSR. Moreover, an organization's CSR focus results in its social acceptance, which puts it in an advantageous position compared to organizations that do not engage in CSR activities. Customers prefer products or services from organizations that emphasize social and environmental aspects to those from companies that care less about such CSR related concerns. Investors prefer organizations that value CSR compared to organizations that do not [18]; this result is a drop in the cost of funding for organizations that focus on CSR [10]. Moreover, knowledgeable employees will be more interested in working for organizations that put more effort into CSR than those that do less to address CSR, thereby helping CSR-focused organizations retain employees that are more qualified. In addition, corporate CSR helps an organization gain more trust from the public. This, in turn, will result in less social resistance. As a result, the risk of damage due to the bad reputation declines [19]. Evidences of these relationships point to the importance of CSR as creating value for organizations, supporting organizations to realize good performance and survive in a globally competitive marketplace [20].

Although CSR is important to the valuation of an organization, it is not the same as financial performance; financial information can be obtained from financial statements prepared in accordance with International Financial Reporting Standard (IFRS) that prescribe standard formats for such reports. Because every organization uses the same standard for financial reporting, it is possible for readers to understand, analyze, and compare financial performance of each company without wasting much time. In contrast to financial reporting, without mandatory international standards for reporting, CSR disclosure may be prepared and presented in a format developed by the organization itself or based on prescribed CSR reporting guidelines, such as The Global Reporting Initiative (GRI) Sustainability Reporting Framework defined by the Initiative for Social Responsibility; Integrated Reporting Framework defined by the International Council on Reporting (IIRC); Guidelines of The Organization for Economic Cooperation and Development: OECD; or The Ten Principles of the UN Global Compact.

Having a variety of practices, there are several report formats for CSR information. A multiplicity of reporting styles makes it difficult to understand and compare, specifically for those who lack experience in analyzing this field. Hence, CSR reports may remain only picture and text on paper. However, the study of the information contained in CSR report indicates the need for quantitative and financial data on organizations' CSR. The ability of new technology to convey an imagined concept, making the difficult easy, to understand information using visualization technology in presentations—in this case the augmented reality visuals developed for this research with actual CSR data, called the CSR-AR hereafter—may help readers better understand and analyze CSR data, when compared to doing so using conventional EXCEL spreadsheet based presentations with mere numbers and two-dimensional graphs.

The everyday use of augmented technology has grown in importance in many industries, including education and entertainment. However, the use of such technology in business for data communication, especially social and environmental information, is still limited. With the potential to enhance the viewing and understanding of content and images related to CSR data, this study investigates the twofold application of this technology in CSR data presentation: First, to study how the use of such technology would help in communicating information more efficiently and effectively; whether it helps the reader analyze the data more quickly and more accurately, when compared to using traditional EXCEL based presentation methods? Second, to assess the feasibility of its adoption based on the acceptance and benefit of this application from the readers' point of view.

It is hoped that users will be able to assess and understand CSR information more effectively and efficiently as well as discover these pioneering visual – CSR-AR, useful in carrying out CSR information analysis.

CSR Reports and Value of the Organization

In the past, corporate tangible assets represented in the financial statements were a key element in creating value for an organization, with 83% of corporate value coming from tangible assets held by the organization. However, recently, value creation for an organization has become an intangible asset for the organization, with 40% of the value of the organization coming from intangible assets that the organization possesses (Thaipat Institute, 2013, <http://www.thaicr.com/2014/03/creating-shared-value-csv.html>).

The information the organization provides to the public should reflect the value of intangible assets that the organization has, such as the advantage it has from CSR spending in order for stakeholders to clearly and predictively understand how these intangible assets can generate value to the organization. This will lead to accurate decisions that have to be made with respect to the organization and its services. Organizations need to focus on providing additional information beyond the financial statements required by the regulator. By providing information about CSR operations, an organization would provide additional information that has significant impact on the corporate valuation assessed by the readers, beyond the financial information in the financial statements of the organization reported in accordance with generally accepted accounting standards [2].

To enable the relevant stakeholders to properly recognize and evaluate the organization and to respond to the needs of society and various stakeholder groups which need such information to monitor and evaluate organizations, in addition to providing public information about financial performance, in countries such as France, England, Denmark, the Netherlands, Spain, South Africa and India, listed companies must also disclose information about CSR. Most organizations which report CSR will disclose CSR information by way of either including in the annual report or separately listing in the CSR or sustainability report. Mostly, the CSR report is based on two internationally recognized CSR frameworks: 1) the Sustainability Reporting Framework defined by the Initiative for Social Responsibility The Global Reporting Initiative (GRI), and 2) Integrated Reporting Framework defined by the International Council on Reporting (IIRC)

Recent studies have found supportive factors and impediments to the reporting of CSR, which is also known as the Sustainable Development Report. Examples of these factors are good reputation at the international

level [11], long-term relationships with shareholders and other stakeholders [26], reliability from transparency, raising of employee morale because of their working with a sustainable organization [17] and the increase in profitability [13]. All these factors encourage organizations to produce CSR reports. However, the main obstacle to the preparation of this report is found to be the lack of a manual for preparation and the difficulty in selecting a variety of standards for practices [1] [15].

Although there is a widely accepted framework that can be used as a guide to present information about CSR, in contrast to International Financial Reporting Standards (IFRS) required for preparing financial statements, all frameworks for CSR reporting are not mandatory in themselves and mainly provide only guidance that needs interpretation in practice. The GRI and the IIRC define a framework in a way that does not specify a specific approach, but giving a principle to be considered as a guide to the presentation of information rather than as a detailed rule that must be followed. Because none of these frameworks are the standard, CSR reports are various and most are presented narratively as text and pictures or two-dimensional charts. Such kind of presentation results in time consuming effort in understanding and analyzing these data, specifically, comparing such information related to different entities [16].

Application of Augmented Reality technology and Corporate Social Responsibility reporting.

The changing environment has resulted in the content of the reports, which are the key medium for the organization's information nowadays, becoming dynamic. Social and environmental issues are of greater interest. Other than financial statements, there is a significant increase in the need for quantitative information and financial figures on corporate social and environmental responsibility. The scope of the information should be broadened with sufficient details for easy comprehension.

To be able to present more and more information and to allow users to spend less time understanding, linking, reviewing, and comparing each organization, technology should play a greater role in presenting corporate reports. Technology should help convey imagination, to make the difficult easy, to perceive and understand complex information through various methods. Information can be presented in a variety of styles. The use of Augmented Reality Technology allows users to control and access information as needed. By utilizing the enhanced technology, the readers will be able to have a better understanding of the content and images of the CSR reports.

Visual and Cognitive Learning with Augmented Reality (AR)

Previous research indicated the relationship between the type of work performed and the effectiveness of a specific information presentation [4] [5] [8] [27]. Study on information presentations and decision-making performance has been mainly dedicated to the differences between the use of graphs and tables. The results from prior research suggest that the decision task and the forms of presentation of the information have affected performance interactively. However, there is no one type of presentation that was found to be superior in all situations. Studies suggested that an information presentation that may be appropriate under one set of environmental conditions might not be appropriate under another set of conditions. Studies on the selection of the right presentation technique corresponding to a specific decision work are not reliable [21].

The augmented reality has evolved from the prehistoric era of painting to the stereoscope era and evolved into a new era of virtual reality. It is seen as a presentation of the realities of the world. The influence of augmented reality on recognition is based on the perception and understanding system of each one. The augmented reality programs are designed to be convenient for users. The visualization creates personal thought space that affects the thought process. The augmented reality media is very influential today. It is a technology that helps in communication in order to expand human perception. Comparison techniques are used by creating a virtual world on the computer to allow users to imagine almost anything, such as people, society, and environment. For example, CSR-AR has modeled corporate images, where users can view links to help remember information such as the amount of energy each employee uses. With CSR-AR, users would be able to easily recognize and imagine information about corporate CSR.

AR visualization allows users to rotate images in 3D space, enabling them to see more details. Previous studies found that, compared to tables of numbers and graphs in EXCEL, AR visuals are appealing, useful, and acceptable. Nevertheless, those AR visuals will not enhance the learning outcome or reduce the user's cognitive load. Users spend more time with AR visuals than 2D graphs and tables. Novice users, however, were able to evaluate financial performance of a firm like the experts because of their ease of use. Experts, in contrast, were found to have used more time analyzing the details when presented with numbers in a spreadsheet table.

While there are studies on the use of AR visuals to assist in the assessment of financial information of a business, there are no studies directly related to the

use of AR visuals to evaluate the CSR information of abusiness[23] [24]. The design of CSR-AR visuals helps presentCSR information of each business in the industry simultaneously. Therefore, the objective of this study is to examine whether by utilizing CSR-AR, users would be able to analyze the CSR data better than using tables of numbers and graphs in EXCEL and whether they find CSR-VR visuals to be beneficial.

With the advances in technology, the use of augmented reality is being increasingly applied in many industries. Past studies have found it useful for classroom learning such as audit classes, and analyzing complex data such as bank data [22] [3]. Given the potential to enhance the viewing and understanding of the content and imaging of CSR information, this study, therefore, aims to investigate the benefit of this technology for data communication in abusiness by considering whether a presentation using such technology is more efficient and effective, when compared to a conventional EXCEL presentation.

For the purpose of this study, following the Bertin Theory (1983) [6], the efficiency of an information presentation was measured by the time taken to answer a question. Moreover, the effectiveness of an information presentation was measured by the accuracy of the answers for a given information presentation, as suggested by Lusk (cited in Davis 1989: p. 497) [9].

H1: The Amount of Time Taken to Answer Questions in the Augmented Reality Presentation will be less than the amount of time taken to answer Questions in a traditional-EXCEL presentation.

H2: The accuracy of answers to questions in the Augmented Reality Presentation will be higher than the accuracy of answers to questions in a traditional-EXCEL presentation.

Furthermore, the usability of the Augmented Reality Presentation in analyzing CSR data is assessed using a SUS System Usability Scale, as suggested by Brooke [7]. Consistent with previous studies, it is expected that the subjects will find CSR-AR more acceptable and useful.

H3: The usability score of CSR-AR visual is above average.

Research Method

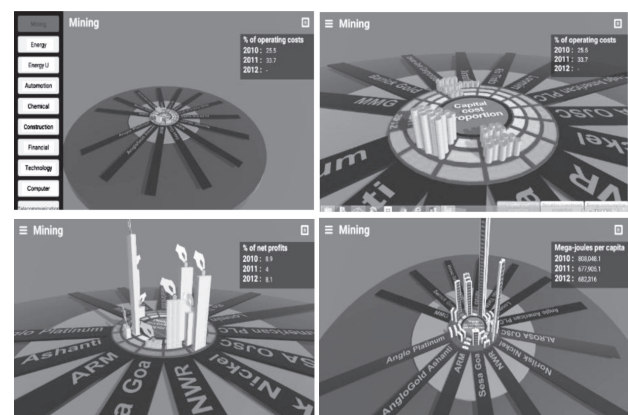
The within-subject experimental design was conducted using a group of thirty third-year students, in a medium public university, to test the hypotheses. These students volunteered to part in this study. They did not get any credit or extra-scores for participating in this study. Students were used in this experiment as surrogates for

the users of financial reports. According to Trotman (1996), students may be suitable surrogates where the research does not rely solely on prior learning and the task can be completed by the surrogates. The subjects were instructed to complete the questions at their own pace in a computer lab and no time limits were given [25]. The speed and accuracy of their responses to their questions were equally important. In the first part of the experiment, the subjects received the first set of questionnaires – Set A. Included in a Set A questionnaire is a one page EXCEL spreadsheet containing CSR information of sample firms and the first set of questions including demographic questions and five-item knowledge test of CSR analysis (so called “tradition-test”). The subject was asked to respond to the question using the presentation given at that time and indicate the start and finish time. Upon completing the first part of the experiment, the subjects spent three hours learning accounting before the start of the second part of the experiment. They were asked to use computers in the computer lab, to learn the use of the CSR-AR application, and were given the second set of questionnaires, Set B. Included in the Set B questionnaire was a five-item knowledge test of CSR analysis (so called “CSR-AR-test”), its perceived ease of use and its usefulness. The CSR-AR test questions were the same as the tradition-test questions, but the questions were reordered. The questions were validated by another professor who does research in the CSR area.

Research Instrument

In this research, time-series data of CSR disclosure from 2010-2012 of 57 European companies are used to construct augmented reality visuals for a basic CSR analysis (Figure 1).

Figure 1: CSR-AR



The data include three chemical companies, twelve construction companies, fifteen energy companies, ten financial institutions, three healthcare companies, and fourteen mining companies. Selected data including capital cost proportion, donation investment proportion

and energy consumption per employee are included as the quantifiable measures of CSR performance comparison among these companies.

Data collection tools were 2 sets of questionnaires, Set A and Set B.

The Set A questionnaire, which is for “tradition-test”, comprises two parts as follows:

Part A-I: General information of the respondents. It contains questions about the general information of the respondents, specifically, 8 questions concerning age, sex, education, and background experience on CSR report and augmented reality.

Part A-II: CSR performances analysis capability. A questionnaire to test the ability to analyze CSR information was presented in a typical EXCEL spreadsheet with numbers and two-dimensional graphs. This section contains 5 questions asking the respondents to compare and report the trends in CSR information. The respondents have indicated the time taken to complete this section.

The Set B questionnaire, which is for “CSR-AS-test,” comprises three parts as follows:

Part B-I: CSR performances analysis capability. A questionnaire to test the ability to analyze CSR information presented using Augmented Reality Technology by means of the CSR-AR Application. This section contains 5 questions, same as Part A-II, asking the respondents to compare and indicate trends in the CSR information and report the time taken to complete this section.

Part B-II: Cognition and perception toward the use of CSR-AR visual. This section contains 5 questions using 5-points Likert scale, asking respondents to give their views on the use of CSR-AR visual after playing with the CSR-AR application,

Part B-III: Usability of the CSR-AR. A questionnaire to test the adoption of Augmented Technology for CSR data presentation is adapted from the SUS-System Usability Scale (Brooke, 1996). This section contains 10 questions to measure the perceived usefulness of Augmented Technology in presenting CSR information as measured by a 5-level Likert scale: highest, high, moderate, little, and minimal in each question rating.

Results

Descriptive statistics of thirty participants are presented in Table 1.

Table 1: Descriptive Statistics

Question (N=30)	Mean (SD)
Ability to analyze CSR data using typical EXCEL-Set A	
E1. Amount of Time	0.1133 (0.01)
E2. Accuracy of Answer	4.56 (0.39)
Ability to analyze CSR data using CSR-AR – Set B	
A1. Amount of Time	0.1123 (0.01)
A2. Accuracy of Answer	4.87 (0.25)
Cognition/Perception toward CSR-AR	
C1. Clear Structure and Organization of Data	4.37 (0.67)
C2. Understand Meaning	3.90 (0.66)
C3. Enable Alternative Data Analysis Method	3.83 (0.83)
C4. Error Proneness of Data Analysis	3.00 (1.11)
C5. Time required, as Compared to EXCEL	2.80 (1.37)
SUS – System (CSR-AR) Usability Scale	
S1. Would use frequently	3.06 (0.73)
S2. Unnecessarily Complex	2.13 (1.07)
S3. Easy to use	3.23 (0.79)
S4. Need Technical Experts	1.13 (1.04)
S5. Well Integrated Function	3.36 (0.57)
S6. Inconsistency	1.93 (1.14)
S7. Learn to Use Quickly	3.17 (0.68)
S8. Cumbersome to Use	2.13 (1.22)
S9. Confident to use	2.91 (0.83)
S10. Difficult to learn	1.43 (1.25)
SUS100 Overall Score ¹	61.25* (10.63)

¹Based on Brook’ (1996) theory, the means score was calculated after reversal of S2, S4, S6, S8, and S10, which were negative measures; these scores were classified on a scale of 0-4 prior to multiplying the sum with 2.5 in order to arrive at the score out of 100.

*One-tailed test. Significant at the 0.05 significance level.

In terms of efficiency, the average time taken to answer the questions (SD) in the typical EXCEL presentation (or tradition-test) was 0.1133 (0.01). The mean score (SD) in the Augmented Reality Presentation (or CSR-AD-test) was 0.1123 (0.01). The t-test pair two samples for mean was performed to test H1 in Table 2. The amount of time taken to use augmented reality in presentation did not significantly drop from that taken to use a traditional presentation.

Table 2: The t-test pair two sample for mean. However, from the point of view of effectiveness, the results showed significant improvement. The average accuracy score (SD) in the typical EXCEL presentation (or tradition-test) was 4.56 (0.39). The mean score (SD) in the Augmented Reality Presentation (or CSR-AD-test) was 4.87 (0.35). The t-test pair two samples for mean in Table 3 indicate that the score for using augmented reality in a presentation is significantly more than that for using a traditional presentation.

	CSR-AR test		Tradition-test		t	p
	Mean	SD	Mean	SD		
AbilityAnalyze CSR data – Time Taken	0.1123	0.010	0.1133	0.011	0.03	0.48

Table 3: The t-test pair two sample for mean

	CSR-AR test		Tradition-test		t	p
	Mean	SD	Mean	SD		
Ability to Analyze CSR data - Accuracy	4.87	0.25	4.56	0.39	1.87	0.03*

*One-tailed test. Significant at the 0.05 significance level.

In terms of the ability to analyze CSR data, the respondents perceived CSR-AR as giving a clearer structure of the data (C1. Mean (SD) = 4.37(0.67)), thereby allowing them to better understand the meanings of the presented data (C2. Mean (SD) = 3.90 (0.66)) and therefore enabling them to use a different method of analysis—C3; Mean (SD) = 3.83(0.83)). However, they thought that the CSR-AR App might be somewhat prone to error (C4. Mean (SD) = 3.00(1.11)), and that it required almost the same amount of time required when using EXCEL (C2. Mean (SD) = 2.80 (1.37)).

With respect to the usability of CSR-AR, the highest score after transformation using Brook's formula was S5. Specifically, Well Integrated Functions (Mean (SD) = 3.36 (0.57)) and S3. Easy to use (Mean (SD) = 3.23 (0.79)), because the system is easy to use, like using games and can display data in multiple dimensions simultaneously. However, since the CSR data are complex, subjects feel the need for experts and experience a little difficulty in learning by themselves. Two lowest measures S4 Need a Technical Expert (Mean (SD) = 1.13 (1.04)) and S10 Difficult to Learn (Mean (SD) = 1.43 (1.25)). Overall, users evaluated the system as useful and acceptable, by scoring the system above average (Mean (SD) = 61.23 (10.63)) as shown in Table 1 above.

Discussion and Conclusion

Corporate Social Responsibility is important to corporate sustainability. Information about CSR is useful in evaluating organizations. How CSR information is presented affects the ability to use data to evaluate the organization. The report on corporate social responsibility in the current reporting framework is based mainly on two approaches, namely GRI Sustainability Reporting Framework and the Integrated Reporting Framework of the IIRC, which establish the principle of presenting the information but do not set the rules on how to implement specific practices or present results. A diversity of presentation styles makes it difficult for users to understand, link, check and compare the data of each organization. To enhance users' abilities to analyze CSR data more effectively and efficiently, technologies like augmented technology were adopted as alternative visualization techniques for CSR data

analysis, which allow comparison of CSR performance of various organizations. Additional Information is instantly accessible by clicking on the image or text, thereby helping users understand the relationship between various discrete data. This reduces errors in corporate assessment, supports the use of CSR data in decision making and promotes the value of CSR which in turn adds value to the organization.

Time-series data of CSR disclosure from 2010-2012 of 57 European companies were used to construct augmented reality visuals for basic CSR analysis and CSR-AR Visuals. The visuals were designed for ease of use for users in order to test 1) whether the presentations using augmented technology are more efficient and effective when compared to conventional EXCEL presentations to communicate CSR data, that is, would it help users analyze the data better than when using a traditional EXCEL presentation, and 2) whether augmented technology is acceptable and useful in the view of users.

The results show that although the time spent in analysis did not decrease, the accuracy in analysis increased. The subjects also recognized the usefulness of this augmented technology and found it to be acceptable as a tool in presenting CSR data. The opportunity to use this technology for data communication, especially CSR data of an organization, is promising. However, for this technology's practical use, future research should overcome its limitation by development of techniques which will ensure that less time is taken to access the data. Moreover, a more refined set of tasks for research subjects should be planned to ensure that the CSR-AR can reach its potential as a practical CSR visual analytical tool to conduct CSR performance analysis, or even as a tool to be used in teaching CSR to students.

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Design of Dynamic Information System in Smart Logistics using Internet of Things

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Abstract

In this paper, an overview of Internet of Things (IoT) and its impacts in the development of logistic systems of supply chains are given. One of the biggest trends poised to upend supply chain management is asset tracking. A way to totally overhaul the supply chain and logistics operations is to make better decisions for smart performance evaluation. Here, by the means of dynamic information systems, each significant functions of logistics system is modeled and adapted by IoT technical infrastructure with respect to data flow management of supply chain in multiple periods. First, the information systems are designed for each logistic components considering IoT and then, smart decision making is proposed for dynamic nature of real supply chain networks.

Keywords Smart logistics; Internet of thing (IoT); Dynamic information system; Asset tracking; Performance evaluation.

1. Introduction

The internet of things (IoT) is a network of objects equipped with radio frequency identification chips and similar technologies so that the objects could communicate and interact with each other. IoT represents the next evolution of the Internet, taking a huge leap in its ability to gather, analyze, and distribute data that we can turn into information, knowledge, and ultimately wisdom. IoT can also be referred as "Internet of Objects". IoT can be viewed as Networks of Networks as shown in Figure 1. In essence, IoT can be viewed as billions of connections that will encompass every aspect of our lives. One of the biggest trends poised to upend supply chain management is asset tracking, which gives companies a way to totally overhaul their supply chain and logistics operations by giving them the tools to make better decisions and save time and money. Delivery company DHL and tech giant Cisco estimated that IoT technologies such as asset tracking solutions could have an impact of more than \$1.9 trillion in the supply chain and logistics sector. And this transformation is already underway. A recent survey by GT Nexus and Capgemini found that 70% of retail and manufacturing companies have already started a digital transformation project in their supply chain and logistics operations.

The IoT presents unprecedented opportunities to digitally enable the supply chain, and to create solutions that combine digital and physical products and services.



Figure 1. IoT in SCM

IoT can transform supply chains in the following key areas:

- **IoTizing the warehouse.** By enabling IoT levers, warehouse managers can better track, trace, and move inventories, as well as prevent loss and damage. IoT allows integration between intra- and inter-logistics components, which reduces wait time and streamlines coordination between logistics providers and warehouse managers.
- **IoTizing inventory management.** IoT provides a multi-level true view that includes in-transit and

at-rest inventory across all echelons, allowing supply chain managers to have visibility of their entire inventory at any given point.

- **IoTizing logistics.** IoT platforms can marry GPS-based tracking with other transactional data to provide logistics and supply chain managers with a clear overview and insights that support tactical decisions. In addition, IoT can integrate forecast weather changes with route schedules at hyper-localized levels, allowing more responsive, granular scheduling and routing decisions. IoT also can help avoid losses while transporting perishables by continuously monitoring the health of the inventory and enabling precautionary steps.
- **IoTizing shop floor management.** IoT provides production status at workstations, helping shop floor managers determine how close they are to achieving target production schedules.
- **IoTizing new product development.** IoT provides sensors and device capabilities, as well as the platform to view product movement through the supply chain. Product development teams can leverage this data and analysis to improve supply chain efficiency.

IoT fills in the gaps and creates a seamless, predictable, and enormously more efficient supply stream.

In 1999, the Auto-ID (for Automatic Identification) Center is established at MIT. Sanjay Sarma, David Brock and Kevin Ashton turned RFID into a networking technology by linking objects to the Internet through the RFID tag.

In March 2002, Chana Schoenberger and Bruce Upbin publish “The Internet of Things” in Forbes. They quote Kevin Ashton of MIT’s Auto-ID Center: “We need an internet for things, a standardized way for computers to understand the real world.”

In January 2003, Bernard Traversat et al. publish “Project JXTA-C: Enabling a Web of Things” in HICSS ’03 Proceedings of the 36th Annual Hawaii International Conference on System Sciences. They write: “The open-source Project JXTA was initiated a year ago to specify a standard set of protocols for ad hoc, pervasive, peer-to-peer computing as a foundation of the upcoming Web of Things.”

In September 2004, G. Lawton writes in “Machine-to-machine technology gears up for growth” in Computer: “There are many more machines...in the world than people. And a growing number of machines are networked... M2M is based on the idea that a machine

has more value when it is networked and that the network becomes more valuable as more machines are connected.”

In 2004, Neil Gershenfeld, Raffi Krikorian and Danny Cohen write in “The Internet of Things” in Scientific American: “Giving everyday objects the ability to connect to a data network would have a range of benefits.... Many alternative standards currently compete to do just ...”

In October 2004, Robert Weisman writes in the Boston Globe: “The ultimate vision, hatched in university laboratories at MIT and Berkeley in the 1990s, is an ‘Internet of things’ linking tens of thousands of sensor mesh networks. They’ll monitor the cargo in shipping containers, the air ducts in hotels, the fish in refrigerated trucks, and the lighting and heating in homes and industrial plants...”

In 2005, a team of faculty members at the Interaction Design Institute Ivrea (IDII) in Ivrea, Italy, develops Arduino, a cheap and easy-to-use single-board microcontroller, for their students to use in developing interactive projects. Adrian McEwen and Hakim Cassamally in Designing the Internet of Things: “Combined with an extension of the wiring software environment, it made a huge impact on the world of physical computing.”

In November 2005, The International Telecommunications Union publishes the 7th in its series of reports on the Internet, titled “The Internet of Things.”

In June 22, 2009, Kevin Ashton writes in “That ‘Internet of Things’ Thing” in RFID Journal: “I could be wrong, but I’m fairly sure the phrase ‘Internet of Things’ started life as the title of a presentation I made at Procter & Gamble (P&G) in 1999.”

As mentioned the terms of “ubiquitous computing”, and “pervasive computing” were coined in the 1990s. The progress of both was limited by the fact that it was difficult and expensive to connect an object to a computer. A well-known prediction is that by 2020 there will be 50 billion Internet devices, up from 25 billion today (Nocerino et al., 2016)[1].

Smart logistics solutions have been developed in order to alleviate the adverse impacts of increasing goods’ transport in urban areas (Gregor

et al., 2017)[2]. However, the outcome can be questioned, unless proper assessment is conducted to compare impacts during or after implementing these solutions (Karakikes and Nathanail, 2017)[3].

Jabeur et al. (2017) addressed the problem of collaboration between logistics objects. This collaboration aims to effectively plan, implement, and control the flow of

services and goods between a point of origin and a point of destination while ensuring their secure, optimized, and efficient distributions to consumers anytime, anywhere[4].

2. IoT based Information flow management

Making Things Smart

There is an electrification of world around us. Anything we see these days has electronics in it. Especially, it includes an embedded processor (typically a microcontroller, or MCU), along with user interfaces, that can add programmability and deterministic “command and control” functionality. The electrification of the world and the pervasiveness of embedded processing are the keys to making objects “smart.” After a device becomes smart through the integration of embedded processing, the next logical step is remote communication with the smart device to help make life easier. With sophisticated cloud-based processing, communication capability IoT can make things happen without intervention. Applications to connect with and leverage the Internet to achieve this goal, they must first become “smart” (incorporate an MCU/ embedded processor with an associated unique ID) then connected and, finally, controlled. “Smart” applications can include cars, cities, homes, appliances, tags, building, grid etc. (see Figure 2).

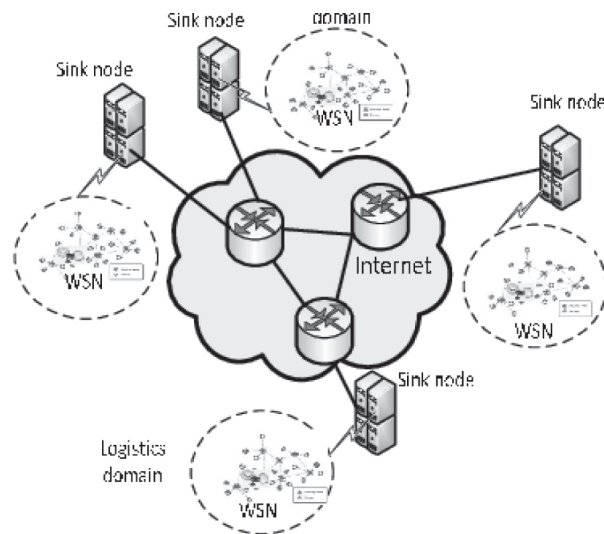


Figure 2. Internet of Things with a synergizing application

Manufacturing - Manufacturing Communication

Using sensors to monitor manufacturing equipment and environments is nothing new. But using those sensors to talk to other equipment and automatically feed data into plant and energy management applications is one of manufacturing's newest frontiers. This is where IoT

comes. Here devices and equipment leverage Internet connectivity to create a more proactive paradigm in which problems are identified much quicker, and in much more detail, and are often even fixed without human intervention. IoT's supply chain can't be ignored. With manufacturers looking to make themselves more sustainable in order to achieve new levels of efficiency and improve their use of resources, the IoT promises to help on both fronts by enabling companies to get more insight into their manufacturing operations than they'd ever imagined.

An informed manufacturing organization contains four elements: Informed products, processes, people and infrastructure. These essential elements of manufacturing are converging like never before, creating a more automated, intelligent and streamlined manufacturing processes:

Products:

Advanced sensors, controls and software applications work together to obtain and share real-time information as finished goods make their way down the production line. Informed products will enable machines to take autonomous action.

People:

By connecting people across all business functions and geographies, and providing them with relevant information in real-time, “informed people” will provide intelligent design, operations and maintenance, as well as higher quality service and safety.

Processes:

By emphasizing bidirectional information-sharing across the global manufacturing value chain — from supplier to customer — informed processes lead to a flexible and adaptable supply chain.

Infrastructure:

Using smart infrastructure components that interface with mobile devices, products and people, informed infrastructure will better manage complexities and enable more efficient manufacturing of goods.

Internet of Things Inventory & Warehouse Management

- Active and passive RFID tags, which provide data on items to which they're attached. The main difference between the two is that passive tags have an RFID antenna and a microchip for storing information, while active tags have their own battery power and can sometimes include additional sensors.

- Internet-connected trackers use long-range networks or Low Power Wide Area Networks (LPWANs) to let companies track specific items throughout their delivery journeys. In the same vein, satellite trackers provide location data on an item almost anywhere on the planet, even in areas that do not have cellular coverage.
- Bluetooth tags and beacons offer tracking data in smaller, more confined areas, and companies most often use them in retail stores to monitor customer traffic and offer marketing messages to said customers.
- Near-field communication (NFC) tags, based on RFID standards, allow workers to use their mobile devices as readers for the NFC tags, which provides an advantage over RFID tags and readers.

Asset tracking

Asset tracking is not new by any means. Freight and shipping companies have used barcode scanners to track and manage their inventory. But new developments are making these scanners obsolete, as they can only collect data on broad types of items, rather than the location or condition of specific items. Newer asset tracking solutions (which we'll get into shortly in the next section) offer much more vital and usable data, especially when paired with other IoT technologies.

Though data security is a general concern in information systems, IoT introduces a number of additional challenges: (1) Much data will be personal, and thus highly sensitive; (2) IoT environments include actuators; an actuation data flow (command) can impact the physical world; (3) There is potential for dynamic, ad-hoc interactions, including between 'things' that have never encountered each other before; (4) IoT functionality typically entails coordination, composition and aggregation, across a range of 'things' (systems, services, etc.), so controls must operate end-to-end, beyond the point of access/production/consumption.

These considerations all concern data sharing, which is unsurprising given that realising the full potential of IoT involves using/reusing 'things', when and where appropriate, to realise new, possibly previously unforeseen functionality, data inference, and services. To date, the bulk of IoT research has focused on particular applications and/or technical constraints, e.g. in terms of protocols, radio and power management, etc. There is comparatively little focus on the security concerns across the range of 'things'. It follows that there is a real

requirement for mechanisms enabling secure, reliable data sharing, enforced end-to-end.

As shown in Figure 3, smart data flow is the basis of IoT based logistics system. In this process, logistics data are categorized into specific infrastructure of the SCM such as transportation, warehouse and manufacturing. These elements exchange data via IoT concept and the data is deposited in a database for further analysis. All collected data is being employed in a real time decision support. Then, mathematical modeling and optimization are performed to obtain smart decisions. These decisions facilitate supply network life and improve logistics performances.

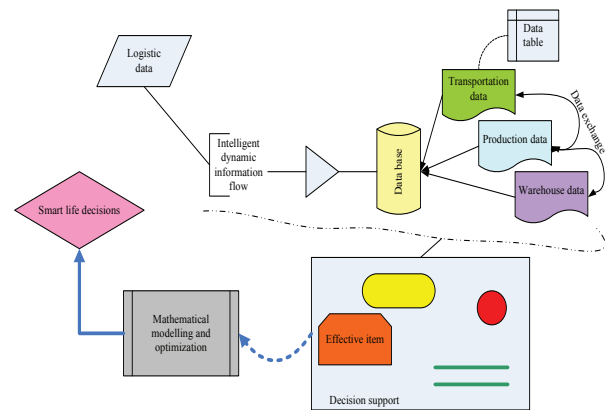


Figure 3. Smart logistics flowchart based on dynamic information

Considering the information sensed by each element of the logistic system such as warehouse or production machines, the required data for optimization and decision making is obtained.

3. Smart Decisions by IoT

Improved Inventory Management

As Phil Van Vormer explains, the Internet of Things (IoT) brings the real-time visibility of the inventory. Without real-time visibility, inventory management relies on guessing. "Lack of real-time visibility means you cannot possibly know how much time your drivers spend active with load, if they take the most effective route, and whether improvements could be made to how pallets flow throughout the warehouse." Moreover the internet of things improves inventory counting: "Manual data collection spells inventory disorder. Too many warehouse operators spend a disproportionate amount of time chasing lost or misplaced pallets as a result of data entry errors. In the connected warehouse, such issues are eliminated since every single pallet is tracked to the

sub inch. Sensors effectively take out the human element, potentially leading to 100 percent inventory accuracy.”

Real-Time SCM

Supply chain management (SCM) manages to optimize processes and collaboration with other companies in the supply chain (suppliers and customers) in order to create more value. While SCM is already heavily supported by various IT solutions, the Internet of Things can be of great value by providing additional information. One of the major challenges in SCM is reducing the bullwhip effect. A major cause of the bullwhip effect is information distortion. For a better information flow, the Internet of Things is able to trigger all relevant actors in the supply chain upon the sale of a product. In traditional processes, information on demand was only passed to one's direct downstream partner instead of sharing this information with the whole chain.

The new sophisticated RFID chips used in the Internet of Things allow the recording of all kinds of manufacturing information, production date, expiry date, warranty period, after sales details allowing real time and more efficient supply chain management. When it's possible to have a real-time look in the supply chain operation, production capacity can be raised, which leads to more productivity with the same investment.

Increased Logistics Transparency

The Internet of Things (IoT) embeds the load carried by a logistic operator with smart objects, which can make information about transport (destination, identification, transport conditions etc.) available to the entire supply chain, making the chain more transparent. This brings log of logistic operational advantages. The smart items monitor the goods and proactively raise an alert if transport conditions are not appropriate anymore, so the carrier is alerted and the goods have a higher chance to be saved. This reduces the costs of return, the removal of defective goods and lowers transports due to lower reshipping rate. Because the load is actively providing information the status of the load is more transparent, a carrier can accurately be held responsible for the amount of defective goods. This can effectively help and increase customer satisfaction.

Besides equipping the load with sensors, the carrier itself can be made smart as well. The sensors can collect all kinds of information and can provide information to the driver in order to allow better navigation and safety. The automatic planning of navigation routes might have impact on the drivers, since they have to yield control over route, allows a greater flexibility to react to unforeseen events.

Fleet Management

- **Physical asset movement and delivery:** This includes fleets of largely semi-trailer trucks that transport goods to fulfill consumers' or business' orders. These fleets can handle long-haul or last-mile delivery.
- **Consumer transportation:** This includes governments and businesses that use vehicles to transport people from one destination to another.
- **Field-service vehicles:** This includes vehicles operated mostly by businesses to transport employees as they perform their job functions.

4. Supply chain smart decisions and optimization

The supply chain can be defined as an integrated system or network which synchronizes a series of inter-related business processes in order to:

1. Acquire raw materials.
2. Add value to the raw materials by transforming them into finished/semi-finished goods.
3. Distribute these products to distribution centers or sell to retailers or directly to the customers.
4. Facilitate the flow of raw materials/finished goods, cash and information among the various partners which include suppliers, manufacturers, retailers, distributors and third-party logistic providers.

Thus the main objective of the supply chain is to maximize the profitability of not just a single entity but rather all the entities taking part in the supply chain. This can only be done if all the entities wish to optimize performance of the supply chain as a whole (system optimization) and do not place their individual preferences (individual optimization) above that of the system. There must also be complete integration among all the entities so that information can be shared in real time in order to meet the highly fluctuating demand of the customers. The important issues driving the supply chain and governing its design are:

1. Inventory management
2. Transportation and logistics
3. Facilities location and layout
4. *Flow of information*

Therefore, to maximize the profitability of the entire supply chain it is definitely not enough to optimize these individual drivers separately. Objective functions capturing these drivers have to be optimized simultaneously.

This problem attempts to capture the dynamics of a single product being manufactured out of three different components. There are five suppliers, three manufacturing plants and four customer zones as shown in Figure 4. As illustrated in Figure 4, the entities labeled S1-S5 denote the five suppliers, those labeled P1-P3 denote the three manufacturing establishments (plants) and entities labeled C1-C4 denote the four customer zones. The flow of goods is also shown for a general formulation where all the suppliers can supply all the plants with the components.

In a more general formulation of this problem the three different components can be supplied by any of the five suppliers. These components can be shipped to any of the three plants where the product is made. Then they are shipped to the customer zones based on the demand. To mimic a realistic supply chain; some suppliers would be preferred over others depending on their policies which impact their previous performance, quality and timeliness of goods delivered. This argument is also valid in the case of the plants. Similarly depending on the amount of importance that is placed on a certain customer zone it would be beneficial to ensure that supply never falls short of demand at important customer zones, but to an extent it can fall short at less important ones. In this situation however a scenario is considered where only certain suppliers can supply certain plants. Thus they are predetermined and the algorithm does not need to choose suppliers to optimize the supply chain.

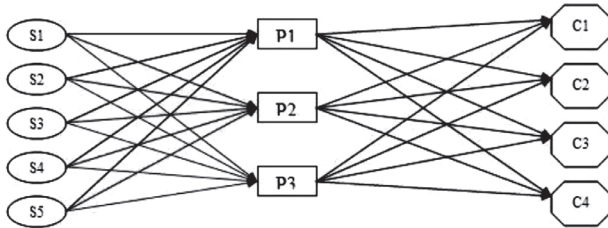


Figure 4. Entities in the supply chain and flow of goods

Presented below is the formulation for the supply chain problem. A short description of the data values (constants) and variables are presented in this section. The principal set of indices used to denote the entities and the interactions between entities in the supply chain is given below.

Indices used in the formulation:

Index	Meaning	Total
i	Component	3

j	Supplier	5
k	Plant	3
l	Customer Zone	4

We can derive sets which elicit the interactions between the different entities in the supply chain. These sets are:

(i, j) : Component-Supplier

(i, j, k) : Component-Supplier-Plant

(k, l) : Plant-Customer Zone

The following representation for data is used in this formulation. The data used in this model applies to suppliers, plants and customer zones. They can be fitted into two main categories i.e. costs and capacities.

Notation for data:

Entity	Notation	Meaning
Supplier	L_{ij}	Capacity of supplier 'j' for component 'i'
Supplier	CS_{ij}	Cost of making a component 'i' by supplier 'j'
Supplier	STC_{ijk}	Transportation cost of a component 'i' from supplier 'j' to plant 'k'/unit
Plant	U_k	Capacity of plant 'k'
Plant	LC_k	Labor cost of plant 'k'/unit
Plant	MC_k	Manufacturing cost of plant 'k'/unit
Plant	IC_k	Inventory cost of plant 'k'/unit
Plant	PTC_{kl}	Plant transportation cost from plant 'k' to customer zone 'l'/unit
Customer Zone	D_l	Demand at customer zone 'l'
Customer Zone	SP_l	Selling price at customer zone 'l'/unit

There are three kinds of variables used in this formulation; they are vendor shipment variables, plant shipment variables and inventory variables.

Notation for variables

Variable	Meaning
X_{ijk}	Amount of component 'i' from supplier 'j' to plant 'k'
Y_{kl}	Amount of product shipped from plant 'k' to customer zone 'l'
I_{ik}	Inventory of component 'i' at plant 'k'
S_{ij}	If component 'i' can be supplied by supplier 'j' 1 and if not 0.

Here, we provide a discussion of the inequalities (or equalities) and linear formulations depicting the constraints and objective functions respectively. These formulations use four sets of two objective functions and different sets of constraints depending on which set of objective functions are used.

Constraints

The constraints listed below model the plant capacities, supplier capacities, inventory-balancing and total operating cost.

$$\sum_l Y_{kl} \leq U_k, \quad \forall k \quad (1)$$

$$\sum_k S_{ij} X_{ijk} = L_{ij}, \quad \forall i, j, \quad (2)$$

$$\sum_j S_{ij} X_{ijk} = \sum_l Y_{kl} + I_{ik}, \quad \forall i, k \quad (3)$$

These three sets of equations depict the constraints used in the problem. Set of equations (1) and (2) depict plant and supplier capacity respectively. Equations (3) depict inventory balancing constraints for all components.

Also, the total operating cost (TOC) which is a sum of the transportation costs from suppliers to plants and plants to customer zones (TC), total manufacturing costs [TMC; which include the plant labor, inventory (IC) and manufacturing costs (MC)] and supplier costs (SC) is computed as follows:

$$TC = \sum_i \sum_j \sum_k (X_{ijk} S_{ij} STC_{ijk}) + \sum_k \sum_l Y_{kl} PTC_{kl}, \quad (4)$$

$$TMC = \sum_k (LC_k + MC_k + IC_k) \quad (5)$$

$$SC = \sum_i \sum_j (CS_{ij} S_{ij} X_{ijk}), \quad (6)$$

$$TOC = TC + TMC + SC. \quad (7)$$

Note that in the above constraints a variable S_{ij} is present. In a more generic formulation of this problem, S_{ij} would be a binary variable denoting whether component i can be supplied by supplier j or not.

Objective Functions

Four sets of objective functions are used in this formulation are as follows:

Set 1:

Objective Function 1: Min TOC*

Objective Function 2: Min MC/TOC

***Note**

MC : Manufacturing Cost

TC : Transportation Cost

TOC : Total Operating Cost

A justification for using these objective functions is as follows. Minimizing the total operating cost is an important performance metric in supply chain management problems. The second objective function denotes minimizing the ratio of manufacturing costs to total operating cost. We would like to ensure that our manufacturing costs fall within a certain permissible bound as a percentage of the total operating cost. The decision maker based on his/her knowledge and expertise would be able to make an intelligible decision in choosing a solution.

Set 2:

Objective Function 1: Max Profit

Objective Function 2: Min MC

As can clearly be seen from Set 1 the two objective functions are conflicting because total operating cost features in the denominator in the second objective. In this set, the conflict is not so easily seen. The analysis will highlight the trade-off between the objectives.

Set 3:

Objective Function 1: Max Revenue

Objective Function 2: Min MC

In this set of objective functions the impact of the total operating cost is not taken into consideration. Only the revenue generated at the customer zones is considered. Its impact on the manufacturing costs is analyzed. In this set, the conflict in objectives cannot easily be seen from the equations that describe them. It is intuitive however that there will be conflict of interest when revenues and costs are studied.

Set 4:

Objective Function 1: Max Revenue

Objective Function 2: Min TC

This set of objectives is similar to that of set 3 except that here transportation costs are minimized, which feature as a necessary cost in every supply chain that has to be incurred in order to ensure interactions between the entities that make up the supply chain.

The model is effective to sense the variations through the intelligent decision support, for logistics performance evaluation. The process is real time to handle dynamic data in different time periods.

Improvement occurs by evaluating the supply network performance in different time periods by sensing the cyber-physical equipment in different elements of smart logistics system. All machines and tools are interconnected by IoT and transfer operational data through the intelligent system for optimization.

The objectives here are flexible to meet all needs of a decision maker and provide a tradeoff among different variables.

5. Benefits of SCM-IoT

Embedded sensor technologies can be used to allow for bidirectional, remote communication with over one million elevators worldwide. Based on captured data, technicians can run diagnostics and remotely initiate repair options or guide on-site technicians to make the appropriate decisions, resulting in increased machine uptime and improved customer service.

Unlike previous generations of passive sensors, the IoT will allow a supply chain to control the external environment and execute decisions. With the IoT, sensor-embedded factory equipment not only can communicate data about parameters such as the temperature and utilization of the machine, but also can change equipment settings and process workflow to optimize performance.

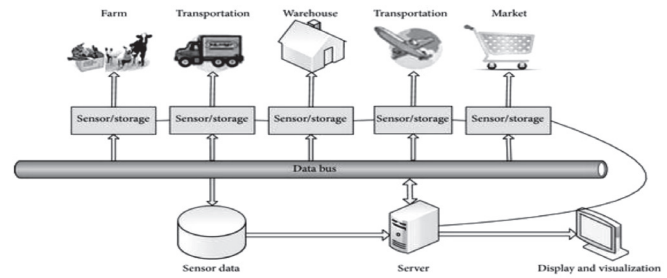


Figure 5. A Configuration of SCM-IoT

IoT system security factors are listed as follows

Confidentiality: A person may have sensor devices for health and lifestyle monitoring. The data streams from these sensors can only flow into remote data storage labelled to receive data from that person. This data may augment a conventional health record application, where the records may be stored on a private cloud, accessed via a web portal. Alternatively, a medical professional may be able to directly access a person's physiological sensors (through the respective gateways, if applicable) when in physical proximity, e.g. when a nurse visits the patient's home. A person's medical data may only be accessed for medical research after being anonymized. We assume an anonymization process is able to tag an output research data set with e.g., secrecy:medical, integrity:anonymized.

Integrity: Sensor data may be tagged as from an approved, standard device, i.e. tagged with an attribute representing the source of data (e.g. belonging to a certain individual). For a smart home or driverless car, only actuation commands based on data approved by the owner are obeyed. This is achieved by tagging sensors, the actuation decision process and the device to be actuated with, e.g., integrity: bob-home.

Protection & Sharing: In a cloud context, data can be protected from leakage and interference by the strong isolation provided by VMs or containers. For IoT in general, including within cloud components, protection with sharing is required that is more subtle and flexible. Information flow control (IFC) achieves data sharing by appropriately labelling data and endpoints to allow data flows. Data is protected, as flows are only authorized where these explicitly-defined labels agree. The underlying assumption is that IFC enforcement can be trusted; there are hardware-based approaches that assist (Vachharajani ET AL., 2004; Jayaram, 2014)[5,6].

Highly decentralized security policy: In decentralized IFC, new, application-meaningful tags can be created (by potentially anyone) to enforce any required policy, on a totally decentralized basis. There is no need for a central

authority. This assists both in sharing data and in breaking application ‘silos’, both of which are crucial for in moving IoT forward. The assumption is that IoT device owners and management components cooperate in achieving the appropriate data tagging to build new applications and meet their policy requirements.

Increasing trust in cloud-hosted applications, and cloud providers: When cloud services are included in an IoT architecture, the cloud provider is more likely to be trusted to enforce policy than lesser-known applications. In turn, this motivates sharing, as a high-level of trust in applications is no longer needed when behaviour is constrained by IFC policy. Further, much IoT functionality is provided through the coordination of ‘things’. Applications (policy engines) facilitating this, causing ‘things’ to interact when and where appropriate, are highly amenable to a cloud deployment. Given the power of such applications, the trustworthiness of the host is a prime consideration.

Assurance through audit: IFC is a data-centric security policy which can cause data-centric logs to be generated during IFC enforcement. These are more relevant in IoT than legacy system logs (Ko et al., 2011) (i.e. OS, hypervisors, databases, etc.), as they will offer traces indicating how, when and why ‘things’ were brought together, and the data exchanges that took place [7].

Support for compliance: IFC policy is able to capture data-centric legal and regulatory concerns (Singh et al., 2014) [8]. The logs generated at IFC enforcement points can be used to demonstrate compliance, and invalidate false claims of leakage.

6. Conclusions

Although IoT is a fairly new concept and not known to wider audience, mainstream companies like IBM, CISCO, ARM to name few are heavily investing in building IoT networks, architecture and betting big on the "Next Big Thing" which will revolutionize world greater than what Internet did. For supply chain, from the manufacturer to the end user, the Internet of Things means richer data and deeper intelligence for all parties in a supply network. Supply Chain Management will continue utilizing these advanced technologies to improve factory workflow, increase material tracking, and optimize distribution to maximize revenues. In conclusion, IoT represents the next evolution of the Internet. Given that humans advance and evolve by turning data into information, knowledge, and wisdom, IoT has the potential to change the world as we know it today—for the better.

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What should Using a Software Product and Usability of the Software Product Be?

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Abstract

Usability is one of the most important concepts regarding software quality. It can be interpreted as the goodness associated with using the software product. This paper distinguishes the goodness of an individual using experience and the goodness of a product for using. This paper proposes a software quality view model which classifies software quality views into two broad categories of end view and means view. End view includes long-term view and short-term view which is classified further into performer's view on software activity and third party's view on software activity. Means view includes intrinsic view and contingency view. The analysis of ISO 25000 Series SQuaRE demonstrates the necessity to decompose product quality model and quality in use model into five models corresponding to the software quality views respectively. The analysis on playability shows that the universal definition of usability may be an illusion. The results provide the theoretical basis to build a comprehensive and consistent body of knowledge regarding software quality, which is consisted with the set of quality models and the theories explaining the relationships among the elements of the models.

Keywords Software Quality, Usability, Quality in Use, Playability, ISO/IEC 25000 Series SQuaRE (The International Standard Organization 25000 Series Systems and software Quality Requirement and Evaluation)

Introduction

Using is the ultimate goal of all kinds of product including software. A software product should be good to use. In this paper, the usability of software is defined as the goodness for using. This generic definition will be elaborated later in this paper.

ISO's software quality models generally regard usability as the property of the software product. Specifically, ISO 25000 Series SQuaRE defines usability as "the degree to which a product or system can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use" [1]. SQuaRE defines quality in use almost the same as usability except that it "includes freedom from risk and context coverage" [9,11]. It emphasizes that "usability can either be specified or measured as a product characteristic in terms of its sub-characteristics, or specified or measured directly by measures that are subset of quality in use"

[ISO/IEC 25010:2011, pp.9, 12][9]. However, their sub-characteristics and measures are quite different. So, they represent different things in fact.

Gonzalez Sanchez et al. [2009a, 2009b] define playability as "a set of properties that describe the player experience using a specific game system whose main objective is to provide enjoyment and entertainment." ISO 9241-11 is the reference model of Gonzalez Sanchez et al.[4]. They say that playability is the extension of ISO's usability or quality in use for the player centered video game. They, however, specify playability as the property of using experience [8].

This paper distinguishes instance usability which represents the goodness as the property of using experience and product usability which presents the goodness as the property of software product. This paper also critically reviews SQuaRE, which is the extended version of ISO 9241-11.

SQuaRE is the most extensive software quality model ever existed, which contains product quality model and quality in use model which contain 13 characteristics, 40 sub-characteristics, and 123 measures for systems and software quality in total. The chief goal of SQuaRE is to assist software engineers to develop software products with high quality. It is an enormous and elaborated body of knowledge about software quality which deserves appreciation. It, however, suffers from ambiguity, inconsistency, and contradictions making it unsuitable for ordinary software engineers to measure the design quality of software product [1, 6, 7, 8,9].

It is the purpose of this paper to provide theoretical basis to resolve the conceptual vagueness and inconsistency associated with software quality models including SQuaRE. It is beyond the scope of this paper, however, to present precise and rigorous definitions of associated concepts.

Usability instance and product usability

In this paper, using is defined as the interaction between the software product and a person or a group of persons through the user interface of the product, which is distinguished from the following types of software activity:

- **Studying the product:** A type of software activity to increase the user's knowledge or expertise about the product itself. It can be performed on other materials too.
- **Testing:** A type of software activity to find out whether the product performs as intended or required.
- **Customizing user interface:** A type of software activity to make the product better to use.

According to above definitions, using can be performed only on the execution of a software product in operation.

As the result, maintaining and porting (transferring) are excluded from using.

Studying the product and customizing user interface are frequently regarded as a sub-type of using. As the result, study-ability (or learnability) or customizability are frequently classified as sub-characteristics or measures of usability [Gonzalez Sanchez et al. 2009a, 2009b; ISO 9126-1:2001, ISO 25010:2011, ISO 25023:2017, Microsoft Corporation 2010, Nielson 2016][9,13,17,18,19]. They, however, can occur independently with using [Koh 2017b]. Accessing is another example of software activity which can occur independently with using: A person may access a software product, for example, to test or study it, or customize its interface.

- **Instance of using:** The sequence of using actions to accomplish specific goals. It includes the immediate results or effects of the actions too.
- **Instance of playing:** The continuation of using a game software product to play. It is a sub-type of the using instance.
- **Usability function:** The function by which the usability of the using instance is determined. It is typically defined in terms of a set of evaluation criteria such as, for example, effectiveness, efficiency, and satisfaction, by which the goodness of using instance is defined. Multiple usability function can be defined simultaneously.
- **Instance of usability:** The value of usability function of a using instance. If multiple usability function is defined, then multiple distinctive usability instances may exist for a using instance. The usability instance is assumed to be determined regardless of measurement.
- **Usability of the software product:** The mean of all usability instances associated with a software product. It is not determined until the product is retired. So, it can be only estimated during its lifetime.

Instance of using, instance of playing, instance of usability, and usability of software product will be called using instance, playing instance, usability instance, and product usability respectively, in short. The typical example of using instance is completing a user task (*"activities performed by the user (using software product) towards a specified goal"*) of SQuaRE [11]. The user task includes activities either physical or cognitive [ISO/IEC 25023:2016 p.4]. As a matter of course, every physical activity requires cognitive activities. The task which is composed with only cognitive activities, however, is not regarded as a using instance. SQuaRE also defines a task as *"a function that needs to be accomplished within a defined period of time, where the function mentioned here is the software itself"* [10]. In this definition, the term task is amount to task type, in fact. In this paper, the task type corresponds to the type of using instance.

It is noticeable that the term task is especially appropriate for the business application software which is developed to support the work in an organization. It can be very unnatural or irrelevant to define tasks for some type of software such as, for example, game software. In that regard, using instance is distinguished from the performance of task.

Many existing sub-characteristics of usability correspond to the evaluation criteria of usability instance. Effectiveness, efficiency, and satisfaction are typical examples of such sub-characteristics. They correspond to the criteria by which the using instance is evaluated. A software product is evaluated to be good for using if the

instances of using it are generally effective, efficient, or satisfactory. In this paper, the set of evaluation criteria is used as the synonym of usability function.

Beside specification of the evaluation criteria, the usability function should include operational definitions to assign a specific value of the criteria to each using instance. Both evaluation criteria and their operational definitions constitute the usability function. Multiple usability functions which shares common evaluation criteria can be defined. Moreover, various usability functions which do not share even the evaluation criteria can be defined. What matters is which one is more useful. The usefulness will vary case by case.

According to Oxford Living Dictionaries, effective means “*successful in producing a desired or intended result*”[20]. Software quality literature typically defines effectiveness in terms of ‘achievement of goals.’ Software effectiveness is typically defined to be concerned with only whether and how well goals are achieved but not to be concerned with how the goals are achieved. As the result, for example, SQuaRE emphasizes that “*effectiveness measures do not take account of how the goals were achieved, only the extent to which they were achieved*” [11]. SQuaRE also specifies the goals to be specified (refer Table 1)

SQuaRE define measure as “*variable to which a value is assigned as the result of measurement*’ as the noun or

Quality Model	Definition	Remarks
Quality in Use	Accuracy and completeness with which users achieve specified goals.	
GS et al. [2009a]	Degree to which specific users (players) can achieve the proposed goals with precision and completeness in the context of use, the video game.	Goals are specified by third party
GS et al. [2009b]	Time and resource necessary to offer players a fun and entertaining experience whilst they achieve the game’s various objectives and reach the final goal.	Virtually identical to efficiency

Quality Model	Metric	Description	Remarks
Quality in Use	Task completed	Proportion of the tasks that are completed correctly without assistance.	Under-estimate the true value. Focused on detecting bad design which causes tasks not to be completed or objectives not to be achieved.
	Objective achieved	Proportion of the objectives that are achieved correctly without assistance.	
	Errors in a task	Number of errors made by the user during a task.	Errors are more closely related with efficiency. Effectiveness is not affected if goals are achieved even if errors are made. Focused on detecting faults which causes errors.
	Task with errors	Proportion of the tasks where errors were made by the users.	
	Task error intensity	Proportion of users making an error.	
GS et al. [2009a]	Goal effectiveness	What proportion of the goals is achieved correctly?	Virtually identical to those of Quality in Use. Represent the third party’s view. Do not concern the intensions of individual users.
	Goal completion	What proportion of the goals are completed	
	Number of attempt	What is the frequency of attempts?	

An individual usability instance can be hardly accepted to represent the characteristic of the software product since it is generally affected by the system, context, and the performer of using instances. The product usability can be accepted as the characteristic of the software product since the influence of the systems, contexts, and users is factored out.

What can be included in usability: Information that can be obtained from each individual using instance

Effectiveness and efficiency: Third party’s view

‘*make a measurement*’ as the verb, where measurement is defined as “*a set of operations having the object of determining a value of a measure*”[9].

Metric is typically defined as the ration or interval measure which generates the data that can be added [2]. Every quality model requires quality data subject to summation. In this paper, measure and metric will be used inter-changeably. Measure, however, will be used when it is necessary to denote that it is the metric of SQuaRE.

Among SQuaRE’s fine measures of effectiveness, ‘errors

in a task,’ ‘task with errors,’ and ‘task error intensity’ focus on errors (refer Table 2). However, users can complete their tasks or achieve their objectives despite of errors. Since, these measures do not conform to the definition of effectiveness.

‘Tasks completed’ and ‘objectives achieved’ ignores the tasks partially completed and the objectives partially achieved respectively to systematically underestimate the true value of effectiveness. Moreover, ‘tasks completed’ conforms to the definition of effectiveness only if ‘achieving the goals’ is specified as ‘completing the tasks.’ Rather, the focus of these measures is given on the uncompleted tasks and unachieved objectives which can be the symptoms of bad system design [11].

All the effectiveness measures of SQuaRE focus on the symptoms of faults or bad design. They are designed to detect symptoms of faults or bad design in their measurement process. The information can be feedback to the development process to improve the quality of the product being developed. That is, they summarize the results of ‘black-box’ testing. They are designed to fulfill the need of people managing development, acquisition, evaluation, or maintenance of software and system [11]. As the result, SQuaRE’s effectiveness represents the view of the third party. They are not designed to concern the users’ intentions of individual using instances. So, the goals can and should be specified in advance of using.

On the other hand, SQuaRE’s efficiency can represent both the third party’s view and the user’s view (refer Table 3 and 4). Among six SQuaRE’s efficiency measures, ‘task time’ is purely objective. It has very universal and common meanings, interpretations, or implications, and can be measured the most straightforwardly.

The other measures require more information and can be affected by the measurer’s judgment. Moreover, ‘consequence of fatigue’ does not measure efficiency itself, but measures the change rate of efficiency. ‘Task time’ is the default measure of efficiency which should be used whenever possible. It is even useless to combine ‘time efficiency,’ and ‘cost effectiveness’ in combination with ‘task time’ to

increase reliability since they are virtually redundant with ‘task time.’ ‘Productive time ratio’ and ‘unnecessary actions’ produce proportions making it very hard to combine them with ‘task time.’ Rather, they are useful to detect faults or bad design which causes unproductive or unnecessary actions or fatigue. In that regards, those other than ‘task time’ represent the view of third parties other than the user: Developers or maintainers. Only ‘task time’ represents both the performer’s view and the third party’s view.

Effectiveness and efficiency of Gonzalez Sanchez et al.’s [2009a] playability are virtually the same as the corresponding parts of SQuaRE, although their wording

Quality Model	Definition	Remarks
Quality in Use	Capability of the software product to enable users to expend appropriate amounts of resources in relation to the effectiveness achieved in a specified context of use.	Defined objectively. Can represent both the third party’s view and the user’s view.
GS et al. [2009a]	The degree to which specific users (players) can achieve the goals proposed by investing an appropriate amount of resources in relation to the effectiveness achieved in a context of use, the video game.	Although it is defined in the term of achievement of goals, it metrics are practically the same as those of Quality in Use.

Quality Model	Metric	Description	Remarks
Quality in Use	Task time	Time taken to successfully complete a task.	‘Task time’ has universal and common meanings, and can be measured the most straightforwardly. The others represent the view of developers or maintainers: They can provide the information about faults or bad design.
	Time efficiency	Efficiency with which users achieve their objectives over time when using the system	
	Productive time ratio	Proportion of the time that the user is performing productive actions.	
	Unnecessary actions	Proportion of the actions performed by the user that were not necessary to achieve the task.	
	Consequence of fatigue	Decrease in human performance after continuous use.	
	Cost effectiveness	Cost-effectiveness of the user.	Regarding the user.
GS et al. [2009a]	Goal time	How long does it take to complete a goal?	The same as ‘task time.’
	Goal efficiency	How efficient are the users?	Regarding the user.
	Relative user efficiency	How efficient is a player compared to an expert?	

is slightly different. Playing represents using the software product for fun or pleasure. On the other hand, SQuaRE concerns chiefly using the software product for work. It is the reason why the task is the key word and why efficiency matters in SQuaRE. For playing, however, efficiency may not matter at all. For example, the time taken may not matter as long as it is fun or interesting. This point of argument implies that usability should be specialized for specific types of software.

It is especially noticeable that efficiency is excluded from Gonzalez Sanchez et al.'s [2009b][4] playability. This seems very reasonable since minimizing time taken may be irrelevant in playing the video game. Effectiveness, however,

is defined virtually the same as the typical efficiency. So, what is really excluded from the model is effectiveness. This seems very reasonable since the goal other than fun or pleasure can be hardly perceived as the chief goal of playing the video game. Again, however, the time taken

correspond to the latter (refer Table 5). The satisfaction as the fulfillment

of user's needs, however, is virtually redundant with the typical definition of effectiveness. SQuaRE uses it as the pleasure the user feels, in fact: it uses satisfaction as the synonym of pleasure in the definition of the sub-characteristics of satisfaction (refer Table 6). From now on in this paper, satisfaction will be used to mean the pleasure the user feels.

Satisfaction represents the user's view. It cannot represent the third party's view while effectiveness and efficiency can be defined to represent the user's view as the followings, for example:

- **Effectiveness:** The user's evaluation on how well his/her motivation or goals are achieved.
- **Efficiency:** The user's evaluation on how much the cost is expended.

Quality Model	Definition	Remarks
Quality in Use	Degree to which user needs are satisfied when a product or system is used in a specified context of use.	The performer's view. Can be evaluated both subjectively or objectively
GS et al. [2009a]	Degree to which users (players) are satisfied in a context of use, the video game.	
GS et al. [2009b]	Gratification or pleasure derived from playing a complete video game or from some aspect of it.	Defined to be free from context.

Quality Model	Name	Definition	Remarks
Quality in Use	Comfort	Degree to which the user is satisfied with physical comfort.	Do not include all the reasons why users are satisfied: People may be satisfied, for example, because it is exciting or hard to play.
	Pleasure	Degree to which a user obtains pleasure from fulfilling their personal needs.	
	Trust	Degree to which a user or other stakeholder has confidence that a product or system will behave as intended.	
	Usefulness	Degree to which a user is satisfied with their perceived achievement of pragmatic goals, including the results of use and the consequences of use.	

to play is really so important? It seems not so. Efficiency may be irrelevant for some type of software such as, for example, the game software, implying that the general software quality model may be an illusion.

Satisfaction: User's View

According to Oxford Living Dictionaries, satisfaction means "*fulfillment of one's wishes, expectations, or needs, or the pleasure derived from this.*" Definitions as software quality characteristics can be classified into two groups: the fulfillment of user's needs and the pleasure the user feels. The satisfaction in quality in use corresponds to the one while those of Gonzalez Sanchez et al.[4,5.]

- **Satisfaction:** The user's evaluation on how much he/she is satisfied.

It is noticeable that context is not referred in the definitions as in Gonzalez Sanchez et al. [2009b][5]. Context is the concept associated with sampling. There is no need to include it in the definition of software quality. It is also noticeable that the goals are set by the user and that it is not necessary for the goals to be specified. The definition of efficiency is almost the same as that of SQuaRE. It, however, can be evaluated subjectively by the user. The subjective evaluation of time taken may not be congruent with the objective physical time taken. For example, the user can feel the time taken to play a game software product to be short regardless of physical duration if it was interesting.

People may be satisfied because his/her using experience was comfortable, pleasant, trustworthy, or useful. People may be satisfied for various other reasons too. One may be satisfied because it is exciting, interesting, fascinating, stimulating. One may be satisfied because it is hard to play a game product. One may be satisfied because it was good for just spending time

Effectiveness and efficiency can be the reason of satisfaction too. That is, effectiveness and efficiency can be classified as the sub-characteristics of satisfaction in the user's view. SQuaRE regards usefulness as "*user's perceived achievement of pragmatic goals, including the results of use and the consequences of use*"[9]. In this regard, satisfaction can be used as the synonym of the user's view on usability. The usability in user's view can be estimated statistically to identify the response of the users as customers of the product in the market.

Satisfaction can be measured using the five point rating scale by asking 'how much are you satisfied?'" It can be also measured by asking "how much do you feel following feelings or emotions?" for various relevant feelings and emotions such as, for example, comfort, pleasure, trust, and/or usefulness and summing the results to increase the reliability of measurement. Gonzalez Sanchez et al.'s [2009a] metrics of satisfaction is inferior to those of SQuaRE in respect of reliability (refer Table 7).

Satisfaction of the user can be measured objectively. 'Discretionary usage,' 'feature utilization,' 'proportion of users making complaints,' 'proportions of user complaints about a particular feature,' and socialization are designed to measure satisfaction objectively. However, they cannot measure the user's satisfaction on individual using instances since they need multiple observations to be measured. Other objective measures can be devised. It is well known, however, that questioning generally produces more valid and reliable data about people's opinion or emotion than observation if its procedure is executed adequately [Cooper and Schindler 2008][2]. For example, users may complain about a product for various reasons even if they think it is useful. Users also may use a product or function simply because there is no other alternative available despite they are dissatisfied. Moreover, "*potential users may choose to use a system of function*"

[ISO/IEC 25022:2016, p.14] as the result of being exposed to advertising, and then become dissatisfied. Logically, potential users cannot choose to use a system or function because they are satisfied with it. In this respect, 'proportion of users complaining,' and 'proportion of user complaints about a particular feature' can be regarded as indicators reflecting the effectiveness of marketing activities. It is generally not a good idea to attempt to measure the satisfaction of the user objectively [11].

Quality Model	Characteristic	Metric	Description	Remarks
Quality in Use	Satisfaction	Overall satisfaction	Overall satisfaction of the user.	Can be evaluated for each using instance.
	Comfort	Comfort	Extent to which the user is comfortable compared to the average for this type of system.	
	Pleasure	Pleasure	Extent to which the user obtains pleasure compared to the average for this type of system.	
	Trust	Trust	Extent to which the user trusts the system.	
	Usefulness	Satisfaction with features	Satisfaction of the user with specific system features	Aggregated information which cannot be obtained from a using instance.
		Discretionary usage	Proportion of potential users choosing to use a system or function.	
		Feature utilization	Proportion of an identified set of users of the system who use a particular feature.	Objective metrics. May be unreliable.
		The same as description	Proportion of users making complaints	
		The same as description	Proportion of user complaints about a particular feature.	
GS et al. [2009a]	Satisfaction	Satisfaction scale	How satisfied is the player?	Can be evaluated for each using instance.
		Satisfaction questionnaire	How satisfied is the user with specific software feature?	
		Discretionary usage	What proportion of potential users choose to use the system	Aggregated information. Objective metrics. May be unreliable.
		Socialization	What proportion of potential users choose to use the system	

What should not be included in usability: Information that cannot be obtained from each individual using instance

Context coverage: Information that should be obtained by aggregating the information obtained from each individual using instance

SQuaRE defines context of use as “*users, equipment, (hardware, software and materials), and the physical and social environments in which a product is used*”.[9]. SQuaRE presumes that both the usability and quality in use are affected by the context of use and recommends estimating them contextually [9,11]. SQuaRE

also recommends to let data obtained from sufficient users performing tasks to obtain the desired level of statistical confidence of effectiveness, efficiency, or satisfaction that the target values have been achieved

- **Unspecified context usability:** The sub-population mean corresponding to un-specified contexts.
- **Proficient user usability:** The sub-population mean corresponding to proficient users.
- **Low-proficient user usability:** The sub-population mean corresponding to un-proficient users.
- **Task type/function usability:** The sub-population mean corresponding to a task type or a function.
- **Role/responsibility usability:** The sub-population means corresponding to a role or a responsibility.

The difference between the definition of quality in use and that of context coverage rest on whether the clause

Table 8 – Definitions of context coverage, freedom from risk, flexibility, and safety : ISO 25000 SQuaRE and Gonzalez Sanchez et al. [2009a]

Quality Model	Title	Definition	Remarks: It is regarding
Quality in Use	Context coverage	Degree to which a product or system can be used with effectiveness, efficiency, freedom from risk and satisfaction in both specified contexts of use and in contexts beyond those initially explicitly identified.	Virtually the same as quality in use from which context of coverage is excluded.
	Freedom from risk:	Degree to which a product or system mitigates the potential risk to economic status, human life, health, or the environment.	Regarding long-term and aggregated impact on various entities.
GS et al. [2009a]	Flexibility	Degree to which the video game can be used in different contexts or by different player or game profiles.	Shares similar problems of context coverage and freedom from risk
	Safety	Acceptable level of risk to the player health or data in a context of use, the video game.	

[ISO/IEC 25022:2016, p.9]. Context and contextual estimation can be regarded to correspond to stratum and stratified sampling respectively. Well performed, stratified sampling provides more accurate estimate than the simple random sampling[2].

Contexts can be grouped to generate bigger sub-populations. SQuaRE classifies contexts into specified contexts and unspecified contexts according to whether they are specified or not. The proficiency of users can be the classification criterion too. Task type can be the criterion too. Role and responsibilities can determine goals and tasks [12]. Task types may be categorized according to the role and responsibilities they rest on.

The means of resulting sub-populations can be defined as follows, for example

- **Context usability:** The sub-population mean corresponding to a specific context.
- **Specified context usability:** The sub-population mean corresponding to specified contexts.

Table 9 – Sub-characteristics of context coverage and freedom from risk: ISO 25000 SQuaRE.

“*in/beyond contexts initially explicitly identified*” is added or not (refer Table 8 and 9). The definition of SQuaRE’s context coverage is virtually the same as that of quality in use from which context coverage is excluded. That is, context coverage generates circular reference in which the whole includes itself as its part. On the other hand, context usability including its varieties is conceptually clear. Context coverage should be excluded from the sub-characteristics of quality in use.

Among four measures of ‘context coverage,’ ‘product flexibility’ is regarding changing the product, but not regarding using the product (refer Table 10). In fact, it is redundant with modifiability of product quality model[12]. It is the intrinsic and invariant property of the software product [16, 17].

The other measures represent some useful concepts. However, they can be more clearly expressed in terms

Characteristic	Title	Definition	Remarks
Context coverage	Context completeness	Degree to which a product or system can be used with effectiveness, efficiency, freedom from risk and satisfaction in all the specified contexts of use.	Division of contexts: Correspond to specified context usability and unspecified context usability, respectively
	Flexibility	Degree to which a product or system can be used with effectiveness, efficiency, freedom from risk and satisfaction in contexts beyond those initially specified in the requirements.	
Freedom from risk	Economic risk mitigation	Degree to which a product or system mitigates the potential risk to financial status, efficient operation, commercial property, reputation or other resources in the intended contexts of use.	Only one value is possible per product. Require special domain knowledge which ordinary SW engineer cannot be expected to have.
	Environmental risk mitigation	Degree to which a product or system mitigates the potential risk to property or the environment in the intended contexts of use.	
	Health and safety risk mitigation:	Degree to which a product or system mitigates the potential risk to people in the intended contexts of use.	

of context usability and its varieties. For example, 'proficiency independence' can be replaced with the ratio or difference of proficient user usability and low-proficient user usability. The pair of proficient user usability and low-proficient user usability provides more information more clearly which 'proficiency independence' is seemingly expected to provide. The pair of specified context usability and unspecified context usability provides more information more clearly which 'flexible context of use' is seemingly expected to provide too. The ratio or difference of specified context usability and unspecified context usability can be used as an index. 'Context completeness' can be rephrased as 'the proportion of the intended contexts whose context usability is above the acceptable criteria.'

'Context coverage' and its sub-elements represent some useful concepts. They, however, cannot be sub-elements of quality in use nor usability. Context usability and its varieties are conceptually clear and can provide more information than they can.

Gonzalez Sanchez et al.'s flexibility corresponds to and shares the same problem with 'context coverage.' Its metrics, however, are quite different from those of 'context coverage' and do not measures what is seemingly expected to represented by flexibility [4].

Freedom from risk: Long-term and aggregated effects

SQuaRE defines risk as "*a function of the probability of occurrence of a given threat and the potential adverse consequences of that threat's occurrence*"[9]. It is obvious that probability or proportion cannot be inferred from a

using instance. It is aggregated information which cannot be obtained from an individual using instance unlike effectiveness, efficiency, and satisfaction.

The measures of 'freedom from risk,' however, do not measure probability or proportion in fact. They measures the long-term and aggregated impact which various activities performed on a software product such as using, developing, changing, and so on exert on various entities. For example, 'return on investment' requires long-term and aggregated information to measure. They cannot be obtained from a single using instance. The metrics that can be obtained from individual using instances respectively and the metrics that can be obtained by aggregating such data should be separated into distinctive models.

Moreover, they require the domain knowledge which ordinary software engineers cannot be expected to have. For example, business people generally can measure 'return on investment' of a software product more validly than software engineers. It is the typical issue which business people traditionally have dealt with. It is better to leave such issues to the specialists of corresponding domains.

Among 12 measures of 'freedom from risk,' 'service to customers' is regarding service level. It is not an item associated with the product itself. It is not a software quality metric. Other measures and sub-characteristics may have to be redefined to be more useful according to the appropriate software quality view: The long-term view. It is beyond of this paper, however, to review and redefine individual items in depth and details. Gonzalez Sanchez et al.'s [2009a] safety is virtually the subset of and shares the same problems with 'freedom from risk[4].

Discussions

The critical review in sections 3 and 4 shows the discordance among characteristics, between characteristic and its sub-characteristics, between characteristics and their metrics, and between the titles and definitions prevails in quality in use model of SQuaRE and Gonzalez Sanchez et al.'s [2009a, 2009b] playability. There exist virtually the same phenomena in product quality model of SQuaRE [Koh 2017a, 2017b]. This implies that the phenomena can prevail in many other software quality models too.

To overcome the inconsistency in product quality model of SQuaRE, Koh [2017a, 2017b] proposes a model of

the views regarding software quality, which classifies the views of software quality broadly into end view and means view[16, 17]. The discussions in the sections 3 and 4 show that end view and be divided into long-term view and short-term view which can be divided further into performer's view on software activity and third party's view on software activity. The resulting model of software quality view becomes as the following:

- **End view:** It represents the effort to find out for what the software product should be good. The quality

Table 10 - Metrics of context coverage, freedom from risk, flexibility, and safety: ISO 25000 SQuaRE and Gonzalez Sanchez et al. [2009a]

Quality Model	Characteristic	Metric	Definition	Remarks
Quality in Use	Context completeness	Context completeness	Proportion of the intended contexts of use in which a product or system can be used with acceptable usability and risk	Require the aggregated information regarding contexts or sub-populations.
	Flexibility	Flexible context of use	Extent to which the product can be used in additional contexts of use with no modifications or only simple modifications	
		Proficiency independence	Extent to which the product can be used by people without specific knowledge, skills or experience	
		Product flexibility	Ease with which a product can be modified to meet additional user requirements	Regarding changing.
	Economic risk mitigation	ROI	Return on investment	Require long-term and aggregated information with which business people usually deal much better than SW engineers.
		Time to achieve ROI	Time taken to achieve the expected ROI	
		Business performance	Profitability or sales compared to a target	
		Benefits of IT Investment	Measure of the benefits of IT investment compared to a target	
		Service to customers	Extent to which the intended level of service to customers is achieved	
		Website visitors converted to customers	Proportion of visitors to a particular web page(s) who become customers	
		Revenue from each customer	Revenue from each customer	
		Errors with economic consequences	Proportion of usage situations where there are human or system errors with economic consequences	
	Environmental risk mitigation	Environmental impact	Environmental impact of the manufacture and use of the product or system compared to a target	Chiefly determined by system
	Health and safety risk mitigation	User health reporting frequency	Proportion of users of the product who report health problems arising from usage	Require long-term and aggregated information with which ordinary SW engineers cannot deal properly.
		User health and safety impact	Health and safety impact on users of the product	
		Safety of people affected by use of the system	Incidence of hazard to people affected by use of the system	
GS et al [2009a]	Flexibility	Accessibility	What proportion of the goals can be achieved by using alternative ways of interaction?	Chiefly determined by system
		Personalization	What proportion of the personalization options are used by the players?	Regarding customizing
	Safety	User health and safety	What is the incidence of health problems among users of the product?	Ordinary users cannot provide necessary information.
		Software damage	What is the incidence of software damage?	

characteristics in this view correspond to the effects of good quality in means view.

- **Short-term view:** It focuses on short-term effects of various software activity types.
- ✓ **Performer's view on software activity:** It represents the performer's subjective evaluation of the software activity that he/she has performed.
- ✓ **Third party's view on software activity:** It represents the interests of stakeholders other than the performer, which are associated with individual software activities.
- **Long-term view:** It focuses on the long-term and aggregated effects on various stakeholders.
- **Means view:** It represents the effort to make the software product good for various ends. The elements of this view correspond to the causes of desirable effects. Software engineers should be able to manipulate the elements to improve the quality in end view.
- **Intrinsic view:** It identifies static and invariant properties of the software product, which affect the achievement of ends. It does not change unless the product is changed.
- **Contingency view:** It identifies static and invariant emerging properties of contingencies, which affect the achievement of ends. It can change even if the product is not changed.

Koh [2017a, 2017b] proposes the principle of one view stating that a software quality model should correspond to one and only one software quality view. According to principle of one view and the new model of software quality view, at least, five software quality models are required: Long-term effect model, activity quality model in performer's view, activity quality model in third party's view, intrinsic quality model, and contingency quality model [16,17].

Quality in use model includes the elements of performer's view on software activity, third party's view on software activity, and long-term view. Product quality model includes

the elements of intrinsic view and contingency view as well as end view [Koh 2017a, 2017b]. As the result, SQuaRE includes all the five views in its two quality models of software and system violating the principle of one view.

Product quality model and quality in use model are too big and complex even for expert software engineers to comprehend properly [16,17]. They include even the elements that can be obtained by aggregating the data regarding other elements. It is the main reason why there are so many discords in the models. It is almost impossible for ordinary software engineers to deal with the models properly. The elements in SQuaRE should be reclassified into a set of smaller models which ordinary software engineers can deal with properly. The cause-and-effect relationships among the elements of the models should be elucidated too.

Table 11 shows another example of discordance. Gonzalez Sanchez et al.'s [4] playability consists with satisfaction, effectiveness, and other 5 characteristics (refer Table 11). Among them, it is uncertain how emotion is differentiated from satisfaction. Emotion can be regarded as an aspect of satisfaction. It is classified as a sub-characteristic of satisfaction in Gonzalez Sanchez et al.'s [4]

However, the definitions of immersion, motivation, and socialization do not describe what their titles typically represent. They represent the factors which affect the titles without specifying what the factors are. So, the audiences should figure out by themselves both what the titles mean and the factors that affect the titles. Confusion arises as the result. The meaning of immersion, motivation, and socialization should be defined specifically and clearly in a model and the factors which contribute to increase emotion, immersion, motivation, and socialization should be specified in the other models. The theory which explains the cause-and-effect

Title	Definition	Remarks
Immersion	Capacity of the video game contents to be believable, such that the player becomes directly involved in the virtual game world.	Titles are of player's view while definitions are of means view without specifying the factors that cause the effects specified by titles.
Motivation	Set of game characteristics that prompt a player to realize specific actions and continue undertaking them until they are completed.	
Socialization	Set of game attributes elements and resources that promote the social dimension of the game experience in a group scenario.	
Emotion	Player's involuntary impulse in response to the stimulus of the video game that induces feelings or a chain reaction of automatic behaviors.	It is uncertain how it is differentiate from satisfaction.
Learnability	Player's capacity to understand and master the game's system and mechanics (objectives, rules, how to interact with the video game, and so on).	Contingency factor: the trait of player

relationship among the elements in the models should be developed too.

Learnability also represents the factor which can affect playability. It, however, is not regarding the software. It is contingency factor.

SQuaRE's definitions of effectiveness and efficiency may be especially appropriate for business application software to be used in the workplace. They, however, may be inappropriate

for some kind of software such as, for example, the video game. Gonzalez Sanchez et al.'s [2009a, 2009b] playability illustrates the point of argument very well. Sub-characteristics and metrics of usability should be defined variously according to the types of software[4,5]

Conclusion

This paper proposes the expended model of software quality view which classifies the views on software quality into two broad categories of end view and means view. End view includes long-term view and short-term view which is classified further into performer's view on software activity and third party's view on software activity. Means view includes intrinsic view and contingency view. According to the expended software quality view and Koh's [2017a, 2017b] principle of one view, at least, following five software quality models are required: Long-term effect model, activity quality model in performer's view, activity quality model in third party's view, intrinsic quality model, and contingency quality model.

Quality in use model of ISO 25000 Series SQuaRE includes the elements of performer's view on software activity, third party's view on software activity, and long-term view. It includes even the elements that can be obtained by aggregating the data regarding other elements. SQuaRE's product quality model includes the elements of intrinsic view and contingency view as well as end view [Koh 2017a, 2017b]. As the result, SQuaRE includes all the five views in its two quality models of software and system violating the principle of one view, which is the main reason why there are so many discords in the models. It is almost impossible for ordinary software engineers to deal with the models properly.

The elements in SQuaRE should be classified into a set of smaller models which ordinary software engineers can deal with properly. Effectiveness and efficiency should be classified into the third party's view on software activity; satisfaction into the performer's view on software activity; 'freedom from risk' into long-term view. 'Context coverage' should be eliminated.

This paper suggests restricting the term using to denote the type of software activity in which a person interacts with a software product through user interface. The software activity such as studying, testing, and customizing is excluded from using although they involve interacting with a software product through user interface. This approach sharply contrasts with that of ISO 25000 Series SQuaRE in which using encompasses various software activities performed by various stakeholders such as "*primary user (person who interact with the system to achieve the primary goals), secondary users (person who provide support, for example. content provider, system manager/administrator, security manager, maintainer, analyzer, porter, installer), and indirect user (person who receives output, but does not interact with system)*" [ISO/IEC 25010:2011, pp.5-6][9].

This paper also introduces the notion of using instance, usability function, and usability instance. Using instance is the sequence of using actions performed on a software product to accomplish specific goals. It includes the immediate results or effects of the actions too. Playing instance is a special type of using instance.

Usability function is the function by which the usability of using instance is determined. It is typically defined in terms of a set of evaluation criteria such as, for example, effectiveness, efficiency, and satisfaction, by which the goodness of the using instance is defined. Multiple usability function can be defined simultaneously. Usability instance is the value of usability function of the using instance. If multiple usability function is defined, then multiple distinctive usability instances can exist for a using instance.

The usability instance is assumed to be determined regardless the using instance is measured or not. The individual usability instance cannot be regarded as the property of the software product. The usability of a software product is defined as the population mean of usability instances from the product. The product usability can be regarded as the property of software product since the effects of contingency factors are factored out.

This paper analysis why SQuaRE is so difficult to comprehend. The results demonstrate well the need to decompose product quality model and quality in use model of SQuaRE into five, at least, small and easy-to-understand models which are consisted with homogeneous elements. This paper also provides the theoretical basis to customize usability according to various types of software.

It is beyond the scope of this paper to complete elaborated software quality models or to present precise definitions of various concepts or terminologies. The system of software quality models and theories to explain the relationships

among the elements of the models should be developed. They will constitute a consistent and comprehensive body of knowledge regarding software quality.

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Building Relational Contract through Compassion: Evidence from Indian Manufacturing Sector

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Abstract

The authors tested a causal relationship between compassion and relational contract using 81 unique samples from Indian manufacturing sector through regression analysis technique. Compassion is the emotional behavioral aspect of the people in form of sympathy and empathy towards their surroundings. Relational contract is an essential part of psychological contracts, talks about the long term and open ended relationship between employee and employer. The authors discussed the new dimensions and applicability of the compassion to build the relational contract among the employees working in Indian manufacturing sector. In addition, they examined the role of empathic behavior of employees in developing their understanding and long term relationship with their employers. The purpose of the study is to provide guidance to the practitioners seeking support to resolve the issues related to unmet expectations between employees and employers. Discussion focuses on the various implications of the findings and open new vistas for the future research.

Keywords Compassion, Psychological contract, Relational contract

Introduction

Indian manufacturing sector is growing rapidly and accounting nearly 16% of real Indian GDP. It is expected to contribute 25% to the Indian GDP by 2025. Due to its emerging importance, Indian Govt. is also striving hard to strengthen this sector by launching ‘make in India, skill India and startup India’ campaigns[1] (IBEF, 2017). Manufacturing sector demands a good relationship between workers and supervisors or employees and employer to meet all the desired expectations related to quality production. It has been seen that if team members are having proper coordination among them and are cooperative to each other, they deliver the better results [2] (Vermaet *al.*, 2012). Manufacturing sector is perceived as production oriented but interpersonal relationships always seek attention to maintain the coordination between team members. Employees working in manufacturing units are majorly concerned about achieving the production targets rather than fostering personal relationships by caring and knowing each other’s needs. It shows that compassionate behavior is missing at the manufacturing workplace. This study talks about the compassion and the role of compassion to build relational contract between employee and employer in Indian manufacturing sector. Compassion

is the emotional behavioral aspect of the people showing sympathy and empathy towards their surroundings. It involves a positive feeling of a person towards suffering people and a wish to relieve their sufferings[3] (Twigg and Parayitam, 2006). Relational contract is one of the three contracts of psychological contracts given by Rousseau (2000)[4]. Psychological contracts can be better explained by understanding employee obligations and employer obligations. These obligations have been divided in three parts relational contract, balanced contract and transactional contract. In this study we are going to discuss the relational contract in two different forms such as employee obligation towards his employer and employer obligation towards his employee.

Literature Review

Pence(1983) discussed the different views of Socrates and Protagoras about compassion. Socrates favored the notion that virtues cannot be taught but Protagoras opposed this claim[5]. After discussing in detail, Pence (1983) concluded that virtues can be taught provided the items of compassion are nurtured and rewarded properly[5]. The items of compassion are sympathy, empathy, help and awareness (Petchsawang and Duchon,

2009)[6] . Mostly, compassion has been studied in the medical field as a therapy to relieve suffering and illness of the patients. This study talks about the compassion behavior of employees shown at their workplace in Indian manufacturing sector.

O'Donohoe and Turley (2006) suggested that compassion is not compliant to managerial systematization and control in the organizations [7]. The rationality, coordination and proliferation of compassion were majorly affected by proper observation, negotiation and conversation. Gilbert (2009) talked about six attributes of compassion includes 'sensitivity, sympathy, distress tolerance, empathy, non-judgmental, and care for well-being' [8] . He proposed some skill techniques to enhance these attributes. These techniques are compassionate attention, compassionate reasoning, compassionate behavior, compassionate imagery, compassionate feeling and compassionate sensation. That organization where compassionate behavior is exercised and noticed at the workplace, make the environment positive and alienates the intention to quit by enhancing affective commitment among employees (Moon *et al.*, 2016)[9] . Compassion at workplace helps employees to understand their coworkers well and develop a better understanding.

Macneil (1985) defined contracts on two basis relational and transactional. Transactional talks about the short term employment arrangement which is based on high economic or monetary rewards [10]. In contrast, relational contracts are focused on open ended relationship stability comprise of socioemotional and economic terms. Rousseau (2000) suggested that there could be four types of arrangements; transactional, relational, balanced and transitional. Balanced contracts refer to open ended relationship focused on performance rewards [4]. Transitional contract is a cognitive stated showing the consequences due to the organizational changes. In this study, we will focus only on relational contract exists in employee obligations and employer obligations. Relational contract emphasizes on stability and loyalty. In this type of contract, employee feel obligated to stay for a long time, support the organization by manifesting commitment and perform all the tasks which are essential to keep the job. Employer also feel obliged to offer long term employment and stable wages to his employees (Rousseau, 1995; Rousseau, 2000)[5] [4]. These psychological contracts have been used to foster the employee retention by increasing organizational commitment in Indian manufacturing industry (Pradhan *et al.*, 2017)[11].

Hypotheses formation

Compassion is not only a trait; it is much more than showing warmth and kindness towards the suffering people. Gilbert (2010) proposed a compassionate mind

approach which says that compassion requires two different psychologies: first 'awareness and engagement' second 'skilled intervention in action' [8]. It means people who are compassionate they have awareness of their surroundings and ready to engage themselves with the other people. It can be inferred that compassionate people understand their responsibilities and try to fulfill their obligations towards the society and their loved ones. Study suggests that compassionate people are good at maintaining their relationship compare to less compassionate people [12] (Neff and Beretvas, 2013). These people can be perceived as good at fulfilling their obligations in form of relational contract. Thus we can conceptualize here

H1: Employees who show compassion at the workplace have a positive impact on fulfilling their obligations in form of relational contracts towards their employer.

As discussed above, employee and employer are having some obligations to fulfill towards each other. The social exchange theory (Blau, 1964) best describes this relationship by explaining that if one party is fulfilling its obligation towards the other party, then other party also feels obliged and strives to fulfill the expectation of first party [13]. With this theory, we can assume that if employee is fulfilling his obligations by working hard, doing personal sacrifices and willing to stay for long time then employer will also be concerned about employees' personal welfare and long term well-being. Thus we can conceptualize here

H2: Employees obligations in form of relational contracts have a positive impact on fulfilling employer obligation in form of relational contract.

Methodology

Participants and procedures

This study is solely focused on the employees working in Indian manufacturing sector and one private heavy industry organization was selected. We targeted only those employees who were working in manufacturing units. First we prepared a word document file for all three scales and approached the unit manager to get the data collection. After getting the approval, we sent him the scale's file along with a ppt having description of related variables. Manager distributed the questionnaire among all the unit employees and after collecting the responses, sent all the sheets back to the researcher by courier. The mode of data collection has been convenience sampling method and total 81 respondents' data was captured. Out of 81 respondents, there were 32% junior, 54% middle and 14% senior level employees. There were total 77 male and 4 female employees, and the average age of these respondents was found 31 years.

Measures of the study

A set of adopted scales were used for the data collection to record the responses for compassion and relational contract. Each item of the scale was captured on Likert's seven-point scales ranging from strongly disagree (1), disagree (2), disagree somewhat (3), undecided (4), agree somewhat (5), agree (6), strongly agree (7).

Compassion

The scale of compassion is based on the previous research of Petchsawang and Duchon[6] (2009). It is consisting of 4 items (Example – 'I can easily put myself in other people's shoes').

Employee Obligation - Relational Contract scale

The scale is adopted from the work of Rousseau (2008)[14]. It shows the relational contract of employee obligations towards the employer and has eight items (Example – 'I make personal sacrifices for this organization').

Employer Obligation - Relational Contract scale

The scale designed by Rousseau (2008), shows the relational contract of employer obligations towards their employees. It has eight items (Example – 'My organization concerns for my personal welfare')[14].

Results

In order to determine the reliability of all three variables, we have checked the Cronbach's alpha value. The Cronbach's alpha value for each construct was found Compassion (.778), Employee relational contract (.886), and Employer relational contract (.906) within the acceptable limit (Nunnally, 1978)[15]. The validity was also checked and found high. Respondents had no problem in reading and understanding any item of the scales.

To check the hypothesis, we used the linear regression technique. Table 1 & table 2 are showing the results. Table 1 shows the values of R square and adjusted R square as .683 & .53 respectively, which exhibits that compassion can account for 53% of the variation in employee relational contracts towards the employer. The p value is found significant at 5% level of significance ($p < .001$), thus the alternate hypothesis 1 has been accepted here. Now, we can say that employees who show compassion at the workplace have a positive impact on fulfilling their obligations in form of relational contracts towards their employer.

Table – I: regression analysis with compassion as independent variable and employee relational contracts as dependent variable

Model	Coefficient		Sig.	R ²	Adjusted R square
	β	SE			
(Constant)	3.323	.539	.000		
Com	.356	.100	.001**	.683	.534
At 5% level of significance (** p < .001)					

(SE: Standard Error, Com: Compassion)

Independent variable: Compassion

Dependent Variable: EERC (Employee Relational contracts)

$$EERC = \beta_{0i} + \beta_{1i} \text{com} + \mu_i$$

$$EERC = 3.323 + 0.356 \text{ com}$$

Table 2 shows the value of R square and adjusted R square as .683 & .61 respectively, which exhibits that employee relational contract can account for 61% of the variation in employer relational contract. The p value is found significant at 5% level of significance ($p < .001$), thus the alternate hypothesis 2 has been accepted here. Now, we can say that employee's obligations in form of relational contracts have a positive impact on fulfilling employer obligation in form of relational contracts.

Table – II: Regression Analysis With Employee Relational Contracts as Independent Variable And Employer Relational Contracts As Dependent Variable

Model	Coefficient		Sig.	R ²	Adjusted R square
	β	SE			
(Constant)	4323	.432	.000		
EERC	1.45	.060	.001**	.696	.611
At 5% level of significance (** p < .001)					

(SE: Standard Error, EERC: Employee Relational contracts)

Independent variable:EERC (Employee Relational contracts)

Dependent Variable:ERRC (Employer Relational contracts)

$$ERRC = \beta_{0i} + \beta_{1i} EERC + \mu_i$$

$$ERRC = 4.323 + 1.45EERC$$

Discussion

This study demonstrates that employees who show compassion towards their coworkers and colleagues are more prone to fulfill employee obligation in form of relational contract (adjusted r square .534, $p < .001$). Their efforts on fulfilling obligations towards employer lead to fulfillment of employer obligation in form of relational contract (adjusted R square .611, $p < .001$). Relational contract refers to those contracts which are solely focused on stability and loyalty. This contract comes under employee obligations and employer obligations both. Obligations are comprised of transactional, relational and balanced contract, which can be defined as the unwritten contracts which a party is expected to fulfill towards other party. This study has solely been focused on the relational contracts. Result supports the view that compassionate people are more aware about the needs of their colleagues and try to engage with them (Kanov, 2004) [16]. They try to relieve the sufferings of suffered people by showing sympathy and empathy. Empathy is the ability to feel what another person is feeling and sympathy is all about to show supportive emotion and pity for another person's pain (Keen, 2007) [17]. The majority of the respondents are male in this study as the ratio of female employees is very less in Indian manufacturing sector. Many sociologists have highlighted the fact that males are very much concerned about their tasks which help the society and family to function, and females are known to be more concerned about harmony among family members (Bales, 1955) [18]. Compassion at the workplace makes the environment positive and creates a harmony among the different hierarchy levels. This harmony may reduce the conflicts between workers and their supervisors. Manufacturing sector is very much perceived as production oriented where many unions are tend to be involved to take care of their workers' interests and influence major decisions. In such organizations, compassion can be used as a tool to avoid the union strikes, where conflicts are aroused between workers and management (Chatterji, 2013) [19]. These conflicts tarnish the organizational image and hamper the growth. Employees tend to work hard and produce good results, if they find working environment positive. They try to build a cordial relationship with their coworkers and colleagues by showing compassion. In these organizations, employees play a big role to maintain

the relationship between workers and top management by communicating to each other. It has been seen that if employees feel obliged to perform their duties towards their employer, then employer also feels responsible to fulfill all their employees' legitimate demands and expectations [20] (Rousseau, 1989). The great examples are Google and Facebook, which are considered as great place to work in. These organizations are very much concerned about their employees' needs and provide the every possible basic amenity to them. Therefore employees focus only on their work and perform well, which eventually lower down the attrition rate in these organizations. A compassionate behavior exhibits the traits of a person includes positivity, cooperativeness, kindness, warmth and caring nature. People who have these qualities found better in position to maintain their relationships (Neff and Beretvas, 2013) [12]. These relationships can be explained better as 'person to person' or 'person to the organization'. Relational contracts theory says that employee seeks stability and loyalty from his employer, where employer exhibits his concern to show fairness and honesty in treating his employees and fulfilling their unwritten promises. In contrast, loyalty from employee talks about the willingness to stay in the organization and feel committed. Past studies also support this view that employees who experience the compassion are more tend to be engaged in their work (Goetz *et al.*, 2010; Grant *et al.*, 2008) [21, 22]. Organizations which experience compassion at the workplace develop the propensity for cooperation in form of generating relational resources building shared values and relational skills (Dutton *et al.*, 2007) [23]. Although, compassion is not acceptable and popular in every organization, it has been seen that role conflicts occur even when some managers show compassion at their work place but the organization culture demands more hard-hearted decisions based on the monetary criteria irrespective of how it affects the employees (McCormick, 1994) [24]. Hence, we can infer that organization culture plays a significant role to experience and practice compassion. This is employer's responsibility to create such culture where compassionate behavior of employees is recognized and rewarded. These employees do personal sacrifices to protect their organization image and continue to work to be remained with their organization for a long time. In result, employer also takes care of the personal welfare of his employees and provides steady employment to them.

Implications

For practicing managers, the most important implication of the study is to understand the compassion level of employees working in tough conditions of Indian private manufacturing sector. With the help of this study, practitioners can motivate their employees to be

compassionate at the workplace. It will help them to understand each other and build the relational contract. The results of our study contributes to the existing literature and help in the policy formulation, which will encourage the employees to work as a team and the team members will be more cooperative and understanding towards each other.

Limitations and Scope for the Future Research

However, there are certain limitations. The study utilized the data collected from the one company and small sample size, which may limit the generalizability of the findings. All the respondents were from Indian private manufacturing unit. Eventually, the necessity for future studies should also include large sample size. There is a good scope for the future studies to collect large sample data from different PSUs and private sector employees. Relationship with other variables and comparison studies could also be useful in the Indian context.

Conclusion

In this paper, we have analyzed the role of compassion in building the relational contracts as part of employee obligations and how these employee obligations positively impact the employer obligations in form of relational contracts. Study revealed that employees, who show the compassion at their work place, remain with their organization for so long and try to fulfill all the expected obligations towards their employers. Study also suggests that these employees receive the positive behavior from their employers in form of fulfilling employer obligations towards them. To conclude we can say that compassion plays a big role to build the relational contracts between the employees and their employer. The outcome highlights how to increase participation between managers and their coworkers. It can help the organization to create the positive environment to work with and the employees can be able to put themselves in their coworkers' shoes to know what their coworkers think, feel and need.

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Distorted Graphs Used in Listed Companies from Six ASEAN Countries

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Abstract

This study examines the publicly available graphs presented in the listed companies trading in the stock markets of six ASEAN countries – Malaysia (BM), Indonesia (IDX), Philippines (PSE), Singapore (SGX), Thailand (SET), and Vietnam (VN). Graph data are manually collected from the annual reports, and websites of 735 companies listed in the fiscal year 2015. From three industry sectors--Finance, Property & Construction, and Service & Hotel, 5,837 completed graphs are examined and used Relative Graph Discrepancy Index (RGD) to measure the extent of distortion in these graphs. The results show relatively less mature market like VN (Vietnam) to have distortion scores more than mature markets like SGX (Singapore) and SET (Thailand). The rapid growth of Property & Construction sector in VN lends itself to have high numbers of graph distortion. BM (Malaysia) shows the greatest distortion scores in the Service and Hotel sector that also has high growth rate with the most number of firms in this sector. Financial sector maintains the lowest graph distortion indexes across all six ASEAN capital markets.

Keywords: Graph Distortion, RGD, ASEAN markets

Introduction

Previous research find graphs to be important for decision makers such as investors. Naïve investors often use public information as they may not do fundamental or technical analyses like professional ones. Graphic representations of corporate performance are perhaps the most used and abused. Previous study found variation of graph usage and graph distortion in the capital markets of different countries [10]. While language barriers make it difficult to compare tabular contents of financial statements from one country to another, graph representations appear to lift those barriers because they are relatively language independent communication medium [2].

Annual reports and investor relation information are most typical public available data sources. The former is required by regulations of all capital markets. Many exchanges have the Excel or PDF files of the reports available for download and view. The latter is created or extracted from corporate data sources to appeal to potential and exiting investors the best side of the company. Frequent use of graphs is present for naïve and

expert users to quickly grasp the large amount of complex financial data. Corporate data presented in graph format is used extensively by local and international investors, however, little research has been done to study the quality of graphs used across different countries [7] [3]. Thus, the main objective of this research is to assess the level of distortion of publicly displayed graphs being used in ASEAN capital markets. Results from this research will benefit international investors when they discern the meaning of graph data across different ASEAN exchanges.

Literature Review

This section gives a brief background for the context of this study, including the data collection platform- capital markets of six ASEAN countries, types of publicly displayed graphs, and measurements used to distorted graphs.

1. Capital Markets of Six ASEAN Countries

The rise of ASEAN (Association of Southeast Asian Nations) as a global player has been recognized in recent years. The first five ASEAN countries in the 1967 Bangkok Declaration are Indonesia, Malaysia, the Philippines, Singapore, and Thailand (<http://asean.org/the-asean-declaration-bangkok-declaration-bangkok-8-august-1967/>).

Seventeen years later in 1984, Brunei Darussalam joined in. Then more than a decade later ASEAN is expanded to include Viet Nam in 1995, Lao PDR and Myanmar in 1997, and Cambodia in 1999. The ASEAN will celebrate

Singapore, the second to the smallest populated country with only 5.6 million people has the largest market capitalization in its stock exchange. To compare the size of different capital markets, September 2016 data from the world-exchange organization is chosen as source of data. Unfortunately, no data is available for four countries, Brunei Darussalam, Cambodia, Lao PDR, and Myanmar. At the time of data collection, the stock exchanges from these countries are in their very early stage of development, thus are excluded from the present study.

Table 1: Size of Stock Exchanges in ASEAN Countries

Member Exchanges	Country Flag	Population (in millions)*	Market Capitalization (USD millions)**	# of Firms*
<u>Brunei</u> Darussalam		0.434	N/A***	N/A***
<u>Cambodia</u>		16.01	N/A***	N/A***
<u>Indonesia</u> Stock Exchange (IDX)		263.51	447,119.00	535
<u>Lao</u> PDR		7.04	N/A***	N/A***
Bursa <u>Malaysia</u> (BM)		31.16	396,623.90	894
<u>Myanmar</u>		54.84	N/A***	N/A***
<u>Philippine</u> Stock Exchange (PSE)		103.79	265,212.20	262
<u>Singapore</u> Exchange (SGX)		5.78	674,323.30	481
Stock Exchange of <u>Thailand</u> (SET)		68.29	424,114.70	648
<u>Vietnam</u> : Hochiminh Stock Exchange (HOSE)		95.41	62,917.60	311
<u>Vietnam</u> : Hanoi Stock Exchange (HSE)			7,086.70	377

its 50th anniversary in 2017. The ten member states of ASEAN have their ups and downs of political and economic developments.

As shown in Table 1, Indonesia has the largest numbers of population and Brunei has the smallest. Nevertheless,

Notes: * 2017 <http://www.worldometers.info/world-population/population-by-country/>

** September 2016 Data from <https://www.world-exchanges.org/focus/index.php/in-every-issue/statistics/market-statistics/43-domestic-market-capitalisation>

*** No data available from the world-exchange.org

To promote the development of integrated ASEAN capital market, the ACMF (ASEAN Capital Markets Forum) was established. As part of this initiative, the ASEAN website and the ASEAN Stars Index were formed in 2011 and the ASEAN Trading Link was launched a year later in 2012 [13]. The ASEAN Star Index comprises 180 blue chip stocks from the six largest economies in ASEAN that also have the most developed capital markets, including Singapore, Malaysia, Thailand, Indonesia, Philippines, and Vietnam. Note that Vietnam has two stock exchanges, the Ho Chi Minh Stock Exchange (HOSE) was established in 2000 and the Hanoi Stock Exchange in 2006. More firms are listed on HSE than HOSE. However, market capitalization for HOSE is greater than that of HSE. Still, the exchanges have different levels of maturity, thus, the number of firms and their sizes vary greatly.

Since different countries have different natural resources and focus on different political, social and economic

Table 2: Industrial Sectors in the Six Chosen Stock Exchanges

BM	IDX	PSE	SGX	SET	VN
Construction	Agriculture	Chemical	Capital good	Argo&Food	Consumer staples
Consumer Product	Consumer Good	Construction, infra & allied service	Consumer service	Argo&Food-Agribusiness	Consumer discretionary
Financial	Finance	Electricity, energy, power & water	Consumer staple	Consumer product-home and office	Energy
Hotel	Industry & Chemical	Financial	Energy	Consumer-fashion	Financial
Industrial Product	Infrastructure & Utilities	Food, beverage & tobacco	Financial	Financial-insurance	Industrial
IPC	Mining	Holding firm	Food and beverage	Financials	Information technology
Mining	Miscellaneous	Hotel	Insurance	Industrials-Automotive	Material
Plantation	Property	Mining	Material	Industrials-industrial material	Real estate
Properties	Trade	Property	Real estate	Industrials-packaging	Transportation
REIT		Service	Retail	Industrials-petrochemical	Utilities
SPAC		Small, medium & emerging	Technology & hardware	Industrials-steel	
Technology		Telecommunication	Transportation	Property-construction service	
Trading-service			Utility	Property-property development	
				Property-property fund	
				Resources	
				Service-health care	
				Service-media	
				Services-commerce	
				Service-transport	
				Technology	

data and selected graphs displayed in publicly assessable reports would differ as well. Thus, comparing sectorial data from one country to another are difficult and with crisscross businesses in publicly listed companies, a ballpark comparison is possible.

Note: Data collected from Bloomberg database (2014-2015)

2. Publicly Displayed Graphs

Graphs and charts are used extensively in publicly available data, especially financial data. Each individual type of graph, e.g., line graph, pie graph, bar or column graph, candle graph, and so on tends to serve a different purpose. For example, a column graph or line graph is suitable for presenting time-series data and pie chart is to show percentage or proportion data. Previous study found chart orientation to affect readers' perception ver. Column graphs seem to be better than horizontal bar charts as they

policies, the industry sectors of individual nations are somewhat different, For example, Indonesia and Philippines are rich with mineral, thus, mining is a major sector in IDX and PSE. Malaysia and Thailand are agricultural based country; Plantation and agricultural related business become their important sectors in BM and SET. Many developing countries in ASEAN rely heavily on service and tourist related industries and their exchanges have hotel and service sectors, i.e., BM, PSE, and SET. However, as seen in Table 2, the sector that is common across all countries is the financial sector. Likewise, construction, property and real estate, combined or separated, are sectors that indicate the rise and fall of the developing economies, thus, can be found in all six exchanges.

The definition and inclusion of companies into the designated sector can deviate from one market to another. In addition, the regulations from each member country differ greatly; it is likely that the quality of disclosed

enhance reader's visualization better [11]. This graph type also is most popular for companies to show their key financial variables [1] [2]. Inconsistent findings the preference of 2D (two dimension) versus 3D graphs have been studied in terms of data reliability and impression formation frameworks [10]. Multiple periods graphs are prevalent in depicting financial performance data such as sales, net income and revenue [2] [7].

Since spreadsheet software has been introduced to business, financial data users are captivated by its power. More and more demands are made to present data in graphs and infographic format because they can serve as effective communication tools between the company and its stakeholders [2] [10]. Publicly displayed graphs, such as those included in the annual report or investor relation section can be used to show a single or combined category of data [1].

3. Measurements of Distorted Graphs

Earlier research addressing graphs distortion focus on publicly available data such as annual reports [1] [10]. Two well-known graph distortion measures are GDI (Graph Discrepancy Index) and RGD (Relative Graph Discrepancy Index). Both indexes are used to measure the accuracy between the graph and its underlying data. GDI was developed by Taylor and Anderson in 1986 and modified by Steinbart in 1989 [cited in 9]. Using GDI, Beatties & Jones (2002) found 10% or more of distortion to affect the financial graph reader's perception threshold [3]. Nevertheless, the inconsistency of GDI measurements had led Mather et al (2005) to come up with an improved measurement called RGD [9]. They noted the limitation of RGD the calculated function would be discontinue when the last data point (d_2) is zero. Table 3 summarizes the formula for both measurements.

Table 3: Graph Distortion Measurement Formula

GDI (Graph Discrepancy Index)	RGD (Relative Graph Discrepancy Index)
Graph Discrepancy Index (GDI) = $\left(\frac{a}{b} - 1\right) \times 100$	Relative Graph Discrepancy Index (RGD) = $\frac{g_2 - g_3}{g_3}$
where a is the percentage change in graph; $a = \frac{\text{heights of last column} - \text{heights of first column}}{\text{heights of first column}} \times 100$ b is the percentage change in data; $b = \frac{\text{value of last data point} - \text{value of first data point}}{\text{value of first data point}} \times 100$	where d_1 = value of first data point; d_2 = value of last data point g_1 = height of first column; g_2 = height of last column g_3 = the correct height of last column if it is plotted accurately; $g_3 = \frac{g_1}{d_1} \times d_2$

Research Method

Data Collection

Secondary data collection of publicly available graphs is the focus of the present research. The procedures include four steps. First is to filter usable firms in each chosen sector from the six markets/exchanges. In each firm, financial data such as Market Capitalization, ROE and ROA for year-ends 2014 and 2015 are collected.

Although of these firms may differ in their year-end dates, the data is collected at the date of each firm's designated fiscal year. Second is search online for companies' annual reports, investors' relation data and from company's own websites. Seemingly, qualified graphs that might be used for assessing distortion level using RGD measures are cropped from these publicly available sources. Third is to use an application to automatically sizing the image/picture so that the height of the component in each graph can be determined.¹ In this step, only measurable graphs are included. The heights of the first and last data-point are recorded. Fourth and final step is to create a summary datasheet for further analyses. Table 4 shows the number of firms derived from the first step; Table 5 shows the number of graphs from the third step.

The researcher identifies 735 (85%) usable firms from 866 firms listed in the three chosen industries during 2014-2015 fiscal years. BM has 244 usable firms (33%), the largest in the present usable dataset. PSE and VN represent less than 10% of the total usable firms being

included in the data collection; 48 (62%) and 51 (59%) are excluded respectively because of several reasons. For example, there are incomplete annual reports for both 2014 and 2015; annual reports is not downloadable; no investor information for the company exists at the Exchange's website nor at the company's own website. Among three sectors, Hotel and Services sector is the largest with 311 (42.3%) firms and Finance is the smallest 185 (25.2%).

¹ The "GraphDistortionMeasurement.exe" application is written for this research project. The application program is operated semi-manually. Once a particular graph is dropped into the designated frame on computer screen and the user can hover the mouse on a particular data-point/ element of the graph, then its height will be automatically calculated. For RGD measures of graph distortion, the heights of the first data-point/ element and the last data-point/ element are needed for the formula as discussed in the literature review section.

Table 4: Number of Firms in Three Chosen Sectors from the Six ASEAN Exchanges

Market/Exchange	No of Firms			No of Firms by Sector		
	Total (a)	Access Problem (b)	Usable (c)	Finance (d)	Property & Construction (e)	Hotel & Services (f)
BM	250 (29%)	6 (2%)	244 (33%)	30	102	112
IDX	205 (24%)	11 (5%)	194 (26%)	70	48	76
PSE	77 (9%)	48 (62%)	29 (4%)	11	10	8
SET	102 (12%)	2 (2%)	100 (14%)	22	36	42
SGX	146 (17%)	13 (9%)	133 (18%)	45	24	64
VN	86 (10%)	51 (59%)	35 (5%)	7	19	9
All six Markets	866 (100%)	131 (15%)	735 (100%)	185 (25.2%)	239 (32.5%)	311 (42.3%)

(a) Total no of firms in three selected sectors with the note that the two Exchanges from VN are combined into one.

(b) No of problem firms (% of total (a))

(c) = (d) + (e) + (f)

Graphs from the usable firms were extracted and classified into graph types that can be used for distortion calculation. Both single graphs and combined graphs are collected. From over seven thousands graphs are examined, almost thirteen hundreds were unusable for the present research, leaving a total 5,827 graphs for analyses as shown in Table 4. There are two times of single graphs as compared to combined graphs being present in all six exchanges (3,921:1,906). Although BM has more usable firms, IDX has the largest numbers of graphs (2,210, 37.9%) usable in this study. There are a little bit more graphs in Finance sector than Hotel & Services, 2,225 (38.2%) and 2,099 (36.0%) respectively.

Table 5: Number of Graphs Collected from Three Chosen Sectors from Six ASEAN Exchanges

Market	No of Graphs			No of Graphs by Sector		
	Single (a)	Combined (b)	Total (c)	Finance (d)	Property & Construction (e)	Hotel & Services (f)
BM	1,166	313	1,479	316	447	716
IDX	1,551	659	2,210	1,300	385	525
PSE	141	61	202	89	100	13
SET	534	481	1,015	358	212	445
SGX	415	341	756	122	291	343
VN	114	51	165	40	68	57
All six Markets	3,921 (67%)	1,906 (33%)	5,827 (100%)	2,225 (38%)	1,503 (26%)	2,099 (36%)

(a) graphs with single data series.

(b) graphs with two or more data series, i.e., column and line graphs

(c) = (a) + (b)

Results

This section reports the types of graph used in six ASEAN Exchanges. Graph types are classified into graphs generated from one series (single graph) and those from multiple data series (combined graph). The average graph-distortion scores calculated by RGD index are also reported in both overall as well as by each of the three sectors, finance, property & construction, and service & hotel.

Graph Types Used

As shown in Table 6, the most used graph types is Vertical Bar, which is also known as, Column chart (73%). Horizontal Bar chart and Line chart gain equal popularity with 11% of the total graphs present. Horizontal Stack Bar chart and Scatter Dot chart are almost negligible as the types of chart used by corporations to represent their public data. Single graphs are used double of the combined graphs (2.05 times).

Table 6: Type of Graphs by Market/Exchange

Market/Sector	Single graph						
	Bar (V)	Bar (H)	Stack bar (V)	Stack bar (H)	Line	Scatter Dot	Total
BM	958	189	4	1	14		1,166
IDX	1,301	179	22	2	46	1	1,551
PSE	122	8	6		5		141
SET	394	64	33	2	41		534
SGX	282	102	7		24		415
VN	83	1	16		14		114
Total# of Graphs	3,140	543	88	5	144	1	3,921
Market/Sector	Combined graph						
	Bar (V)	Bar (H)	Stack bar (V)	Stack bar (H)	Line	Scatter Dot	Total
BM	189	20	11		93		313
IDX	379	17	72		184	7	659
PSE	41		15		5		61
SET	296	19	35	2	129		481
SGX	162	56	45		68	10	341
VN	18	3	1		28	1	51
Total# of Graphs	1,085	115	179	2	507	18	1,906
GRAND TOTAL	4,225	658	267	7	651	19	5,827
% from Total	73%	11%	5%	0%	11%	0%	100%

Graph Distortion

Table 7 shows the average RGD scores calculated from the graphs examined in this study. The overall average of RGD score is 94.81 from the total number of 5,827 graphs. In terms of market/exchange, despite representing only 3% and consisting of the smallest numbers of graphs (165), VN has the highest average RGD score of 631.99, almost seven times of the total average. On the other hands, with the largest number of graphs present (1,479 or 25%), BM has the second highest average RGD score (191.23). Almost the same size as VN (3%), PSE has the smallest average RGD score of 18.18.

Table 7: Average RGD Index by Market and by Sector

(n) number of graphs examined and measured using RGD index

Among the three sectors, Service & Hotel sector has the highest average RGD score of 161.39, Property &

Construction is the second highest 99.97, and Finance the lowest 28.50. Note that the numbers of graphs for the highest and the lowest are about the same, 2,099 and 2,225 respectively. Except for VN, individual market in the Finance sector has the magnitude of RGD scores proportionately to the number of graphs in its respective exchange. The average RGD score for the Property & Construction sector in VN is remarkably high, 1,496.59. Note also that even though number of graphs in Property & Construction sector from SET (212 graphs) is half the size of BM (447 graphs), the average RGD score of SET (58.6) is one and a half time higher than that of BM (40.22). BM's average RGD score in the Service & Hotel sector is the highest among all exchanges with the score of 364.64. Among all ASEAN countries, Indonesia is the most populate with 263 million people, 70 companies, and 1,300 graphs in the Financial Sector. However, IDX's graph distortion score is almost the same as Singapore's, 29.03 and 24.60 respectively. The graph distortion scores for Financial Sector of SET and VN are about the same,

Market (n, %)	Finance (2,225, 38%)	Property & Construction (1,503, 26%)	Service & Hotel (2,099, 36%)	Total (5,827, 100%)
BM (1,479, 25%)	11.95	40.22	364.64	191.23
IDX (2,210, 38%)	29.03	19.22	69.07	36.83
PSE (202, 3%)	4.92	30.35	15.36	18.18
SET (1,015, 17%)	46.36	58.60	38.42	45.44
SGX (756, 13%)	24.60	26.31	68.46	45.16
VN (165, 3%)	46.72	1,496.59	11.25	631.99
Average RGD by Sector	28.50	99.97	161.39	94.81

46.36 and 46.72, even though the number of graphs in SET (22 firms, 358 graphs) is nine times more than VN (7 firms, 40 graphs). Note that graph distortion indexes for Financial Sector are the lowest across all exchanges.

Discussion and Conclusion

The present study examines the graphs used in publicly available data sources of companies listed in the stock exchanges of six ASEAN countries, Malaysia, Indonesia, Philippines, Thailand, Singapore and Vietnam. Similar to previous research [12] [8], column charts are used the most. The majority of graphs are constructed with single type of data, for examples, sales, cost of sales, or returns. Combined data graphs are present but much fewer in numbers.

The majority of graph distortion studies are done in Europe and Central America (Penrose, 2008) and very few in the ASEAN markets. This study contributes to the literature gap and reports the use of RGD Index in computing graph distortions. Results reveal that distorted graphs are found more in the less mature market like VN. The result shows highest average distortion scores even though the numbers of usable graphs collected for Vietnam is the smallest. Vietnam enjoys its double digits growth in the past few years because it is one of the fast growing economies in ASEAN (<http://vneconomicstimes.com/article/vietnam-today/double-digit-growth-in-8m-trade>

). Nevertheless, BM has the second highest average RGD scores despite Malaysian exchange is among the earlier developed market in ASEAN. Conceivably, size of the markets should have some bearing on the average scores of graph distortions; however, the results do not support this conjecture.

Industrial sectors differs in their distortion levels. They appears to vary according to market maturity of each country. For example, Property development market is one of the fastest growing sector that adds to booming of Vietnam Indexes. Thus, it is conceivable that the graphs may have been amplified to positively attract investment from local and international investors. The study results

support the argument that less mature markets may not have stringent rules to ensure the data presentation, especially in graphic format, given to investors and prospects is free from exaggeration. In contrast, Service & Hotel sector in BM, a relatively mature exchange, turns out to have highest graph distortion index. This may be because there are more firms and graphs of this sector in BM than in other five exchanges in ASEAN. The size factor affecting average distortion scores is consistent with previous study where graphs from thirty best-performed corporations were examined [4] [8].

On the other hands, Banking and Finance sector maintains the lowest distortion scores. This sector is a highly regulated with rules and regulations from national bank, Security Exchange Commission, government and professional bodies, and so on. International standards also influence the need for transparency and good governance of this sector more than any other sectors. Thus, the distortion scores are proportionate to the numbers of graphs examined in all six exchanges. This is also consistent with previous studies [8].

Future research in distorted or misleading graphs and their impact on investor's decisions are still in an infancy state even though the issue has been raised in the past decades [2]. While one popular strand of research deals with finding the threshold of graph distortion [6], factors influencing graph distortion and relationships between graph distortion index and user's learning, cognitive engagement, and decision can add to the body of knowledge in the field of graph creation and usages in business setting.

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Audiences' Motive for Watching live Video Streaming

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Abstract

Due to the popularity and low cost of rapid mobile internet connection, live-streaming service is now blooming. Some users broadcast live show to the publics. Some of these users who provide video live show are famous and are called as youtubers, vloggers, or internet celebrity. The content of the live show is diverse. Some youtubers broadcast their computer screen when playing online game, the procedure of cooking food, and even everything of their daily life. The abundant contents of live video streaming attract sight from youngsters as well as adults. They spent a lot of time on live video streaming. To understand the viewers' motivation of watching live video streaming, the study used a self-report online questionnaire survey. We get totally 374 responses to analyze the motives of viewing live video streaming. Based on the empirical survey results, we propose a motivation model comprised of four motive categories: Leisure, celebrity worship, social connection, and voyeurism motivations of watching video life streaming. These four categories can be divide into eight motives, including pass time, entertainment, relaxation, celebrity identification, vicarious participation, companionship, social interaction, and voyeurism.

Keywords live video stream, web live show, youtuber, vlogger, internet celebrity

1. Introduction

Live video is “one of the things I’m most excited about,” address by Facebook CEO Mark Zuckerberg in 2016. Facebook had released the live video feature since 2016[1].

For social media, live video or live streaming is now an essential feature which allows people to broadcast live video to friends (and to the public). As Zuckerberg predicts, video will be the primary way that users share content in the future. The live streaming feature of social media has become more and more important from now to the near future. Not only social media have new feature of live streaming, some specialize apps focus on providing live streaming service for users. Live streaming industry market is now booming and live streaming itself became a new social media with high impact [2].

Hundreds of live video social apps have emerged during the past few years. According to search results in Google Android Market with a key word of “live streaming video”, there are 237 apps with function of “live streaming video” (searched on July 4, 2017). Live streaming video is now

an emerging market opportunity which attracts sight from industry practices.

Streaming media constantly deliver video (or audio) from a provider to receivers (https://en.wikipedia.org/wiki/Streaming_media). Unlike downloading, which is a process that the audiences obtain the entire video or audio before watching or listening to it, streaming refers to the delivery method: The process of constant delivering and constant obtaining video or audio. The delivered content (video or audio) can be “live” only when the delivery speed is fast enough to avoid significant lag.

Live video streaming service is booming with increasing user base. With live video streaming services, users can broadcast their activities to others in real time. Live video streaming services are usually synchronous, in which users broadcast their activities while audience view the video and response at the same time [3].

It is feasible and available due to the advance in mobile device, including high resolution display screen, high speed process for visual content, and high quality camera, and high penetration rate of high speed mobile

communication. The technique requirement is easy to reach when a user want to serve as a broadcaster (live video content provider) or just as an audience (live video content viewer).

Some broadcasters attract attention from audiences and become famous since a lot of audience keep viewing their live video streaming. The content of the live video streaming is diverse. Some broadcasters circulate their computer screen when playing online game, some use live video to show the procedure of cooking food, and some

2. METHOD

2.1 Participants

This study used a self-report online questionnaire survey to collect data. The participants were audiences of live video streaming. We post a call-for-voluntary advertising to recruit Taiwanese participants from Facebook, since Facebook is the largest social media in Taiwan with more than ninety percent penetration rate. Because age may be an influential factor for the viewing behavior to reality

Table 1 Estimated Social Network Sites Users in Taiwan

		(A.) Taiwan Population (age 13 and above)	(B.) Internet Usage Penetration (%)	(C.) SNS Penetration (% of Internet User)	(A) x (B) x (C) Estimated SNS population in Taiwan	Estimated Percentage of SNS users	Actual Respondent of the study (% of samples)
13-19	male	1,109,856	97.89%	80.12%	870,454	6.4%	8.3%
	female	1,017,152	97.89%	80.12%	797,747	5.9%	9.1%
20-29	male	1,664,421	98.08%	92.49%	1,509,866	11.2%	7.5%
	female	1,545,765	98.08%	92.49%	1,402,228	10.4%	17.6%
30-39	male	1,896,047	97.23%	86.51%	1,594,835	11.8%	12.8%
	female	1,914,692	97.23%	86.51%	1,610,518	11.9%	15.8%
40-49	male	1,804,613	92.66%	76.55%	1,280,034	9.5%	7.5%
	female	1,849,137	92.66%	76.55%	1,311,616	9.7%	8.0%
50-59	male	1,785,760	80.79%	63.35%	913,960	6.8%	3.7%
	female	1,842,545	80.79%	63.35%	943,023	7.0%	5.9%
60 and above	male	1,432,398	62.70%	53.10%	476,898	3.5%	1.9%
	female	2,475,136	62.70%	53.10%	824,064	6.1%	1.9%

even share their daily life on the internet live show. The abundant contents of live video streaming attract sight from youngsters as well as adults. They spent a lot of time on live video streaming.

With live video streaming, people now can consciously broadcast their own life to share their daily activities real-time, which make the live video streaming look like the hot sale film the Truman Show in 1998 [4].

By viewing the live video streaming, audiences can also pry about broadcasters' personal activities and private affairs. The live video streaming attract audiences' attention and some audiences spend significant time on viewing the live streaming video.

However, few previous literature focus on exploring the participation behavior exhibited by live video streaming audiences [5].

The current studies focus on understanding the motivations about why audiences keep viewing live video streaming.

television program [6], the study used stratified sampling to make sure the samples were representative to the whole population of Taiwanese internet users. The stratified sampling of the study was based on the research report of "2016 Summary Report: Wireless Internet Usage in Taiwan" [7] which presented the penetration of Taiwanese usage of Internet and social networking sites (SNS). The "Household registration statistics data" by Taiwan Ministry of the Interior was also used to determinate the sample numbers for stratified sampling. This study calculated the age percentage distribution of social media users, shown as Table 1. We used this distribution to allocate budget for Facebook Ads to recruit participants.

2.2 Procedure

We employed an online questionnaire during a 2 weeks period. Participants in this study were voluntarily and the questionnaire took approximately 10 min to finish. The questionnaire comprise two parts. First, we ask for participants report their Internet live show viewing behavior and their demographic data. Second, the participants answer the motives of viewing Internet live show. All volunteers through the Facebook Ads to access the online questionnaire. We provide a lucky lottery to

Table 2 Demographic profile of participants

Measure	items	percentage
Gender	Male	41.7%
	Female	58.3%
Age	Below 20 years	17.4%
	21-30	25.1%
	31-40	28.6%
	41-50	15.5%
	Above 51	13.4%
Career	Student	26.1%
	Employed	50.4%
	Between jobs	15.1%
	retirement	8.5%
Frequency for watching internet live video show	Always	10.7%
	Once a day	11.8%
	Once 2-3days	23.3%
	Once a week	17.4%
	Seldom	12.6%
	Never	24.3%

participants who completed the online questionnaire. The prize in the lucky lottery is approximately twenty NT\$ 100 dollars (US\$ 3.3 dollars) convenience store gift certificate.

2.3 Measurement

Based on the literature review for the potential motivations for view Internet live show, nine motivations were included in this study, including pass time, entertainment, relaxation, celebrity identification, vicarious participation, companionship, social interaction, and voyeurism. We selected two items for each motivations. Five point Likert-type scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), was used to measure these nine motivations.

The measurement scale for motivations of pass time, entertainment, relaxation, companionship and social interaction was adopted from [6].

Vicarious participation was measured by asking participants “To plot as if I were on the Internet live show”, “To pretend that I’m a contestant in the Internet live show”, which was developed by [8].

Two item measurement scale for identification to broadcasters was adopted from [9].

Three items was used to measure voyeurism, which were modified from [10].

We ask participants to answer three questions as below, “I enjoy watching Internet live show that help me get a peek into broadcasters’ private moments.” “I like Internet live show that shows a side of broadcasters that I would not normally see.” “I enjoy watching Internet live show that provides access to things that broadcasters try to hide.”

3. Results

3.1 Demographic

This study recruited 374 participants to join, 58.3% of the participants were female (n=218) and the other 41.7% were male (n=156). 53.7% of the participants were in the year range of 20 to 40 years old. Most participants were workers (50.4%). Overall, 75.8% participants have viewing experience for internet live video show. Table 2 shows the descriptive statistics of the respondents’ demographic profile, including gender, job career, age, and frequency for watching internet live video show.

3.2 Scale reliability and validity

To verify the construct reliability, we computed Cronbach’s alpha and composite reliabilities (CR) to evaluate the internal consistency among items to each construct of this study. The Cronbach’s alpha value of all constructs in our model exceed the usual .70 benchmark [11]. The Cronbach’s alpha value of each construct ranged from 0.674 to 0.901. This study calculated composite reliabilities for each construct, the value of composite reliabilities of each construct range from 0.803 to 0.940. The results demonstrated each construct of satisfactory with all coefficients being greater than the recommended threshold of 0.70, following the suggestion of [12]. The coefficients of Cronbach’s alpha and CR demonstrated that the constructs were with acceptable reliability.

Table 3 Scale reliabilities and Validity

Motivations	Items	Cronbach’s α	Composite Reliability (CR)	Average Variance Extracted (AVE)
Pass Time	2	0.848	0.861	0.755
Entertainment	2	0.818	0.838	0.721
Relaxation	2	0.856	0.867	0.765
Celebrity Identification	2	0.788	0.803	0.671
Vicarious Participation	2	0.817	0.837	0.718
Companionship	2	0.875	0.873	0.775
Social interaction	2	0.817	0.827	0.705
Voyeurism	3	0.935	0.940	0.839

We accessed the convergent validity of scales by calculated the standardized factor loading and Average Variance Extracted (AVE) of each construct of Confirmatory Factor Analysis (CFA) model. The standardized factor loading for each item ranged from 0.78 to 0.96 and had a significant loading with the appropriate latent construct, thereby demonstrating adequate convergent validity. The AVE value of all constructs was above the criteria of 0.50 (ranging from 0.671 to 0.839)[13], which indicated adequate convergent validity. The results show as Table 3.

Table 4 demonstrates correlations among the latent constructs and the root of AVE in the diagonal of the

matrix. According to the suggestion of Fornell and Larcker [13], we accessed the discriminant validity of the latent constructs in terms of the root of AVE. Compare of the root of AVE with corresponding correlation estimate of any two constructs, if the root of the AVEs are greater than the correlation between the constructs, which means the requirements for discriminant validity are satisfied. However, the result indicated all but two factors (entertainment and relaxation) had adequate discriminant validity. The root of the AVEs for entertainment motivation was 0.849, which was slightly lower than the correlation coefficient between relaxation and entertainment (0.892). The root of the AVEs for relaxation motivation was 0.875, which was slightly lower than the correlation coefficient between relaxation and entertainment (0.892). The remaining six factors were with acceptable discriminant validity.

	CI	VP	VO	PT	EN	RE	CO	SI
CI	0.819							
VP	0.779***	0.847						
VO	0.571***	0.621***	0.916					
PT	0.605***	0.672***	0.700***	0.869				
EN	0.595***	0.622***	0.724***	0.816***	0.849			
RE	0.655***	0.706***	0.713***	0.866***	0.892***	0.875		
CO	0.660***	0.745***	0.697***	0.752***	0.732***	0.816***	0.880	
SI	0.680***	0.732***	0.680***	0.753***	0.713***	0.800***	0.788***	0.840

Table 5 The exploratory factor analysis results of the motivation of watching live video stream

Dimensions	Sub-dimension	Leisure	Celebrity Worship	Social Connection	Voyeurism
Leisure	Pass Time	0.779	0.328	0.347	0.231
	Entertainment	0.813	0.254	0.254	0.363
	Relaxation	0.777	0.321	0.406	0.258
Celebrity Worship	Celebrity identification	0.320	0.870	0.228	0.223
	Vicarious participation	0.290	0.695	0.533	0.222
Social Connection	Companionship	0.427	0.341	0.704	0.333
	Social interaction	0.488	0.366	0.666	0.218
Voyeurism	Voyeurism	0.401	0.282	0.281	0.820

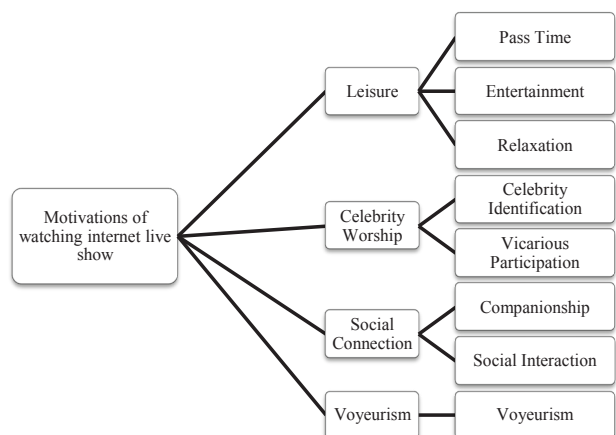
3.3 Exploratory factor analysis

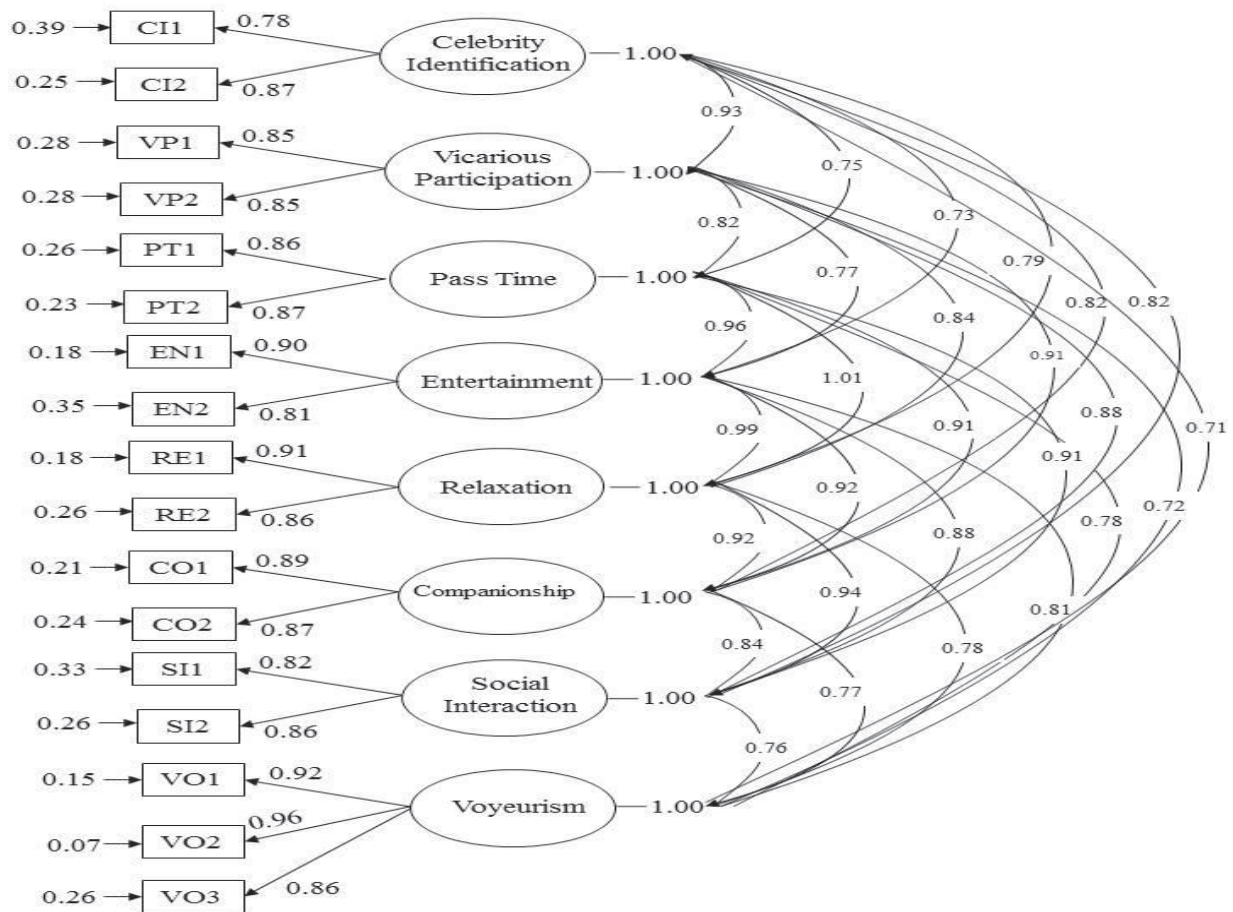
This study proposes eight motivations to explain why audiences watch live video stream. However, according to Table 4, there are significant correlation among these eight motivation. To check if these eight factors can be further classified into several categories, we employed the exploratory factor analysis (EFA) to extract second order factors to confirm whether the eight factors could be concentrated into fewer dimensions. As Table 5 indicates, the eight factors could be condensed into four motivation categories. This study named these motivation categories of watching video life streaming as leisure, celebrity worship, social connection, and voyeurism.

Leisure motivation included three factors: Pass time, entertainment, and relaxation. Celebrity worship motivation covered celebrity identification and vicarious participation. Social connection motivation contained companionship and social interaction factors. Voyeurism motivation comprised only voyeurism, as shown in Figure 1.

Leisure motivation reveals that audiences can take a rest, have fun, and release their pressure by viewing video life streaming. Celebrity worship implied that audience has identification to their favorite broadcaster and make a sense of real and close with them by viewing their video stream. This parasocial interaction makes audience satisfaction. Social connection motivation means audience uses the contents of video life streaming to interact with their friends, family, and others, which will decrease the level of companionship. Finally, the subjects of video life streaming usually approach to star's real life. Audience may be curious about everything of their favorite star which drives them to view the video streaming to fulfill their desire to peep at others.

To confirm whether the second-order dimension of motivation model of watching live video stream is appropriate, this study conducts two confirmatory factor analyses (CFA). The first CFA included eight one-





Chi-Square=641.97, df=91, $p < 0.001$, RMSEA=0.133, GFI=0.82, AGFI=0.70, SRMR=0.034, RMR=0.034, NFI=0.91, NNFI=0.89, CFI=0.92

Figure 2 the results of CFA of first-order model

order factors and the other one is second-order factors CFA, shown as Figure 2 and 3. This study used the chi-square ratio to test the goodness-of-fit. According to the suggestion of Hayduk [14], we compare with the chi-square ratio of first-order model and second-order model. The ratio of χ^2 and df (degree of freedom) of first-order model was 7.05, and the ratio of χ^2 and df (degree of freedom) of second-order model was 3.99, which nearly the threshold value of 3. Thus, the later one (the second-order model) has the better goodness-of-fit.

In otherwise, the model fit indicators of first-order model is RMSEA=0.133, GFI=0.82, AGFI=0.70, SRMR=0.034, RMR=0.034, NFI=0.91, NNFI=0.89, CFI=0.92, and the model fit indicators of second-order model is RMSEA=0.094, GFI=0.87, AGFI=0.82, SRMR=0.037, RMR=0.037, NFI=0.93, NNFI=0.93, CFI=0.95. The model fit indicators of second-order model is better than first-order model, that is, the second-order model is

suitable to explain the motivation of viewing live video stream.

4. Discussion

Internet live video show or live video streaming is an emerging internet application that attract sights from audiences, academics and industry practices. A lot of audiences spend significant time on viewing live streaming. However, few previous literature focus on exploring the motivations about why audiences keep viewing live video streaming. The current study reveal four kind of motivations for view live streaming: Leisure, celebrity worship, social connection, and voyeurism. The motivation leisure can be further divide into three sub-motivations of pass time, entertainment, relaxation. The motivation of celebrity worship can be further divide into two sub-motivations of celebrity Identification and vicarious Participation. The motivation of social connection can be further divide into two sub-motivations of companionship and social interaction. In addition, the study reveal that voyeurism should be the fourth dimension for viewing live video streaming.

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Contemplating Overict Workplaces With Gender Biases:actualities, Workablesolutions And Comments

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Abstract

*The paper aims to display and discuss the inequality and discrimination faced by the female labor in worldwide information and telecommunications technologies (ICT) industries via centering on obstructionsrestraining their presence and capabilities thus progress in sector.Initially it portraystra-
ditional mindset and discriminatory/prejudicedbiases against female labor force in workplaces in
common highlighting misconduct in access and treatment practices.In addition through related liter-
ature scanning it concentrates on compared cases in country and economic sector basis centering on
problems of women workforce in global ICT sectors. Finally concluding that no fully recommendable
solution(s) to the predicament sustains and despite all national and international attempts to deal
with the problem no all satisfactory results seems to be reached it suggests fostering female self-es-
teem/confidenceand creating an effectual interactive group structure/directive in organizations as
key and achievableway-outssteering the signified problem to a workable project targeting to provide
gender equity in ICT workplaces.*

Keywords: Female Labor, Gender inequality, ICTworkplaces, Women’s representation, Self-esteem, Self-confidence.

I. Introduction

“Sex or gender discrimination is treating individuals differently in their employment specifically because an individual is a woman or a man.” An individual is accepted to be subjected to “sex or gender discrimination” in case “rejected for employment, fired, or otherwise harmed in employment because of [his/her] sex or gender.” While the two terms are commonly used interchangeably “the term “sex” refer[s] to a person's biological or anatomical identity as male or female, while reserving the term “gender” for the collection of characteristics that are cultural-ly associated with maleness or femaleness.” (Workplace Fairness, n.d.).

ICT’s while “evolved into the “general purpose technology” of our time, given their critical spillovers to other economic sectors and their role as industry-wide enabling infrastructure [with their]... access and usage are key enablers of countries’ overall technological readiness” (Sala-I-Martin *et al.*, 2014)[1], and “increasingly being recognized for their potential to carry the new global knowledge-based economy” indicate disparities “such as income, education and literacy levels, race , ethnicity and gender” where in the latter case exhibiting “persistent gender-specific structural inequalities constitut[ing] barriers to women’s access.” Being “designed and created

within male-dominated environments [and]... regulated by decision-makers, the majority of which are men” these do not really match “the specific needs of women”(Huyer and Sikoska, 2003: pp. 1, 2)[2]. “Gender discrimination in IT sector can be classified into two practices as *access* and *treatment*. While the *access* is related to discrimination in practices of recruitment, *treatment* is related to objective and subjective differences between experience of women and men” (Livermore, 2012: p. 90)[3].

However, global ICT industries today employs vast numbers of blue and whitecollar female workforce within their bodies involving with hand and brain worktogether depending on their education levels, careers and abilities. Such group of workforce (nick-named as purple-collars) despiteinvolving with a considerable part of the work done whether that to be simply putting parts together or usingtheir brain power for innovative purposes in order to create unique technologies, goods and services, evidently isnot unbound of inequalities and discrimination in their organizations that to be urging ICT businesses to provide reliable, just and fair ways to overcome such discrepanciesthrough arranging a rather motivating, productive and profitable basisleading to a better organizational climate and company image.

II. Discriminative Applications And The Role Of Traditional Mindset As A Prohibiting Issue Against Female Workforce

“Women perform 66 percent of the world’s work, produce 50 percent of the food, but earn 10 percent of the income and own 1 percent of the property” [showing to be a result of the key actualities such as] “Gender-based discrimination, trafficking in women and girls, integration difficulties, under-representation in politics, unequal access to resources, unequal employment strategies, and lack of access to basic services” all signifying “that gender gap is a global epidemic”, a fact confirmed by statistics (UNICEF, 2011)[4]. “Widespread gender discrimination” that “hardly uptunes the nature of existence for the vast majority of women in the Third World, where a combination of culture, laws and religion... deprive women of basic human rights” is a fact contradicting to equal rights argument on the part of women (Viotti & Kauppi, 2001, cited in Gurol, 2002, p. 36)[5]. “The conditions of women’s engagement in the labor market” could be reached “by estimating and analyzing five key gaps, or gender differentials, between women and men” specified as employment, unemployment, in labor force participation, in vulnerability, and in sectoral and occupational segregation. Several barriers faced in entering labor markets not merely hold back women but “also economic growth and development in countries with large gender gaps” (ILO, 2012)[6].

“There are large differences between genders and age groups regarding the proportion of low-wage earners. In the EU in 2014, 21.1 % of female employees were low-wage earners, compared with 13.5 % of male employees” (EUROSTAT, 2016)[7]. In US case while women on average “make 20 percent less than men” similar percentages for Black and Hispanic women are even less respectively being 37 and 46. “Over the lifetime of a woman’s career that disparity could cost her a good half million dollars” (Whitney, 2017)[8]. Regarding Turkish experience, a similar survey conducted on gender pay gap (TUIK, 2014) indicates that “While GPG was in favor of female employees (-0.4 %) at the total, it was in favor of male employees at all levels of education[9].” As reported by ILO (2016) “In 2015, the gender gap in the employment rate amounted to 25.5 percentage points in women’s disfavour, only 0.6 percentage points less than in 1995.”[10] Excluding the Eastern part Europe shows to be an exception to that where “employment gaps have closed marginally as women continue to enter the labour market in higher numbers in that region” yet that still happening to be “a result of the reduction of men’s employment rates due to the economic downturn” and “the global financial crisis.”

Equality between women and men (gender equality) necessarily means “the equal rights, responsibilities and opportunities of women and men and girls and boys. [It] does not mean that women and men will become the same, but that women’s and men’s rights, responsibilities and opportunities will not depend on whether they are born male or female.” Not simply being a women’s issue, but both a concern of women and men, that has to be perceived “as a human rights issue, and a precondition for, and indicator of, sustainable people-centred development” (European Commission, 2013)[11]. In spite of Recommendation No. 90 published by ILO (1992: 531-533) as early as in 1951 based on the “prohibition of gender inequality targeting equal remuneration for work of equal value for women” while verbalized in legal jurisdictions of many countries merely remains on paper in several cases.

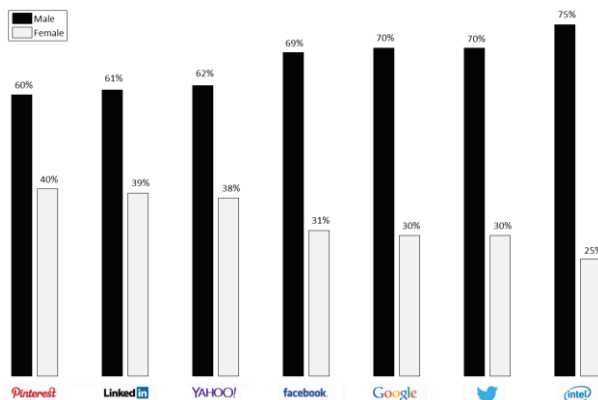
Women do not merely face inequality and discrimination in developing or newly industrializing countries yet in those of the industrialized—in a rather polished manner. Thus, “Discrimination in the workplace is a major problem for women everywhere. It can take the form of job segregation, unequal pay, lack of training or advancement opportunities, or outright exclusion from certain fields” (Neft & Levine, 1997: 54, 57)[12]. Yet the subject matter goes further than such indirect oppositions where the principal problem commonly seems to stem from the traditionally domineering mindset contradicting role of women in paid work despite their major stand in all parts of the working life today. Yet, as commented by Nobel laureate Yunus (2010) relating to his Grameen Bank involvement in Bangladesh [especially] in traditional communities changes in mentality is never without reactions and never to be unproblematic[13]. Be adamant in his way in “creating a counter-culture” he challenged against opposing ideas insisting women “to be kept at home” and not “to have, or handle money” where in most of the cases “countless Grameen borrowers” in country managed to create a micro-business also benefiting “their spouses, children and communities” beyond themselves.

III. Gender Inequality In Economic Sectors: Cases Of Sexual Misconduct And Discrimination

On international grounds no economic sector whether that would be a primary, secondary, tertiary, quaternary (intellectual activities) or quinary (highest levels of decision making in society) one show to be fully free of gender gap in industries or occupation. As reported by Richter (2014a) most tech industries are male-dominant, employing more number of men than women examples being major industries like Google, Yahoo, LinkedIn, Intel, Facebook and Twitter[14]. “In all of these companies, the large majority of the global workforce is male... The degree of female employment is even lower when con-

sidering leadership positions and what the companies call “tech jobs.” While women account for 52% of non-tech jobs at Yahoo, they make up no more than 15% of tech jobs and 23% of leadership positions. The same is true for Google, where 21% of leadership positions and 17% of tech jobs are occupied by women.”

Figure 2- Gender breakdown of selected tech companies’ global workforce



Source: Richter, Felix (July 24th, 2014a)[15]. Tech World Remains Male-Dominated. Statista.com. The Statistics Portal.

Walmart is also among the major companies facing lawsuits in discrimination against its female workforce where “In 2011 [luckily] evaded one “when the Supreme Court ultimately overturned a decision that would have held Walmart accountable in a class action suit. The justices ruled that the “women did not share enough in common to qualify as a class in what would have been the largest class action discrimination suit in history[16].” However, individual lawsuits against Walmart continue to be filed.” Similarly, “Quest Diagnostics and AmeriPath, a subsidiary have been sued in federal court for widespread and systematic discriminatory practices against women. Without admitting guilt, the company agreed to pay \$152 million to more than 5,000 current and former female employees”. The company also agreed to spend \$22.5 million to institute new human resources policies and procedures.” Within a rather long list Bank of America, CitiGroup, New York Mills, Home Depot, Morningstar, Eaton, CBS, Goldman Sachs are among the further major companies that need to tackle discrimination related lawsuits(Wolfe, 2016)[16].

As cases from sectors, in movie sector “analyses of 120 films across the most profitable movie markets in the world, including the United States, China and India among others” indicates that “women are vastly under-

represented in the fictitious workforce and that female characters in prestigious occupations are a rarity in movies”, the inequalities in the industrybeing “perpetuate[d]...by using stereotypes, sexualizing female characters and rarely showing women in powerful positions” (Richter, 2014b)[15]. In oil and gas industry while 75% of the women “feel welcome” working in the industry “almost half (45%) believe they do not get the same recognition as their male colleagues.” Similarly “95% believe that mentors are important for career advancement in oil and gas industry yet 42% said they were neither a mentor nor a mentee” (NES, 2014)[17]. Pertaining to financial services industry although “data from 20 global markets shows [that] women [to] comprise nearly 60% of employees in the financial services industry...only 19% progress through the leadership ranks to senior level roles. Board and CEO representation is even more alarming: women hold only 14% of board seats and a mere 2% of CEO positions” (PWC, 2013)[18].

According to a prediction by Deloitte Global “by end-2016 fewer than 25 percent of information technology (IT) jobs in developed countries will be held by women, i.e. women working in IT roles.” However, while “(roughly 50 percent women in IT jobs)seems[to be] a reasonable goal over the long term” 2016 figures still are “less than half that goaland...not improving faster”by reasons not clear. On global basis “lack of gender diversity in IT” is a fact where its worldwide costs “may be in the tens of billions of dollars; according to one study, the gender gap in IT costs the UK alone about \$4 billion annually.”Main factors widening the diversity gap basically seems to be “The Education Line, Recruiting and Hiring, Paying and Promoting” and “Retaining.” Relating to educational part of the story “In fields of study related to IT -- especially computer science -- there are clear problems with gender diversity [where as an] example, only 18 percent of US university computer science (CS) graduates in 2013 were women.In the UK, a 2012 survey showed that only 17 percent of girls had learned any computer coding in school, about half the level of the 33 percent of boys who had coded.” In recruiting and hiring applicants in IT “various studies from multiple countries show that both men and women are twice as likely to hire a man for an IT job as an equally qualified woman -- a pattern that may be driven by unconscious gender biases.”Policies/applications in payment, promotion and retaining in IT businesses are equally no immune to gender inequality. In US case female web developers and computer and information systems managers respectively make 79 and 87 cents to the dollar men make for the same job while “a quarter of women with IT roles feel stalled in their careers... [and] ”Compared to US such proportion in India is far higher being 45 percent. Similarly “a survey in the UK states that 37 percent of women in IT say that they have been passed over for promotion because of their gender.” Re-

tention also seems to be a problematic issue for “Women in IT roles” that are “more likely than men to leave in their first year” at a rate of 45 percent, “according to a 2014 US study” also indicating that it “was a problem after the first year as well.” Retaining policies “beyond pay and promotion” additionally include “Potential issues... [like] a hostile or sexist ‘bro-grammer’ [macho-programmed] culture [and]... workplace policies not suited to women, such as marathon coding sessions, expectations around not having children, and lack of childcare”(Lee & Stewart, 2016)[19].

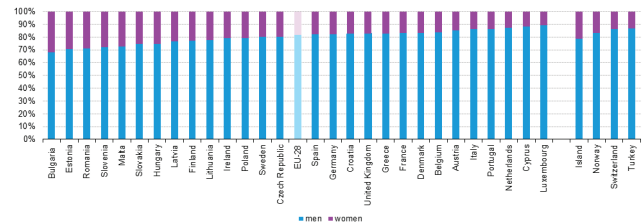
IV. Gender Gap Issues In Ict Industries: Problems And Challenges

While pictured as a “progressive, clean industry” actually it “is far from clean [both] in environmental or human terms” production is being “highly toxic at several points along the process... Moreover in terms of labor practices, except at the very top of the labor ladder, policies and practices are far from progressive.” In US case “despite some model efforts, women and people of color of all genders lag far behind in the statistics of jobs” (Cultural politics, n.d.), indicating the actuality of “gender diversity specifically within “large American (usually Silicon Valley-based) companies” where according to the figures annually published by some tech companies in 2014 that reveals female employees to average 32 percent of their total workforce. In such companies not all occupations women hold are IT jobs. As publicized by “One sample of six US tech companies” out of their 30-39 percent female workforce those in “tech jobs” are merely 10-20 percent. It will be reasonable to predict that “the gender diversity numbers at high-profile publicly traded companies [that are under public pressure for being leading ones employing large numbers of women] are likely to rise at a faster rate than for women in IT functions or jobs” implying that “even if some Silicon Valley companies have 50 percent female employees that may not mean that the diversity of women in IT jobs across the US or developed countries in general has improved to the same extent.” According to gender diversity numbers released by tech companies in US there is a 0.15 percent increase in 2014 over “an average of 30.3 percent female employees” in 2013 (Lee & Stewart, 2016)[19].

On global basis women’s participation in ICT professions are “less than one third of full time staff in telecommunications [is] women”, while in India (as software professionals) and South Africa being consecutively 21% and 20% of the total workforce in sector (Morgan, 2012), with 17 % in Japan, 25% in Brazil, 16% in Russia, and 4% in Arab Emirates (Huyer, S. and Sikoska, T., 2003: p. 2) [20, 2]. In case of Australia and New Zealand female employment in information media and telecommunications

that accounts to 40% holding the same level according to a comparison made within intervals “1996-1997” and “2012-2013” (NSW Government, n.d.).

Figure 1. The gender of ICT specialists in European countries in 2014.



Source: Eurostat <https://www.weforum.org/agenda/2016/04/where-are-the-women-in-computing/>

“Despite strong evidence regarding the importance of fully incorporating women into the Information and Communication Technologies (ICT) sector, gender ICT gap still remains in Europe. European females do not take ICT studies... Women’s active participation in the ICT sector is essential for Europe’s long-term growth and economic sustainability” (European Commission, 2013). Apparently, in Europe “only 6% of networking professionals are women”, where in UK “form[ing] 20% of the ICT workforce and are concentrated in the lower-level operator and clerical roles, with only 15% of ICT managers and 11% of ICT strategy and planning professionals being female”, and constituting merely 14-25% of sector’s labor force in Switzerland (Morgan, 2012)[20]. Luxton (2016) citing European Commission information states that “Encouraging more European women into ICT... could boost the EU’s GDP by €9 billion a year... Yet women currently only make up 30% of the 7 million people working in Europe’s digital sector, and they are under-represented at all levels, especially in decision-making positions [21].”

Based on women’s poor representation “at all levels in the ICT sector, especially in decision making positions”, the European Commission started a new program “Action 60” with the intention of increasing her participation in ICT workforce, additionally aiming the encouragement of young people in “studying and choosing careers in ICT” to counterbalance the falling labor demand with that of the growing sector. What is basically targeted here is to “attract more women into ICT jobs... in order to realize full equal opportunities and to empower them to participate fully in the information society” (European Commission, 2015)[22].

A similar attempt is the one realized by the Swedish Program for ICT in Developing Regions (Spider) and the Swedish International Development Agency (Sida) conducting a workshop on gender, ICT and development

where it is aimed to “promote and create equality between men and women.” Idea here is to help women to access information and communication possibilities in case these do not have or limited chances to reach that (Wamala, 2012)[22].

Regarding programs in women’s employment and in preventing discrimination in ICT sector there are several more country cases. Jordan centered on her workforce in ITC sector (beyond that of the tourism) conducted a program under the Women and Work Project (2008-2010) “in the areas of education, training and employment... with the objective of contributing to the promotion of gender equality policies” in domestic basis (EU Neighborhood Library, 2011)[23]. In Malaysia, “The proportion of Malaysian women (most of Malay origin) in the professional ICT and computer technology sector is now quite high” being 44% of ICT professionals and 39% of what is ranked as technicians or associate professionals. “However, [despite] the economic and social importance of the numerous women working in ICT-related jobs, the high profile of professional cybershopping malls managed by women and numerous internet stores open by self-employed women...the overall female presence in the ICT-related industry remains small.” Additionally, in sector Malaysian women still show to hold more office and secretarial occupations “and a lower share in scientific and professional ones.” In order to cope with that while a number of e-business programs are developed these do not “explicitly stipulate gender issues and challenges” similar to those created in Vietnam (Debroux, 2010: 89, 90)[23]. “A collaborative research project exploring the potential of ICT’s for the empowerment of women” is put into effect by INSTRAW targeting to “determine the constituents of enabling/disabling environments for access and use of ICTs by women” with “gain[ing] a better understanding” in participation of individuals in ICTs “promot[ing] adequate policies in sector” beyond “propose ways in which ICTs can better serve as an important tool for women’s empowerment” (Huyer, S. and Sikoska, T., 2003: p. 3)[2].

V. Conclusion And Remarks

Inequitable/discriminative behavior female workforce face in ICT workplaces mirrors a common conduct encountered in so many other women’s spheres of work. Such disputing matter that cannot specifically be attributed to the sector alone shows to have different facets and dissimilar/uniqueway-outs basically centered on the diverse types of sectors, workplaces beyond the qualifications of labor and work standards. Essentially the hardship and complexity in finding an effective and sustainable solution to the problem stems out from the customary mindset on sexual categorization holding up the role/stand of men in social and working life. Despite their inevitable role in all

segments of the economy today such gender-biased prejudices lying as a barrier on the stand of women in workforce rests as a hampering issue blocking their advancement in businesses—even in developed/industrialized countries in a rather polished way. Subsequently such problematical issue happens to be a concern of all women in business life where accordingly intentions in reaching a totally *sui generis* way-out to the problem regarding female labor in ICT sector does not seem to be too logical.

Furthermore possible remedies offered to gender-based discrimination women face in ICT sector workplaces could differ depending on the geographical area and/or cultural distinctions. Likewise away-out that shows to be beneficial in one specific occasion/case could have adverse effects in the other leading to even detrimental ends such as in the case of the Indian IT female labor facing “risks of divorce, intra family conflict and even [a breakdown in stability of] the family” while being “liberated... from traditional gender roles and ascribed demands” (Bhattacharyya & Ghosh, 2012: p. 51)[24].

Additionally inequity/discrimination in information and telecommunication technologies is not simply/basically being a concern of the female workforce in ICT workplaces but also an issue relating chances and involvement between sexes in getting to education, use, access/entry, number and kind of technological devices where that necessitates “The challenge of building a social model based on gender equality should for now go hand in hand with targeted efforts to expand women’s access to and use of information and communications technologies (ICT) as a way to democratize information, communications and the participation of women in the generation of knowledge” (Newsletter, 2011)[25].

It should also be understood that the “Recent information-sector worker commonly has different qualifications, attitudes, habits and needs than those of the classical blue collar and that of the earlier day service sector [for] prevailing in a [rather] diverse production process” (Ozdemir, 2010: 120) requiring particular involvement in many cases[26]. As an example “What is needed to promote productivity of information-sector workers is different from what is needed in other sectors. In the information economy, the quality of work life is an important component of worker productivity... For information sector workers financial compensation is necessary, but not sufficient. Intellectual stimulation needs to be included high on the list of motivational factors” (Trauth, 2001: p. 354) where that say is equally/particularly true for sector’s female workforce subjected to gender bias or discrimination [27]. Consequently, in organizational systems freely accessible clearly defined policies and procedures accompanied by unrestricted hierarchical channels liberating/broadening information flow and a shared climate

encouraging creativity and innovation will at least lessen discrimination and inequalities to result in system inefficiencies.

An applicable and effective way to come over controversies women labor force face in ICT businesses could be surmounted through the mutual determinations of female employees in putting their personal-empowerment/confidence and organizing abilities in action that will help to “chang[e] social attitudes and laws and fighting discrimination... overcoming the internal barriers” where that also necessitates a change in perception of their own herself. As have been “noticed, time and time again, wom-

en with skills, talent and potential constantly doubting and putting themselves down, lacking confidence in taking up leadership positions, afraid that they are not good enough. This invisible fear and self-doubt holds women back in a very significant way” where this should be stopped (Tan, 2015)[28]. Chances of ICT female employees to come over such burdening issues appears to be more promising than their equals in many other sectors for being employed among more skillful and talented applicants for a sector requiring higher qualifications. That simply needs their organizing abilities, self-empowerment, trust, and determination all that to be strengthening their stand in worklife beyond advancing the sector itself.

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International Collaboration In Research And Education: Benefits And Burdens

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“Collaboration may occur at virtually any level of an organizational structure. People can collaborate within an organization, between organizations, between one another, between countries, and between professions. Collaborating usually provides a means for organizations, institutions, or professions to achieve more than they can on their own. Business has used collaboration for many years to share costs, spread risk, and reduce supply chain uncertainty while forming strategic economic alliances that also serve as fertile grounds for innovation and learning. [However] Collaboration potentially reduces self-sufficiency [autonomy] in environments demanding great flexibility and innovation”[1]. At a time where innovative efforts increasingly rely on “external sources of innovation” and “Rather than relying on internal R&D, organisations are reported to increasingly engage in ‘open innovations’ an indication signifying innovation to be originating from “distributed inter-organisational networks, rather than single firms” [2]. Education and research as two interdependent components similarly when subject to a “multinational/transnational research/international collaboration” have a greater chance to perk up. Surely such partnerships are to be “guided by international ethics codes proposed by the international ethics committee to avoid stringent follow/unethical practices” [2].

Beyond their collaboration with other universities and industry, as indicated in an National Research Council statement (2005) having partnerships with laboratories will also be beneficial for universities for those “have an extensive investment by the federal government in facilities, equipment, and staff” which is “very attractive for university researchers, who may not have access to major scientific facilities or to teams of researchers working on particular application areas.” Additionally, researchers in universities could benefit from such collaborative research for “laboratories were viewed by many as having a strong connection to real problems (the mission-oriented link) and yet still being close enough to academic research disciplines to have the ability to transfer their understanding to university situations.[6]” Yet for laboratories such collaborations are important for “delivering world-class research and strengthening the overall contribution of the laboratories to the nation’s research enterprise [and for]... the interaction with university researchers increases the quality and impact of the user facilities and helps to improve them.” As indicated

by some research concerning with the collaboration with industrial firms while that could benefit universities in “their academic research support by acquiring funds necessary to support graduate students and purchase lab equipment” beyond “gaining valuable insight into their own research agenda” and “find[ing] an opportunity to field-test the practical application of their own research and theory” chances in business opportunities for university members resulting from such “research collaboration” might not be that promising [3].

Asian countries lately having a vast interest “in investing in higher education as a means of promoting competitiveness and economic growth” forming networks, tending “to establish a longer term, more sustainable set of relationships manage to create partnerships ” like the Southeast Asia One Health University Network (SEAOHUN) networking to fight against contagious diseases consisting of 13 universities [2012] from Indonesia, Malaysia, Thailand, and Viet Nam other than having “loosely associated [ties] with two universities in the US”[3]. Asian Universities Alliance Forum is another example of an alliance formed by fifteen universities across Asia identifying four objectives from member universities such as to “promote mobility of students, scholars and staff among all members,” “strengthen research collaboration and joint innovation,” “establish high-level dialogues and forums to discuss higher education strategies and policies,” and “compile and publish annual reports on Asian higher education.” Members of the alliance are Chulalongkorn University, Thailand, Hong Kong University of Science and Technology, Indian Institute of Technology Bombay, King Saud University, Saudi Arabia, National University of Singapore, Nazarbayev University, Kazakhstan, Peking University, China, Seoul National University, South Korea, Tsinghua University, China, United Arab Emirates University, Universitas Indonesia, University of Colombo, Sri Lanka, University of Malaya, Malaysia, The University of Tokyo, Japan, and University of Yangon, Myanmar (Inside Higher ED, 2017). A British Council report (2015) indicates that “In 2013, China produced 71,003 documents with international collaborations, compared to India, 17,484, Pakistan with 4,278, and Bangladesh with 1,566” additionally pointing out the “lack of international research collaboration in South Asia” that could flourish if “supported by government and industry.” “Furthermore, [it signifies that] although more countries from outside the region are looking to

collaborate on research with South Asian countries, just 2.2 per cent of all international collaborations involve countries within the region, despite all the benefits available through collaborating on projects that address common, region-specific challenges[5].”

Consequently, collaboration between universities, laboratories and industry in education and research covers certain benefits such as;

- Access to unique facilities and equipment,
- Share costs and risks,
- Exchange techniques and insights, scientific information,
- Strengthen/Expand knowledge base,
- Attract talent, enhance S&T-led economic performance,
- Address national, transnational or global problems,
- Foster science diplomacy,
- Access foreign markets,
- Pursue personal/professional goals,
- Upsurge opportunities to learn and go beyond traditional ways of thinking,
- Access to people normally cannot be reached in order to serve a larger body of people,
- Gain the potential to develop lifelong relationships and bonds that might be beneficial in future,
- Gain from the wisdom of others,
- Access to new resources and the potential to develop new skills,
- Increase productivity in doing more work in less time,
- Share recognition and accolades [honors/praises],
- Associate with successful others,
- Improve access to funds where some funding bodies merely support collaborative projects,
- Improve cross fertilization across disciplines,

- Escalate the pooling knowledge for tackling large and complex problems,
- Exchange manpower (scientists, technical staffs etc.) for training under the projects,
- Provide combined accomplishment of the goals of the scientific projects,
- Support organization of medical education sessions, scientific meetings, symposia, seminars, workshops (Beck, 2013; Green & Johnson, 2015; Mandal, Dinoop&Parija, 2015)[1,2, 4].

Beyond all worded above while such partnerships eventually encourages competition thus progress in research and education, it will also help to create a synergy effect helping all partners to get more than what they can get alone, aids developing countries to upgrade their research and education systems, encourages transnational cooperation in other fields of concern, facilitates to create order and wealth in international environment, concurrently helping out the creation of a mutual and secure planet homing us all.

Despite all pros specified there could be certain risks for any country willing to take partnerships like the “exploitative and/or low-quality foreign providers entering the region... and that the existence of “diploma mills”, “policy inertia and the absence of QA systems”,” disparate socioeconomic levels of various countries, e.g., Singapore and Myanmar” and adoption of “we-knowit-better” attitudes of the country “with a superior standard of living” resulting from translation of the “Differing sociopolitical environments... into different national economic and educational needs” eventually often leading to collaborative efforts “to be rather onesided in nature.”

As in the case of cross-border collaborations costs can outweigh the benefits. “Benefits can be in forms impossible to translate into monetary terms (e.g., newly developed personal relationships and friendships, increased local prestige).” While costs could exceed benefits in case such collaboration “is imposed from outside and there are conflicting vested interests” these “can be justified and considered as worthwhile... if parties are satisfied and results fit institutional goals” making “transparency and openness (without any hidden agenda)” a significant quotient of a beneficial and meaningful collaboration.” However, while “Networks function best when there is transparency in decision making” as in the case of some Southeast Asian universities this might lead to challenges originating from their “operation as “steep hierarchies,” characterized by strong, top-down administrative structures” effecting communication in an inefficient manner. Also “University networks may span different national legal systems and different university operating

procedures. When that is the case, network members must recognize that member universities may operate with different rules and procedures.”

Depending upon the gains and holdups of participation in education and research such networkings need to employ certain policies and procedures that will help to minimize barriers and maximize benefits within an international collaboration structure to be stemming from national, social, ethnic and financial influences considering the type and quality of the participation that could be of a *sui generis* makeup rather than one having common features for many.

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Massive Open Online Courses: International Experiences and Implications for Vietnam, China, & Silk Road Developing Areas

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Abstract

This review of literature examines empirical and case studies to help educators and shape frameworks for usage of MOOCs (Massive Open Online Courses), especially in Vietnam, China, and Silk Road Developing Areas (VCDA). Several initiatives support MOOCs, and many educational institutions started offering courses as MOOCs. Designing a MOOC however, is not an easy task. Educators need to face not only pedagogical issues, but logistical, technological and financial issues, as well as how these issues relate and constrain each other. The 'MOOC' phenomenon is only just beginning to register with many educational policy makers in VCDA, despite these areas having the highest educational scores per income in recent OECD PISA test results. Little guidance is available for educators to address the design of MOOCs, especially in non-native English speaking countries. Results show corporate trainers and educators should design MOOCs with foci on teachers and learners' attitudes, as well as infrastructure toward teaching and learning in cyberspace..

Keywords: MOOCs, eLearning, online education, constrain of MOOCs, MOOCs framework,

Introduction

Online education significantly raises the educational attainment levels. Colleges with inadequate infrastructure and insufficient teachers cannot accommodate all those who seek education. Expansion of traditional educational facilities is slow and expensive. Online education using internet and communication technologies offers abundant opportunities to quantitatively and qualitatively expand access to education.

A huge gap exists between the educational potential and existing levels of education in both developed and developing nations. In developed nations it is largely a qualitative gap between the education that is offered and what is required to equip student for the future, as witnessed by rising levels of unemployment. There needs to be a radical shift from preparing students to seek salaried jobs in major corporations to preparing them to create their own jobs through self-employment and entrepreneurship.

For example, Currently, China is home to almost 70 different online colleges, a number that will likely grow

in the coming years in order to meet the high demand for online learning opportunities. China has a long history of distance education, beginning in the 1960s with courses that were delivered via radio and television, but the nation is fast becoming a leader in online education as well.

While problems with internet access in rural areas and a proliferation of diploma mills have slowed progress being made in China, several major online education companies are seeing rapid growth, due largely to the increased demand for highly trained members of the global workforce coming from China. The online learning industry is expected to grow by leaps and bounds over the next few years, and with steady growth since 2006, it's looking to meet all expectations (Jia, 2014).

India - one of silk road countries - is playing a major role in the growth of online learning opportunities that are popping up throughout Asia. Over the past few decades, India has developed numerous world-class universities and colleges which are fast becoming destinations for some of Asia's best and brightest, and their online programmes are experiencing a similar boom.

Part of the explosion of interest has stemmed from economic concerns, as many simply can't afford to take two or more years off of work to attend a traditional college. Online schools help to solve that problem, and with programmes expecting to bring in a whopping US\$1 billion in revenue by the end of the decade, it's clear that distance learning has staying power in India. While home-based schools are doing well, including the popular IITs and private schools like Sikkim-Manipal University, American universities are also bringing online ed to India, offering courses at MIT, Carnegie Mellon and Cornell to Indian students [1].

The rapid expansion of MOOCs has sparked commercial interest from some big Vietnamese, China, and VCDA Universities who want to enter the HE market using a MOOC approach. Most significantly, it has opened up strategic discussions about the disruptive potential of MOOCs in the university and forced established providers to revisit online learning and open education as strategic choices for the future. However, designing and running a MOOC from scratch involves several issues covering logistical, technological, and pedagogical areas that educators must face [2].

- ✓ Regarding issues of logistical nature, educators need to be aware that designing and running a MOOC can be a very time consuming task. The survey by Kolowich in 2013 concludes that most educators are not able to keep a balance when running a MOOC, diverting time from their normal duties like research or traditional teaching[17].
- ✓ In term of technological issues, educators should be clear about the supporting systems, they will use to run MOOCs. According to Phan and Dang research about instructors' e-readiness towards online teaching, 78% of participants who are instructors in Ho Chi Minh City Open University in Vietnam (HCMCOU) said that technological competency is the biggest barrier with e-learning[5].
- ✓ With respect to pedagogical issues, educators need to change their mindset from face-to-face and online courses (Hill, 2012), since in MOOCs they teach to a massive number of learners from different regions, with different backgrounds, status, and motivations. Moreover, due to time constraints, educators cannot play a central role in MOOCs, and so, didactics that promote learner autonomy [3] and allow building connections among learners [4] should be explored.

In order to raise awareness of MOOCs and their implication for HE, this paper synthesizes the latest thinking and ongoing debates on MOOCs from the media, including blog and press releases, and from material published by individuals and organizations. This critical

review intends to help educators and decision makers in HE Institutions gain a better understanding of the phenomenon of MOOCs and their potential as disruptive innovation as a part of the trend towards greater openness in Vietnamese, China, and VCDA HE. Moreover, in this paper, we present a conceptual framework to help Vietnamese, China, and VCDA HE Institutions make informed decisions about how to serve their specific mission and how to respond to the different needs of learners in a rapid changing educational market. The speed of development opens up the risk that decisions will be made in a fragmented way by different unconnected groups without a deep understanding or clear analysis of MOOCs and other potential educational education delivery models. Institutions will need to develop a cohesive strategy to respond to opportunities and threats posed by MOOCs and other forms of openness in HE.

Research Background and Literature Review

We are exposing the total engagement of internet in our life, in our work, and almost everywhere. We can use Google for searching, Wikipedia for finding necessary knowledge, Facebook or Twitter and other tools for social connection, Flickr for sharing photos, and YouTube for sharing videos. These are only very few among numerous applications of technology that we are using every day. Technology is transforming totally almost all social and economic fields, especially finance and banking, engineering and manufacturing, medicine and science applying. The most out of date, in term of using technology, perhaps is education that still has been being in the framed model of teacher - learner and classroom model of teaching and learning.

Making Sense of MOOCs

A MOOC is an online course with the option of free and open registration, a publicly shared curriculum, often with open ended outcomes [6]. MOOCs are online courses designed for large numbers of participants, can be accessed by anyone anywhere as long as they have an Internet connection, are open to everyone without entry qualifications and offer a full/complete course experience online for free (adapted from Mulder & Jansen, 2015). Holland and Tirthali (2014, p. 2) make it clearer for each letter in MOOC[6].

- ✓ Massive: In terms of actual number of course participants, the capacity for courses to enroll large numbers, or the capacity to obtain vast quantities of participant activity and performance data.
- ✓ Open: The word "open" with respect to a MOOC was the possibility for anyone with an adequate Internet connection to participate in the course.

- ✓ Online: MOOCs should be available via the Internet on a variety of devices to facilitate scale and to expand access beyond the traditional campus.
- ✓ Course: MOOCs should provide a coherent set of resources and follow a sequence of activities organized by an instructor in order to address specific learning objectives or goals. MOOCs are suggested to be bounded by time with a beginning and an end point [6].

Methodology

This study is a qualitative, case study and participant observation research with critical analysis of literature on MOOCs toward implementation of online learning in Vietnam, China, and VCDA. It began as a broad search for research on online teaching and the authors went into participant observation in courses not only in Vietnam, but also in Cambodia, Canada, China, France, India, Italy, Kenya, Korea, Nepal, Singapore, Taiwan, Thailand, and USA. The participant observation follows guidelines from Becker (1958), Spradley (1980), Tedlock (1991), and Yin (2011); while the case study follows Klein and Myers' (1999) 'Set of Principles for Conducting and Evaluating Interpretive Field Studies'[7,8,9,10]. After the identification of key articles and related frameworks, the search was narrowed down to the topics of online learning, preparing for MOOCs, and international experiences of MOOCs. The transformation of the search topic into the search language was an ongoing effort to find the key terms in the field in order to locate the desired literature. The articles included in this review comprise both qualitative and quantitative studies. They were located through a search of online databases, including EBSCO, JSTOR, Educational Resources Information Center (ERIC), Academic Search Elite, and Google Scholar; etc; and bibliographies of relevant articles. To locate the review studies, the Review of Educational Research journal was examined, focusing on the reviews of online teaching published since 2003. The Distance Education Hub was also used to locate research on online teaching. DEHub serves as an online database of research on distance education and contains research articles and other resources on distance education drawn from the Australian Education Index and a variety of international organizations and publishers. In addition to searching online databases and journals, three other sources were used for the search: printed books, references of the key articles, and articles by key researchers in the field. Due to the insufficient level of consistency or agreement on the terminology used in the online teaching literature, the references of the related publications were extensively used. Keywords included online learning, Massive Open Online Courses, online learning competencies, higher education, and distance learning.

This critical review covers articles published in the last 10 years, starting with the current research and going back to the late 1990s when research on online teaching, teacher effectiveness, and teaching with technology was gaining momentum with the dissemination of online learning in higher education institutions. Empirical research articles and articles on conceptual and theoretical frameworks were included. The review resulted in many key articles on MOOCs were showed in table 1.

Because there is limited research that critically analyses readiness based on online teaching, several studies from the teacher education field were included in order to frame the critique in the online teaching context. The keywords used in searching these databases and websites were MOOCs, distance education, distance learning, participation, motivators, deterrents, barriers, attitudes, and factors. This initial search yielded a total of twenties articles. After including additional keywords (satisfaction, inhibitors, asynchronous learning, online learning, perceptions, attitude, MOOCs) paired with initial keywords and searching the reference lists of those articles already found, an additional search yielded ten articles, some of which were actual research studies and others that were descriptive articles or summaries. Four dissertation abstracts were also located but results of the studies were not included in this literature review.

Key Case Study Findings

MOOCs experiences on over the world

Hollands and Tirthali report that colleges and universities are adopting a wait-and-see approach, and some have considered MOOCs and have either decided against any form of official engagement or have not met with interest from faculty members to pursue them [6]. Others have adopted several different stances toward engaging with MOOCs. Some are actively developing MOOCs and may be termed "producers," some are using MOOCs developed by other institutions in their programs and could be termed "consumers," and a few are doing both. There are now thousands of MOOCs available worldwide from several hundred colleges, universities, and other institutions of higher learning. Some of the platform list right below are offered by many Universities and Entities.

With the popularity of MOOCs, universities and colleges will need to rethink how to make their curriculum delivery models and courses truly flexible and accessible. Many HEI have sought to make learning more flexible with course modular design and bankable credits to encourage learners to study at a time and pace that suits their own needs. Open courses based on new structures, ways or working and use of technology can make higher education more cost effective and accessible and may also contribute to balancing work, family and social

life. Learners have access to a variety of non-traditional learning models including access to courses and materials to self-direct their own learning beyond their classes and institutions. More flexible models and open approaches will encourage more mature students to participate in higher education and gain qualifications to further their careers.

What are the Drivers for Developing a MOOC?

The next phase of the study explored why people are so interested in MOOCs and what are some of the key drivers behind MOOC popularity.

e-Learning barriers of Higher education in China, Vietnam, and India (one of the silk road countries)

Cost

Some, such as Christensen, Steinmetz, Alcorn, Bennett, Woods, & Emanuel, argue that the one of the reasons for the escalating costs in tertiary education is the inefficient

business model of tertiary provision. He noted that universities typically bundle a range of services that include teaching, assessment, accreditation, and student facilities as a package to all learners, whether they require them or not. MOOCs are opening up a discussion around the unbundling of such services, and they are exploring whether universities can offer education, or elements of tertiary education, at a lower cost [11].

Technology Driven Innovation

According to the report of the University of Glasgow in 2015, about building and executing MOOCs, technology and, in particular, the internet has ‘transformed’ how other sectors design and deliver their services and now the question is can higher education achieve similar results[36]. People use language such as ‘technology-enhanced learning’ to describe the potential impact technology can have in eLearning barriers of Higher education in China, Vietnam, and India (one of the silk road countries)

	Logistical Nature	Technological Issues	Pedagogical Issues
China	Most universities in China suffer from budget constraints. Through technology transfer, budgets can be replenished and salaries raised. It can also enhance their position in securing funding in national R&D projects and economic development. Hence, most HEIs are actively pursuing tech transfer activities. However, still many problems hinder tech transfer processes. A number of obstacles to tech transfer come from an academic perspective globally and the impact is found in HEIs in China.[12]	A number of forms of tech transfer are between university research centres and private companies. Many obstacles to tech transfer from an academic perspective: (1) attitude of professors, (2) inclination towards perfectionism, (3) lack of practicality, (4) lack of realism and hostility to compromise prompted by a search for scientific truth, (5) lack of regard for deadlines and profitability, (6) communication difficulties, and (7) confidentiality problems.	Special initiatives are needed to be taken to improve the academic status and excellence of MOOCs. This would include certificating standards made at par with the traditional education, similar evaluation stringency and proper promotion of the MOOCs project.
Vietnam	Educators are not aware that designing and running a MOOC can be a very time consuming task, and so not only educators, but also educational policymakers, do not understand the nature of eLearning and MOOC; therefore, they do not plan carefully the feasibility of the course depending, for instance, on the available human resources. The survey by Kolowich in 2013 concludes that most educators are not able to keep a balance when running a MOOC, diverting time from their normal duties like research or traditional teaching.	According to our research about instructors’ e-readiness towards online teaching, 78% of participants who are instructors in Ho Chi Minh City Open University in Vietnam (HCMCOU) said that technological competency is the biggest barrier with e-learning [5].	Analyzing LMS Moodle shows problems designing such complex systems is current design methods focus on usability, rather than learning. Learning can be synchronous where learners are “online” at particular times, or asynchronous -done anytime, anywhere; self-paced interactive learning using web portals or CDROMs and integrating support via online bulletin boards, chat rooms, e-mail or instant messaging. It is also knowledge databases, with click through info from a database mildly interactive.
India	India lacks tremendously in terms of digital literacy, it being non-existent in more than 90% of the population. Even in these days also, considerable digital divide exists between the mass. This digital divide intensifies within the rural and urban students. Since a majority of the learning mass seeking higher studies (also a considerable amount of the ones imparting education) is not friendly with the recent technology, it is a major constraint hindering them to access MOOCs seamlessly. [1]	Though IT infrastructure improved a lot in urban areas, basic infrastructure needed to implement MOOCs is still absent in rural areas. Fast Internet services being costly, people are bound to compromise with speed. To implement MOOCs effectively, a fast internet connection is required throughout. India’s internet speed increased 8% from previous years, while most Asian countries increased 20%. Limited availability of requisite infrastructure to access MOOCs confines MOOCs spread [1]	Distance ed started in India 30 years ago. Though it is popular, an overall perception views formal ed and regular courses superior to open universities or other distance ed in terms of academic status. When this shifts to a digital paradigm of MOOCs, perception is biased and does not consider regular traditional courses at par. Lack of proper certification and promotion for MOOCs has contributed to MOOCs not being considered at par with traditional ed systems.

Table 1: The main articles related to this critical literature review

opportunities that previously were beyond their reach.

Public- ation	Authors	Title	Main content	Perceptions of MOOCs
2015	Conole [13]	MOOCs as disruptive technologies: strategies for enhancing the learner experience and quality of MOOCs	Impacts of growing tech. Enhancing learners' attitude toward MOOCs.	Important
2014	Le et, al.[14]	Ho Chi Minh City Open University: IT Governance in Vietnamese Higher Education	Limit of Moodle System; Rapid growth of ICT infrastructure / Internet in Vietnam	Favourable
2014	Gaebel [15]	MOOCs: Massive open online courses	Modifying definition and role of MOOCs. MOOCs making Process	Favourable
2014	Ncube, Dube, & Ngulube [16]	E-Learning Readiness among Academic Staff in the Department of Information Science at University of South Africa	Attitudes Technology Training	Appreciate the value of e-learning
2014	Hollands & Tirthali [6]	Why Do Institutions Offer MOOCs?	Importance of MOOCs in HE.	Favourable
2013	Mai [18]	The biggest challenge in teaching is emotion.	The challenges of eLearning.	Unfavourable
2013	Siemens [19]	Massive open online courses: Innovation in education.	The growing of MOOCs in technology era.	Favourable
2012	Daniel [20]	Making sense of MOOCs: Musings in a maze of myth, paradox and possibility	MOOCs' impacts on HE	Favourable
2012	Martin [21]	Will massive open online courses change how we teach?	Instructors' attitude toward MOOCs. The effects of MOOCs on learning.	Favourable

education, as it is seen that it can enable learners to access quality learning in new ways.

Labour Market Needs

There is evidence of growing youth employment globally [22] and some believe that HE institutions are not preparing young people for current job vacancies [23]. MOOCs are viewed as a medium to provide 'relevant' job training courses to all citizens over the internet.

Learner Demand

According to the report "The shape of things to come: Higher education global trends and emerging opportunities to 2020" of the British Council (2012), it found that total global tertiary enrolments are forecast to grow by 21 million between 2011 and 2020 or 1.4 per cent per year on average[24]. MOOCs may be able to facilitate the growing numbers of people who want access to higher education. It appears that the growth in the number of learners signing up for "wholly online learning" is an indication that there is a real demand for such courses. It seems as if more and

more people want to learn in their own time and the internet is allowing them opportunities to access learning

Potential Values for the Institution

The literature also shows that institutions see values in joining a MOOC network, such as FutureLearn or edX, and some of the main reasons for such decisions are as follows:

Branding

Institutions who typically join a MOOC network often view it as an opportunity to enhance their brand recognition and a way to join an exclusive professional network. Currently, many of the MOOC platforms, such as edX or Coursera, are viewed as exclusive clubs that have a set of entry criteria that not all institutions can meet. Those institutions that do meet the entry criteria believe their participation will benefit their institution both in terms of raising brand profile in becoming members of a professional network 25]. Furthermore, there are opportunities for institutions to showcase their expertise in particular fields and to publicise some of their outstanding academic talent with a view to recruiting additional students at some point in the future.

Shared Services

The development of MOOCs offers institutions the

possibility of unbundling four key elements of a typical higher education programme to their students and this can mean that students' enrolment costs are lowered[26]. These elements are Content, Delivery Platform, Feedback, and Support Awards. There is interest among institutions as to how this unbundling might occur and if it can reduce costs, increase collaboration, and ultimately enhance the quality of student learning.

Collaboration

The provision of a shared online infrastructure that is managed and maintained by reputable institutions has the potential to make it easier for institutions to create and manage collaborative delivery arrangements. For example, NPTEL (the National Program for Technology Enhanced Learning), India's national online learning platform, works with a population over a billion and allows Indian institutions to come together and offer courses or technical modules that are currently in Indian Institute of Technology and Indian Institute of Management [27]. Such an approach could "allow divisions of labour whereby institutions could contribute their teaching expertise, others their technical and so on" [28].

Explore Online Pedagogies

There is evidence that a significant number of HE institutions see MOOCs as providing an opportunity to experiment with innovative pedagogical approaches online (Allen & Seaman, 2014, 2015; Hollands & Tirthali, 2014)[35,2, 6]. Accordingly, 49.8% and 44.0% of academic leaders viewed MOOCs as an opportunity to innovate pedagogy. However, in their most recent report (Allen & Seaman, 2015) this number dropped to 27.9%. Though this number appears to be decreasing, a large number of HE institutions see the MOOC space as an opportunity to conduct research around new and innovative online pedagogies [2].

Discussion

Implementation MOOCs: Culture as a Big Barrier

In 2010, the U.S. Department of Education conducted a meta-analysis of published studies comparing online learning to face to-face courses in postsecondary contexts in developing countries [30]. The results of the analysis suggest that, when well-implemented, online learning is a promising alternative to traditional course formats (US Department of Education, 2010); key findings of the analysis included:

- ✓ Students in online conditions performed modestly better, on average, than those learning the same material through traditional face-to-face instruction;

- ✓ Instruction combining online and face-to-face elements had a larger advantage relative to purely face to face instruction than did purely online instruction;
- ✓ Effect sizes were larger for studies in which the online instruction was collaborative or instructor directed than in those studies where online learners worked independently;
- ✓ Effectiveness of online learning approaches is quite broad across different content and learner types;
- ✓ Online learning can be enhanced by giving learners control of their interactions with media and prompting learner reflection.

Despite the overall promise of online learning, the online medium appears to be significantly less effective among community college populations, as reviewed below. In addition, much of the evidence regarding online learning appears troubling for the MOOC movement. Many of the features of effective online instruction are absent from MOOCs. For instance, some MOOCs platform - online learning seems to work best when there is extensive student-instructor interaction or when online and face-to-face components are combined to create a blended course. Given that MOOCs are, by definition, both entirely online and massive in terms of enrollment, some features of effective online learning environments will be difficult to achieve using the traditional MOOC format.

So what is the particular challenge? The main challenge is to overcome, or at least partly overcome the lack of emotions in the process of teaching and learning. An interview with distance learners questioned how they think about online learning courses. 90% of those that replied stated it was connecting with emotions - How can we feel emotion and spirit through a machine? This is indeed a huge challenge for MOOCs in Vietnam and perhaps other countries that have a culture demanding collectivist relationships revolving around emotions more so than individual focused cultures. Respondents said that when listening to lectures from real teachers, they can use all the different means of expression, like saying, looking, listening, expressions, and body language. They also could stop to talk with teachers and classmates. They may smile or laugh, or even think. That is a very real life, very focused on existence, very lively and emotional.

Responsibilities of Universities

The positive response of many Vietnamese universities in such a short period of time to the emergence of Moodle and MOOCs shows that they have the capability, responsiveness, and flexibility required to embrace new developments in a rapidly changing global environment.

Rather than MOOCs making universities obsolete, universities are making MOOCs possible: most MOOCs are produced by higher education institutions and people working in them, and it appears the best are considering implications of Figure 1 below. This wise structure to follow was adapted from research of Fidalgo-Blanco, Sein- Echaluze, & Garcia-Penalvo in 2015[31]. Figure 1 shows the model to be considered when developing MOOCs which is elaborated upon thereafter in Re-envisioning the Context of Vietnam Universities through Teacher E-readiness. This also means that universities must assume responsibility for the quality of all their learning activities, including MOOCs.

Each institution will have to assess whether and how it wants to use MOOCs, rather than, or in addition to, other forms of e-learning. This requires the development of strategic approaches, developed in line with institutional profile and mission, and in the wider context of the changing nature of learning and teaching and the growing role of e-learning.

It will be important for universities to explore proactively further use of e-learning, taking into account the resulting changes for staff, students, and for their governance and management approaches. They will also have to consider learners and partners outside universities being addressed through MOOCs. As in other areas of activity, this will require strategic approaches to implementation if these new developments are to impact significantly on the “regular” teaching process and course provision.

Framework of MOOCS Preparation

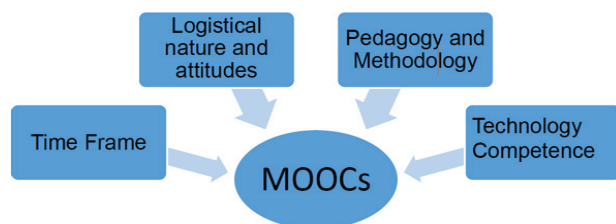


Figure 1: Conceptual Framework of MOOCs adapted from Fidalgo-Blanco, Sein-Echaluze, & García-Penalvo (2015)

Re-envisioning the Context of Vietnam, China, and VCDA Universities through Teacher E-readiness

As stated in the background to the study, many Vietnamese University are going to launch their online programs after several years of preparation. Universities have developed learning content and modern infrastructure; however, there has not been investment in preparing for e-learning, and MOOCS specifically. Hence, this literature review and Figure 1 above help provide a general picture of what should be considered and done for the preparation

of a MOOC. The newly constructed framework based on the findings of this paper is therefore a good lens for the authors to re-envision the status of universities in getting ready before starting a new teaching format, namely MOOCs.

Currently, although some Vietnam China, and VCDA Universities have used Moodle - an open source learning management system - for more than ten years, its main function was to provide forums for students to post their questions. The number of lecturers and students actually using the system was very limited because there was no learning activities or learning programs operated in the system. Thus, teaching on Moodle appears to be a new concept to most of the lecturers at universities. Since the administrators of the school began to prepare for online programs which will be mainly carried on a Learning Management System powered by Moodle, they predicted that there is a lot to do to prepare the lecturers to work in a new teaching delivery format. One of the most important factors to take into account is the attitudes of the lecturers who are going to teach online. The factors of Figure 1 are outlined as follows:

Logistical Nature and Attitudes

According to Ncube et al. (2014, p. 357), “elearning can assist the university to advance its academic goals but it is important to note that these goals may be influenced by the lecturers’ attitudes toward elearning”[16]. It was found that positive attitudes have strong impacts on the success of the adoption of elearning in higher education institutions. Reflecting on the attitudes of the lecturers of the universities, it is subjective to affirm whether they are positive or negative about the implementation of elearning and teaching online programs because there have not been any research studies conducted on this topic at the school. Understanding lecturers’ attitudes will be useful for the school administrators to have strategic plans to support and motivate them to participate in the adoption of elearning with willingness. Within this paper, we would recommend that the school administrators should encourage more research on exploring the logistical and attitudes of lecturers before, during, and after online course delivery.

Pedagogy and Methodology

“Readiness in terms of instructional strategies or pedagogy has to do with the knowledge, skills, attitudes and habits of instructors to use the appropriate strategies acquired through normal face-to-face classroom interaction to accommodate the elearning ‘classroom’ and learners”[32]. The term “pedagogical knowledge” refers to the ability to design appropriate learning experiences and skill at selecting instructional media and delivery methods, management of small/large group discussion,

and internet interaction[33]. Those learning activities must be designed for the web and available through the Internet. These could not be achieved unless the teachers form good habits with discipline.

Issues of methodology were identified as a major challenge affecting the success or otherwise of elearning. Most researchers emphasised that design, delivery, and pedagogy challenges are crucial and traditional approaches cannot be assumed to transfer to the elearning environment. As original design idea in universities is personal and essentially connected with individuals, design education focuses on strong collaboration between teacher and student as well as among peers. The process of transferring these educational goals from face-to-face to online environment requires the lecturers of the school to be well prepared with the paradigm shift. Beyond the knowledge and skills vital for online teaching, online instructors should teach with care, love and passion.

Technology Competence

Universities acknowledge that for the instructors to be good facilitators for online learning, they must have the technological skills and competencies of basic computer operation and technical issues relating to internet usage, such as web searching and conferencing and managing a learning management system. Therefore, there has been an early effort to computerize the administration procedures and course management system at universities. So far, there have been certain positive outcomes such as network and programs have been deployed. According to Le et al. the level of ICT skills and knowledge of the key participants differed significantly in a large institution line Universities [14]. Young scholars, having grown up with ICT, have an advantage but it could take time for the older generations to get used to the new ICT and LMS.

Apart from the advantages that the existing system brought to universities, there were many drawbacks that needed to be taken into account. Firstly, there was still insufficient understanding about eLearning and ICT among three important players: manager, lecturers, and students. This was mainly because the current course management system did not apply those in their activities. In 2016, universities have tried to change the culture by using the modern technology in daily activities. This change started by the training which include training in basic skills in using technology – Google Apps as well as training in the integration of those technologies into interactive and effective teaching. However, the training still does not have efficient result.

Time Frame

Koo (2008) supposed that time constraint could be a major impediment to affect the teachers' perceived readiness for

online collaborative learning. Some teachers expressed that they were too busy with their classroom and school administrative works (Koh, 2004, as cited in Koo, 2008)[34]. This could be problematic for universities' lecturers when adopting online education. The lecturers have been used to teaching face-to-face classrooms for both mainstream and distance education. Beside a certain number of periods they are required to teach each year, the lecturers at universities are assigned other tasks such as designing and developing learning materials, doing research, and other administrative work. The workload seems to be high and might make the lecturers feel overwhelming. Hence the school leaders issued more flexible policies for the lecturers, in which they are able to choose whether to do research, or designing learning materials, or designing and teaching online.

Conclusion

MOOCs promise to open up Vietnamese higher education (HE), and HE throughout SouthEast Asia and beyond by providing accessible, flexible, affordable, and fast track completion of universities courses for free or at a low cost for learners who are interested in learning. The popularity of MOOCs has attracted a great deal of attention from HE institutions and private investors around the world seeking to build their brands and to enter the education market. Vietnamese and other developing country, non-native-English speaking institutions will need to look more closely at and learn from the different initiatives outside traditional institutions that are developing new business, financial, and revenue models to meet the different needs of new groups of learners in an open HE marketplace. Open education brings new opportunities for innovation in higher education that will allow institutions and academics to explore new online learning models and innovative practices in teaching and learning. At a national and international level, new frameworks for HE funding structures, quality assurance, and accreditation to support different approaches and models for delivering higher education will be required. Policy makers will need to embrace openness and make education more affordable and accessible for all and at the same time be profitable for the institutions in an open higher education ecosystem.

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An Analysis of the Customer Satisfaction from Service Quality of Himalayan Airlines

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Abstract

The main objective of the study was to find out customer satisfaction of Himalayan airlines and analyzed the factors affecting customer satisfaction level. One hundred structured closed ended questionnaires were developed and distributed among the passengers who travelled through Himalayan airlines at Tribhuvan International airport (Kathmandu, Nepal) to collect data for result. In order to examine the effect, customer satisfaction was taken as dependent variable and ticket fares, airport services, employee behaviors, flight reliability and in-flight services were taken as independent variable. The users of Himalayan airlines in general were satisfied. It is suggested to the management to focus on fares in comparison with competitors and more attention toward the passenger and their baggage at airport.

Key words: customer, satisfaction, airlines, Himalayan, service quality

Introduction

The aviation sector is one of the major economic drivers for prosperity, development and employment in any country. It is a progressively growing segment of most economic and it has developed rapidly to become one of the most common means of travel. It facilitates global investment, tourism, economic development and world trade among other numerous benefits. It contributes to the growth of business which depends on airlines such as hotels, car operators; tourism etc. customer satisfaction with the service quality offered by airline has become the most significant factor for success and survival in the airline industry. Satisfaction is an internal view which offshoot from customers own experience of a consumption or service experience. The connection between customer satisfaction and company success has traditionally been tied to faith and numerous satisfaction studies have supported this position [1]. Customer satisfaction has always been considered a vital business goal because of its crucial role in the formation of customers' desire for future purchase or tendency to buy more [2].

The growing of airlines industry provided opportunities as well as challenges to the business entities in this industry. The opportunities are due to the increasing demand for the airline services, while the challenges are high level of competition between airlines but also due to the growing customer demands for better services. The growing of this industry has led the government around the world to deregulate the industry by opening the platform for private and foreign airline companies [3].

The aviation history of Nepal started in early 1950s. Initially, neighboring India aircraft used to land on mere grazing land called "Gaucharan" in Kathmandu. Royal Nepal Airlines Corporation was established in 1958 as state owned airlines company. In 1990s, Nepal government had introduced the open sky policy; many airline companies have been established. Himalayan airlines a Nepal-China joint venture airline which was founded in 2014 with the aim to excel in safety and operational reliability [7].

Review of literature

Customer satisfaction has become a fundamental goal of all business organization. This position is derived from long hold conviction that for a firm to be profitable. It must satisfy customers [4]. Generally, academics and business practitioners have long admitted that customer satisfaction is one of the highest priorities of business organizations and research have also shown that customer satisfaction is a key determinant in maintaining and sustaining business relationship [5, 8]. Chang, Wang and Yang (2009) defined customer satisfaction is a psychological response or an evaluation of emotions from the customer. It is the outcome or assessment of what the customer initially expected and what they actually experienced during the use and consumption of the product/service. The service quality study did by British Airways monitored customer service using customer surveys and audits. The study focused on flight arrival and departure time, meal quality, inflight services, checking experience and baggage claim time [6].

The cost and revenue of the firm are influenced by repeat purchase, positive word of mouth, recommendation and customer feedback. Moreover, there is strong evidence that service quality has either a direct influence on the behavioral intentions of customers or an indirect influence on such intentions. It is cleared that there are number of areas which together contribute in the total satisfaction of the airline customers. In this study, the researcher investigates the satisfaction level of the Himalayan Airlines with its service quality.

Methodology

Research design

The current researcher followed survey method to complete the objectives of the research. The survey was conducted by taking the responses of customer who were involved in travelling with Himalayan Airlines. The study used both quantitative and qualitative methodologies. The questionnaire composed of five questions representing the service of the airlines which were the theme of analysis and measured the satisfaction of the customers from the service quality of Himalayan Airlines. The study took the factors such as Ticket fares, Airport services, Employee behaviors, Flight reliability and In-flight services to identify the relation of these factors with customer satisfaction. Five point Linkert Scale was used to measure the intensity of the satisfaction of the respondents where 5 extremely satisfied, 4 satisfied, 3 neutral, 2 dissatisfied and 1 extremely dissatisfied.

Research sample

The sample of this study consisted 100 air passengers arriving at Tribhuvan International Airport at arrival terminal in Kathmandu. An objective convenience structured questionnaire was distributed to the respondents. The benefits of the objective questionnaire were low-cost and time saving; which was most comfortable for study with homogeneous population. The researcher met the respondents and filled up the questionnaire through face to face contact. The response rate in such sample based data collection method almost hundred percent as researcher was on the field for the administration and collection of data. So the reliability of the data was guarantee.

Reliability of data

Table 1 presents the reliability of the data. It shows the overall reliability of the data is 0.765, which is high in reliability scale of Cronbach's Alpha indicating high reliability of the collected data.

Table 1: reliability statistics

Service quality	Cronbach's Alpha
Ticket fares	0.765
Airport services	
Employee behavior	
Flight reliability	
In-flight services	

Source: calculations based on researcher's survey 2017

Customer satisfaction on service quality

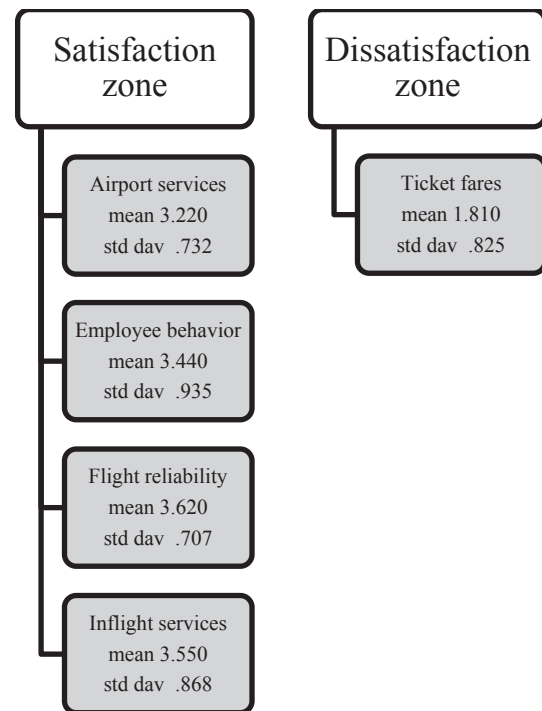


Figure 1: satisfaction and dissatisfaction

Source: calculations based on researcher's survey 2017

The figure 1 showed that the satisfaction level of the customers for all the five variables representing the service quality of Himalayan Airlines. There were only one variable in the dissatisfaction zone name 'ticket fares (mean 1.810, stddav .825)'. Out of 100 respondents there are 42 are extremely dissatisfied and 38 were dissatisfied. Remaining other four variables named 'airport services (mean 3.220, stddav .732), employee behavior (mean 3.440, stddav .935), flight reliability (mean 3.620, stddav .707) and in-flight services (mean 3.550, stddav .868)' were in satisfaction zone. The main values were more than 3 which indicated as high satisfaction level.

Descriptive statistics

Table 2: customer satisfaction on service quality of Himalayan Airlines

Service quality	N	Mean	Std dev	EDS	DS	NEU	S	ES
Ticket fares	100	1.810	.825	42	38	17	3	0
Airport services	100	3.220	.732	4	6	54	36	0
Employee behavior	100	3.440	.935	10	1	24	65	0
Flight reliability	100	3.620	.707	4	1	24	71	0
In-flight services	100	3.550	.868	7	4	16	73	0
EDS= extremely dissatisfy, DS= dissatisfy, NEU= neutral, S= satisfied, ES= extremely Satisfied								

Source: calculation based on researcher's survey 2017

Level of satisfaction on percentage wise

Table 3: customer satisfaction of Himalayan airlines on the basis of percentage

Service quality	Percentage (%)
Ticket fares	3%
Airport services	36%
Employee behavior	65%
Flight reliability	71%
In-flight services	73%

Source: calculation based on researcher's survey 2017

Discussion

The main objective of conducting the research was to find out the satisfaction level of customers from service quality of Himalayan airlines. Based on data in table 1 and 2, the customers of the airlines were mainly satisfied. From out of five variables, they were satisfied for the four variables

Conclusion

The findings from the analysis of the results it is cleared that the satisfaction level of the customer is overall high. Out of five variables, two variables such as Ticket fares and Airport services satisfaction level are low. It is suggested to the management to focus on fares in comparison with competitors and more attention toward the passenger and their baggage at airport.

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Challenges of Tourism Management of Nepal

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Abstract:

Nepal is rich of high snowcapped mountains; natural and cultural heritage in the world. It has high potential of tourism and opportunity of its growth. It is the largest industry in Nepal and its largest source of foreign currency and revenue. However, Nepal hasn't met its goal to bring the targeted tourists of arrivals and expected revenue for the government. There are different factors of challenges in management to improve. Therefore, this research paper tried to disclose how the country is facing and managing the challenges, what is the lack of promotion and what is infrastructure condition. The research methodology used is enquiries with key personnel involved in public and private tourism sectors, review of literature and focus group discussion. The data collected were primary and secondary both in nature. The tools to collect private data are focus group discussion to evaluate the existing challenges of tourism of Nepal. The research design used is qualitative and quantitative in nature.

Keywords Infrastructure development, international air connectivity, political instability, effective planning, marketing, promotion and management, Safety and security, price war and illegal operators, climate change, and e-Tourism, mobility and new technology.

Introduction

Nepal is well known for country of the Mt. Everest and the land of Buddha. Nepal is the popular destination for adventure and cultural tourism. Natural scenic landscape and biodiversity, high Himalayas, incomparable cultural heritage and other numerous customs have made Nepal a well-known destination in the world tourism map with a distinct image [1]. Nepal is also the home to 8 of the 14 highest mountains on earth. Nepal has high potential of untouched, the undiscovered and uncovered new tourism destinations.

Tourism Sector plays a vital role for increase the GDP and is also a major source of foreign exchange and revenue of Nepal. The traditions and famous hospitality of its many different groups are indeed a major part of what makes Nepal so special. From remote mountain villages to medieval hill-towns and the ancient cities of the Kathmandu Valley, the people of Nepal are always welcoming. This paper tries to answer the questions has this country been facing the challenges to promote tourism in term of poor infrastructure, international promotion and political instability.

Literature Review and evolution of Tourism

Not much researchers have found in the country on

tourism sectors so far. Whatever has found the author reviewed here :

Tourism in Nepal, despite having a long history has really started to appear since 1950's after the end of autocratic Rana Regime in 1950. Rana's were noble family who rose in power over the contemporary Shah dynasty. Before 1950's only handful of tourists visited Nepal under strict permission of Rana regime. George Mallory and Andrew Irvine attempted to summit Everest in 1924 and went missing. Nepal tourism flourished in 1950's through mountaineering activities and contribution of Swiss Geologist Tony Hagen. French national Maurice Herzog became first person to summit Annapurna I (8091m.) on 3rd. June. 1950. Likewise, on 29th of May 1953, Sir Edmund Hillary (New Zealander) and Tenzing Norgay (Nepali) became first person to stand on the summit of Mt. Everest (8848m). In 1952, he was employed by Nepal government for exploring and mapping geography of Nepal that took him 20 years travelling over 14,000 kilometer inside Nepal. These activities lime lighted virgin and pristine Nepal into international arena. 1950 with Swiss development mission. Later in 1952, he was employed by Nepal government for exploring and mapping geography of Nepal that took him 20 years travelling over 14,000 kilometer inside Nepal. These activities lime lighted virgin and pristine Nepal into international arena.

Nepal issued its first tourist visa to Boris Lisanevich, Russian Legendary hotelier invited by King Mahendra Bir Bikram Shah to allow Thomas Cook company to send tourists in Nepal. Boris established the first hotel: Royal Hotel "and began catering tourists."

The same year, National Tourism Council set up the first five-year tourism development plan under the Ministry of Industry and Commerce. Royal Nepal Airlines Corporation (RNAC) was established in 1958 and became a member of the International Union of Official Travel Organizations. The first travel agency "Mountain Travel Nepal" was established by British citizen Colonel Jimmy Robert. Later on, he also brought "Tiger Tops" operation in Chitwan National Park. He is regarded as "father of trekking in Nepal" and a role model in teaching and implementing management in tourism in Nepal.

Nepal became a popular tourist destination as the Hippie trail started to take off during the 1960's and 70's. Hippies who followed radical and liberal anti-war philosophy with "mind exploring" activities such as sex, drugs and religion began traveling in Nepal. Hashish and marijuana were legal in Nepal until 1979 when Drug Enforcement Administration was established by the Nepal government to discourage use of drugs. Hippies played the role of ambassadors and kept on telling cultural and natural beauties of Nepal to the outer world. In 1972, Tourism Master Plan was formulated with German assistance that led to the concept of spreading economic activity in Nepal. Nepal Academy of Tourism & Hotel Management (NATHM) was established by the Government of Nepal in 1972 aiming to produce skilled workforce required by the hospitality and tourism industry.

Chitwan National Park was officially established in 1973. During 1975-1991, Nepal became a hot spot for holiday makers, adventure seekers and cultural tourists. The flow of tourists was in an increasing trend. Nepal Tourism Board, a governmental supreme body of tourism development and promotion was established in 1998. Different trekking and travel agencies, associations, hotels began to appear in this time to facilitate the increasing number of tourism demand. The following year of 1998, Nepal celebrated "Visit Nepal 98" which brought overwhelming numbers of tourists to Nepal.

Downfall of tourism in Nepal started with hijacking of Indian Airlines flight from Tribhuvan International Airport in 1999. Nepalese history caught a black day in year 2001, when the loved Royal King and his family were massacred in a royal party. On the other hand, people's war was taking place in remote corners of Nepal until 2006 when Comprehensive Peace Accord was signed between the Government of Nepal and Maoists. These activities gave a message in the international arena that Nepal is not safe for

tourism activities. Tourists were concentrated in visiting city areas only. Tourism slowly started booming after 2006. Nepal marked 2011 as "Nepal Tourism Year" with the slogan "Naturally Nepal once is not enough" where 736,215 (MOCTCA, 2012) international visitors' arrival was noticed. Similarly, Lumbini Visit Year was celebrated in 2012 giving a message that Nepal is safe for tourism [2].

Mountain tourism faced natural disasters serially. On 18th April, 2014, a tragic ice avalanche that killed sixteen Nepalese guides in the Khumbu Icefall. On 22 April, the Sherpas announced they would not work on Everest for the remainder of 2014 as a mark of respect for the victims. Government agreed and re-opened again in 2015. On 14 October 2014 a snowstorm and series of avalanches occurred on and around Annapurna and Dhaulagiri in the Manang and Mustang districts of Nepal within the Himalaya range. The tragic natural disaster resulted in the deaths of at least 43 people of various nationalities, including at least 21 trekkers and many injured. The incident was said to be Nepal's worst trekking disaster. On 25th April, 2015 at 11:56 Saturday a devastating 7.9 magnitude earthquake struck Nepal and over 9,000 human beings lost. It was the worst earthquake in 80 years. 14 of Nepal's 75 districts were affected by the quake, one of 10 national parks was hit, two trekking routes, the popular Langtang route and the Manaslu region trek, were closed. Some of UNESCO World Heritage sites as Boudhanath Stupa, Bhaktapur, Patan, Kathmandu Durbar Square were partly damaged and Bhimsen Tower was destroyed. 23 Nepali trekking guides and porters lost their lives.

Methodology

The methodology is based on secondary sources. The information gathered from the focus group discussion made key personnel of Nepal Tourism Board (NTB), Trekking Agencies' Association of Nepal (TAAN), Nepal Association of Travel and Tour Agents (NATTA) and Nepal Mountaineering Association (NMA) as based on following aspects as primary sources.

(1) Infrastructure development, (2) political instability (3) safety and security, (4) climate change (5) Planning, marketing, promotion and management (6) international air connectivity, (7) Price war and illegal operators (8) e-Tourism, mobility and new technology

Challenges of tourism sector in Nepal

1. Political instability and internal conflict

In context of Nepal, political instability has always been the major challenge and constraint in development of tourism. Decade long Maoist insurgency, changing

of government time to time, dispute among political parties and leaders has hindered the potential of tourism growth of Nepal. New government just starts to identify the issues and challenges but before understanding well government changes and same case happens for upcoming government.

Moreover, Nepal ranks at top in context of foreign labor migration. Fact and figure of government and other says that there are more than one million Nepal migrant workers including 100 thousand female who are working outside Nepal. These have resulted in lack of youth and energetic work force needed in tourism field. There is a high chance of internal conflicts in Nepal such as strike, Banda, political movements etc. which damages the reputation of tourism development in Nepal among the tourist community.

2. Effective planning, Marketing, promotion and Management

Effective marketing and management are lacking in order to promote and advertise Nepal. Even with presence of different tourism organizations, government bodies and others, the potentials of tourism have been left behind. One of the main causes is the absence of sound co-operation between these organizations, which is very essential. Politics and interference can be found from lower level to upper level in most of the organizations.

Government also seems to lack long run strategic tourism plan and policies for betterment of tourism. Timely review of policies is needed in order to assure plans are executing as expected and to eliminate the constraints that may arouse during execution. Moreover, government and private sector should work together to allure and create favorable environment for investors in infrastructure development such as attractions (natural and man-made), accommodation (hotel & homestays), accessibility (land, air, and sea) lastly amenities and facilities needed to facilitate tourist in visit like atm's, restaurant, and parks, information centers. Nepal, nestling between two Asian giants China to north and India to south, east and west has not initiated to get maximum benefit from neighboring countries. Nepal can be cultural and pilgrimage tourism hub for Hinduism from India and Buddhism for China. But it should increase the carrying capacity of demanding arrival from both countries in future.

There is lack of proper strategy of promoting. International medias, papers, mart, Seminar and B2B conferences are not using as marketing tools to promote Nepal's tourism.

3. Infrastructure development

Due to lack of infrastructural development it is unable to utilize its features. If we are able to provide all the

infrastructural facilities we can attract a large number of tourists in our country. There should be applied possibilities of equal and proportionate development of infrastructures in different tourist destinations by identifying them as opportunity. Similarly, to distribute the profit from this sector to concerned authorities in a proportionate manner had been challenging.

In Nepal, due to the rugged terrain the first shift of freight transport was naturally to a ropeway in 1922. The second shift came in 1928 in the form of a railway line in Janakpur. However, road infrastructure development in Nepal started during 1950, until then Nepal had no road infrastructure linkages with the rest of the world. Construction of roads and availability of subsidized fossil fuel from India heralded the shift to trucks in 1956. With the marginalization of the earlier modes, which could have been developed to higher efficiency and better sustainability, trucks have become the undisputed mode of transportation throughout the last century.

Since then, the government has been making efforts to provide increased access to transportation, communication, health services, electricity and other infrastructure services. Despite these efforts Nepal remains one of the poorest countries with infrastructure development as the major challenge. One of the most dominant challenges of Nepal is to develop the basic infrastructures to accelerate its pace of development. For this, transportation, information and communication technology (ICT), health and electricity play a vital role in the tourism and overall development of a country.

In Nepal, road transport has predominant role because it is the only means for transportation except the limited air service to some part of the country. Janakpur to Jainagar Railway, which is a narrow gauge in poor condition, is the only railway facility in Nepal. ICT, health, drinking water and sanitation, electricity transmission line as well as technology development and innovation has to be developed in order to accelerate the tourism development of the country.

Nepal has only one international airport called "Tribhuvan international airport" (TIA). It has poor condition of runway and its management. Nepal should have at least three international airports as in main tourism destinations as Pokhara and Lumbini. There are 32 domestic airports in operation though their run way and management condition need to be improved and in most of them not operating regular flights. 17 internal airports are not in operation which should bring in run soon. 6 domestic airport are under construction since long time which is taking too long to complete.

The road are extending to tourist destinations ruining the trekking trail which is now big challenge to face. The road should be built as tourism and environment friendly. Trekking trail and local villages should not be damaged and it should be build in alternative way.

4. Price war and illegal operators

A price war exists and is primarily propagated by illegal operators who are either unlicensed or do not pay taxes or those who are in the business with the clear intention of defaulting on their debts to suppliers like hotels, Trekking agency, domestic airlines and transport suppliers.

This uneven playing field is harming the capacity of the national economy to absorb whatever taxes were going to come as these operators neither pay VAT or income tax or any other taxes. They are surely siphoning the money off into the 'alternative economy'. Therefore, price based unhealthy competition in the industry is eating it from the inside and destroying whatever little chance there is for it to recover.

There is lack of government monitoring mechanism of illegal trekking and tour operators in the industry. It encourages NGO's and unregistered/unauthorized company (company inside bag) to operate trekking and tour while they don't have skilled guide/porters, no need to pay VAT, tax and sell the package in cheap price.

5. Safety and Security

For travellers, either the trip is adventures or leisure their first concern is safety and security. They should feel free from fear of missing, rubbing and cheating etc.

High percentage of tourists visits Nepal for mountain adventures trip. There is big challange of missing the trail, safe walking path, Acute Mountain sickness (AMS) and rescue evacuation . The government and private sectors should minimize it by ensuring “ No trekking without company's guide/porter”, mandatory travel insurance covering rescue evacuation and international standard signage and information centers.

6. e-Tourism, mobility and new technology

e-Tourism can be defined as the analysis, design, implementation and application of IT and e-commerce solutions in the travel&tourism industry; as well as the analysis of the respective economic processes and market structures and customer relationship management.

Effective and high-speed ICT infrastructure and software applications in the tourism industry are crucial for its development. ICTs allow customer–management relations and supply chain management to be combined

into a single source that facilitates a variety of operations – product selection, ordering, fulfillment, tracking, payment and reporting – to be performed with one easy-to-use tool. ICTs ultimately cut costs by enabling the provider to be in direct contact with the consumer and also impact employment through the need for required maintenance of ICT equipment.

Management within tourism companies use ICTs to undertake a range of tasks that enhance the efficiency of employees in the workplace, notably online reservations. Staff reductions in areas (e.g. hotel front offices) where work traditionally took place were projected to have implication for cost saving . Remaining workforce need to work with new technologies for instance, inputting consumer orders into portable devices additional to traditional tasks. Such changes create a need for multitasking skills which, in turn, leads to necessary adjustments to training programs.

The development of ICTs has also led to changes in demand and supply. A higher demand for flexible, individualized options and quality of information has personalized leisure and tourism behaviour; a consequence of increased ICT use. Through new technology and social and economic ratings (e.g. social media platforms like Facebook, Twitter, blogs) customers have the ability to share information and research ratings on destinations, quality of service in hotels and restaurants and environmental and social conditions.

In the context of Nepal, E-marketing, it's mobility and new technology of information communication technology is aggressively developing but still digital marketing, social medias and online business is required to be trained by experts.

Use of Internet for online tourism reservations, selected countries, 2002–08

Table 1: Percentage of individuals who ordered travel and holiday accommodation on the Internet

Country	20 02	20 03	20 04	20 05	20 06	20 07	20 08
Austria	1	3	3	3	7	8	11
Denmark	8	10	14	18	26	27	30
Finland	2	3	7	10	12	26	31
France	-	-	-	-	8	14	18
Germany	3	5	6	10	21	23	22
Iceland	-	14	24	31	39	40	38
Ireland	-	3	7	10	18	20	21

Netherlands	5	6	2	15	21	25	26
Norway	-	13	25	33	40	41	45
Spain	-	2	2	5	9	11	12
Sweden	8	-	12	16	18	28	27
United Kingdom	11	17	18	24	23	24	27

Source:[3] OECD: “Tourism trends in the OECD area and beyond”, in Tourism Trends and Policies 2010, 2010, p. 38

7. Climate change

The future of the tourism industry depends on climate and environmental conditions because they can have a dramatic effect on the competitiveness and sustainability of climate-sensitive destinations. Climate can be a determining factor when people choose their holiday destinations, depending on their demands for sun, snow conditions, mountains or regions with warm weather and it can have an effect on the length and quality of tourism seasons.

Tourism is estimated to create about 5 per cent of total carbon emissions, primarily due to tourist transport (75 per cent) and accommodation (21 per cent, mainly issued by air conditioning and heating systems) .

Within the service sector, hotels are among the top five energy-consuming buildings. Figure 14 offers a profile of the typical amount of energy consumed by hotels. It clearly illustrates that the highest consumption is generated by space heating, followed by water heating and cooling systems.

Moreover, customers are increasingly concerned about the environment, particularly the use of less carbon-intensive products and are looking for sustainable travel packages that include recognition of social and environmental issues, of —green II tourism services and of the principles of —eco-tourism. Research indicates that consumers are concerned about the local environments of their travel destinations and are willing to spend more on their

holidays if they are assured that workers in the sector are guaranteed ethical labor conditions in the places they are visiting.

Weather patterns are becoming more unpredictable and prolonged dry with the effect of climate change. Similarly glaciers and snow-capped areas are shrinking day by day. Many glacial lakes are on the verge of bursting whereas the volume of water in the river system is decreasing significantly.

The Himalayas are not only the pride of Nepal, but are closely linked with the very existence of it. The experts are on the opinion that warming in the Himalayan region has been much greater than the global average leading to rapid melting of glaciers and snow- covered areas.

The issue of melting Himalayas is a formidable challenge for Nepal which might be a matter of less importance to many other countries that are more concerned on small Islands and Coastal Regions, water and deserts, forests and bio-diversity and the Arctic region. Therefore, this issue has not obtained due focus by the world community.

8. International air connectivity

Nepal’s tourism industry is suffering from poor air connectivity, lack of adequate promotion in international market and inability to develop and market new products and services. Nepal has only two international airlines of own flagged Nepal airlines and Himalaya airlines. Nepal airlines operates only international flight to Thailand, India, Dubai and Malaysia while Himalaya airlines just starting to operate flight to Dubai and China. [1]

All the international flight are transition and has no direct flight. So, it being costly and time consuming travel to Nepal. It is great challenge for Nepal to compete with other destinations.

9.Component and challenges of tourism management

A group of key people working for Nepal Tourism Board (NTB), TAAN, NMA and NATTA (focus group) gave their responses to the different issues related to tourism. The Table 2 presents the summary of their responses.

Source: [1]

Conclusion

Component	Challenges
1. Political instability	Strike, banda and movement are frequently happens and government is changed shortly very often.
2. Safety and security	Missing, AMS, weather information and quick rescue evacuation from mountain are facing.
3. Infrastructure development	Only one International airport, not regular flights to operating domestic airport, not operating all completed domestic airport and some airports are still under construction, which is being problem for easy accessibility.
4. Climate change	Climate change is affecting negatively in global warming, environment, eco-tourism and weather conditions in the Himalayas.
5. Price war and illegal operators	Nepal is slowly known as cheap destination in the world. Unhealthy price competition and operating illegally by unauthorized companies polluted the tourism industry. The quality of service is decreased due to cheap quotation.
6. Effective planning, marketing promoting and management	Planning, marketing and promotion through international media is essential.
7. e-Tourism, mobility and new technology	Required training of digital marketing, online business and social medias.
8. International air connectivity	There is low air international connectivity and direct flight to Europe and America. Time and cost factor is challenge to reduce for travellers.

Nepal is naturally gifted and culturally blessed to take comparative advantage. It has most opportunities and high potential to grow fast economic benefit to the nation of developing tourism management. There are some great challenges to face and progress of international air connectivity, infrastructure, international promotion and quality tourism.

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Jatayu Restaurant in Vulture Conservation a Complete Home to Nature: it's Potential and Threat

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Abstract

Ecosystem is being the most challenging environmental issues. This paper bases how a restaurant can be an example of social responsibility in this regard. Also discusses what efforts are being done to preserve vulture.

Keywords Jatayu Restaurant, Vulture, Conservation, Tourism

Introduction

Jatayu Restaurant not for the dinner but an environment for beauty of nature, for the home of those species which are on the verge of endangered, for the shelter of vulture, a tertiary consumer. The concept of conservation of those endangered species are interlink directly to the human life, life of those species and the resources dependent on those species. Being a part of the eco-system the rational human society has the foremost role to sustain and balance the eco system. Vulture, being a part of eco system has a right to live and its our essence to sustain those species for our future. Vulture, age tertiary consumer has a important level on balancing ecological pyramid. Conservation is in the hand of humans. Only human society can flourish that vulture livelihood. Destruction of the habitat for vulture can deteriorate the balanced food web. The cycle of effect on human population and human concern to vulture has major impact on human vulture relationship. Vulture human relationship is not a well defined term. But it is a established concern to visualize. Humans are the savior of the eco system. The human society has role to maintain the feeding, habitat and concern to vultures population.

How a consumer plays a role to develop a food chain/web to establish a existence of living is a fact to conceptualize,

Likewise the relationship between the eco system and survival of the species one so conjoined that consumer can break the hierarchy of livelihood. conservation of those consumer are essential to human race for the living of therefore coming generations-beside, the essence the human rationality has developed to the concept conserve the species those territory consumers as such different projects has been in initiated in the western countries. Being the developing nation the concept has been adapted for the first in Nepal with the Asia continent. The concept of vulture conservation as Jatayu Restaurant has been a

first implicated in Nepal within Asia in Pithauli village. These programme has been promoted by the natural habitat and successful community forest project in Nepal. Nepal as such has the Large Variety of animal species and diversity of geography with in limited territory.

Jatayu Restaurant has been working for vulture conservation since 17 August 2006 vulture then normal birds. There species differ in height and weight normally vary from 8-12 kg. Vulture are also called scavenger as environment cleaning, servants, they do not eat living animals the survive on the carelessness of dead animals.

These scavenger can be deduced by human activities . Diclofenac abuse has deduce the vulture population to its endanger stage. So, concern on its population, data collection and research can give a way to future framework to work on Jatayu Restaurant concept has been highly successful to increase their population.

Before these project has been launched scenario of the vulture conservation was miserable. There was a serious decline in the vulture population. This project has imparted a major role to step up shown by the efficiency of those projects.

Jatayu Restaurant has been a part to conserve endangered vulture species. Pithauli Jatayu Restaurant is first of its kind to start in Nepal for vulture conservation .

The spot Jatayu Restaurant is well facilitated with road transportation facility. East west highway (Mahindra highway) passes through the nearby area of the spot. The designated Kawasoti Municipality is enriched with geographical diversities cultural diversities ,caste diversities, religious richness ,hill shrines, verdant forest, water bodies ,aquatic animal diversities . The spot is near the rich natural heritage of Chitwan National Park and

Piety of Narayani River with its religious importance Resort and eco-tourism is the boon for the spot nearby areas of the spot in the district. These natural enrichment has kind napped the eyes of travelers through the unique offerings of cultural and natural heritage and unforgettable views and the spot is tantalizing and as yet undiscovered in adequacy.

Research Problem

Vulture' being endangered species and tertiary consumer of food chain has direct impact on ecosystem. Without maintaining ecosystem sustainable development of world and future generation is impossible. Human life is highly dependent on natural resources for their existence. Disturbance on eco-system can result several problems to human life.

Many of the examples have already shown the result due to harming of ecosystem. Vulture being tertiary consumer in food chain and part of food web links to all the ecosystem behavior. Its extinction can hamper human survival. Thus, the study of research on vulture seems to be reliable to present context as vultures are being endangered species to the country.

Why is the conservation of vulture important for the overall conservation and people's lifeways in Nepal? What steps have been taken to conserve vultures in Nepal?

What strategies, campaigns and activities have been initiated in order to raise awareness on Vulture conservation among the local people?

How is the tourism business responding to the conservation program? What is the impact of vulture conservation on the livelihood strategies of the local people?

To explore on practice of vulture conservation in the area and analyze its impact on local people's lifeways and the promotion of tourism through the conservation in Nepal.

To explore on the participation of local people to the practice of vulture conservation at Jatayu restaurant. To find out how vulture conservation in the area is being practiced. To analyse the impact of vulture conservation on the livelihood of people and in the promotion of tourism in Nepal.

Review of Literature

The literature review is one of the most important parts of research. It helps a researcher become familiarized with the existing theories, concepts and ideas pertinent to the subject matter, which might also be helpful to a researcher to develop new theories, concept and ideas. The literature review dose not intent mere to collect information on the

subject matters under study. Review of different forms of literature was done for the following objectives.

J.W. Bennett, on "ecosystem, Resources conservation and Anthropological Research" has described human ecology as human behavior and had presented essays in environment and development .F.Berkes and M.T. fervor on "introduction and overview" has discussed on common property resources and has mentioned about ecology and community based sustainable development has written about forest from culture, environment and development [2] .Ghimire. B. Krishna and Michael P. Pimbert on their book "Social change and conservation " had highlighted on environmental politics and compacts of national parks and protected areas F. Berkesi on his book "CO-operation Development " has discussed on relation between conservation and cultural values. B.S. Brush have presented information on Anthropology and the conservation of bio-diversity o their " Annual Review of Anthropology [1]."

Research Method

This section has discussed a set of methods to be employed to accomplish the research objectives. More specifically, it contains nature of data, research design, selection of samples, data collection tools, data analysis and interpretation.

For the proposed study exploratory research design will be applied to explore on the practice of vulture conservation in the area. Analytical research design will also be used to analyze the impact of conservation in the lives of local people and on the tourism of the country.

Selection of the Study Area: Jatayu Restaurant of Nawalparasi district is of first kind and unique in Asia .in conservation of vulture. Jatayu Restaurant encompasses the area of two VDCs. They are Pithauli and Kawasoti VDCs of Nawalparasi district of Nepal. Thus these two VDCs are selected for the study.

Nature and Source of Data: Primary as well as secondary data has been widely used in the study. Primary data collection was done from study area with the help of interaction, organization conducting the program and management committee along with local people. The secondary data was collected from various brochures and reports related to vulture conservation program. Similarly various news articles, websites published by various sources related to study was also been adequately used for relevant information. From the study, both qualitative as well as quantitative data was collected.

Discussion

Jatayu Restaurant has implicated its success on conservation, during these eleven years of practice. Tourism a part of country's occupation has been promoted by these Restaurants. Success of these projects during the decade of practice has been possible through uncontaminated feeding, census on vulture population and uniqueness of the concept discouragement of diclofenac on treating animals. The progressive increment in the vulture population on different spots of the Restaurant established in different area of country has boaden of concept to preserve the endanger species and nearly extinct species. Jatayu Restaurant providing a belief to possibility of the conservation of those tertiary consumer has promoted biodiversity of the society or the globe.

The beneficial consumer preservation has imparted to maintain the ecosystem and to retain a healthy food web. Sanitation prospective is widely enriched by these projects, Management of the Carcasses reduces pollution and provides advantage to promote habitat for vulture feeding of vulture with those carcasses free of diclofenac can increase the population of those endangers species.

These Restaurant provides diclofenac free carcasses which has major contribution to vulture feeding as these drug was found to be major cause of decline in vulture population before. The main aim of this project is to provide safe food for critically endangered vulture is steworthing and management of the local communities. Cattle, when become old and unproductive they are collected at cow rescue centre of Jatayu Restaurant but paying to farmers. These old cow (cattle) are provided good care and facility. After natural death, these carcasses are kept at designated place where vulture comes to feed on. Tourist can enjoy more varieties of vultures, vultures swoop down at meal time and other birds of prey in vicinity.

The Jatayu Restaurant not only potentialize the natural aspect but also benefits the local population with good source of income vegetated via tourism. Tourism described as one of the major role in country's economy also bonuses the local community to earn via tourism. Tourism can promote the social wellbeing, educational essence and employment benefits. Visitor centre Jatayu Restaurant provides information in comers about these creatures and its conservation effort carried out to safeguard them natural history, other birds and mammals information are additional aspects. Study on population of vulture colonies and breeding success of all vulture species in Nepal is being carried out awareness raising activities to different groups and faculties has been promoted by the project.

Educational tourism and among national and international population with the initiation of the project. Feeding centre, breeding centre sightseeing photography jungle town, grassland and home stay in these Restaurant has multi factorial benefit to those endangered species and local community via tourism . Jatayu Restaurant, a complete home to nature.

Managerial set up have imparted the glory attract the tourist. These restaurant has been advantageous for the income generation among local community with the flourishing identity. Interest of the people on conserving those endangered species and increment in vulture population is not only a proof to success of the project. It's success can be easily conceptualized through Its replication. It has been one of the successful project launched in Nepal and outside the country has shown brighter side of, the concept i.e. "Jatayu restaurant as vulture conservation project".

Being a community based project, it has promoted the indigenous Tharu community to promote there identity, to generate there income and to preserve their culture. Culture promotion has been supported by this project. Tharu culture and there varieties of food can be enjoyed near by the project. The project is a community based so participation and collaboration of the community people has benefited the concept of group work and participation of community people to outcome a common purpose. Jatayu Restaurant being a home to nature has also promoted cultural protestion and publicity with community participation and group work. Social bonding and cultural identity with ethnic promotion has been additional outcome of these projects.

Along the potential every good concept has forcers side or challenges. Continuation of the project has Jatayu Restaurant a, complete home to nature, managerial set up have imparted the glory to attract the tourist. This Restaurant has been advantages for the income, generation among Local community with the flourishing identity. Interest of the people on conserving those endangered species and increments in vulture population is not only a proof to success of the project. Its success can be easily conceptualized through its replication. It has been one of the successful project launched in Nepal. Replication of the project in different area of and outside the country has show the bighted, side of the concept i.e. Jatayu and vulture conservation on Project.

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Toward Harnessing Web-Based Technology in Developing Distance Education in Nepal: Reviewing the Barriers and Opportunities

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Abstract

Distance education is becoming a major concern for most countries, especially developing countries. It is designed to give people options. It makes learning attainable for people from all walks of life. A great alternative to traditional, campus-based classes, distance education allows students to study on a more flexible basis. Nepal is one of the countries that are in urgent need to harness modern technologies to improve the quality of distance education as one of the most urgent solutions to improve the education process. But there are difficulties faced by researchers in this area, especially the scarcity of studies and research in this area. This paper aims to reviewing the barriers and opportunities that assisting in harnessing Web-Based technology in Developing Distance Education in Nepal. The descriptive analysis methodology has adapted for conducting intensive academic literature review. It analysis Governmental and non- government all report and other literature that relates to Web-Based technology and distance education. The research exposed that it is vital to of conducting in deep research in Web-Based technology and distance education in Nepal as one of the most solution for remote education

Keywords Web-Based technology, Distance Education, Information Systems, Information Technology, Web Application.

Introduction

While there are many concerns expressed about technologically-mediated teaching, there are faculty members who applaud the opportunities technology brings to their teaching and their students' learning environment. While the survey data used in the analysis here is now a couple years old, anecdotal conversation and review of current online discussion lists suggest the barriers to online teaching have not changed, or changed very little. Many barriers to learning and teaching at a distance are caused by lack of access to resources and people. Further, the most critical obstacles reported in this survey appear related to persons' resistance to or fear of the many changes that must occur at the individual and organizational level. Add to these fears the lack of support for the changing roles of students and teachers and you have the ingredients that often lead to significant impediments to success in online education. Other barriers arise over difficulties in assessment: whether it involves evaluating students' online work, or the rewarding, compensating, valuing, and supporting of faculty members' teaching

online and as they develop technologically-mediated learning environments.

Online learning is considered to be a kind of distance education, the main component of learner and teacher at the time of teaching, a mainstream of the process of instruction that content and instruction are conveyed largely over the Internet. In the same time the distance education is considered to be a system or method of instructing education that there is no face-to-face communications. The intensive literature review has been found the lack of studies that trying to solve the weak of utilizing e-learning technology to improve the dependence on the solutions of net-based learning. The key objective of this research is to propose conceptual framework for enhancing integrating of e- learning and distance education in Nepal. The **descriptive analysis methodology** has adapted for conducting intensive academic literature review. It analysis Governmental and non- government all report and other literature that relates to e- learning and distance education. The research exposed that it is vital to of conducting in deep research in

e- learning and distance education in Nepal and propose proper conceptual framework

Background

Distance education is considered to be a system or method of instructing education that there is no face-to-face communications. At present face-to face contact is becoming accepted and fashionable in such mode of culture. The methods of Distance education delivery help the ways of delivery of the courses conditional on the needs and nature of the subjects [1]. The teacher or instructor is a facilitator of face-to-face communication or interaction and teacher counselor is the obtainable resource person locally for offering regular support to the students.

The past decade has seen a dramatic growth in the utilization of online, blended, and the approaches of distance learning in secondary and elementary education all over the world. Online learning is considered to be a kind of distance education, the main component of that is “the segregation of learner and teacher at the time of teaching, a mainstream of the process of instruction” [2]. Online learning is said to be “an education that content and instruction are conveyed largely over the Internet”.

Even though working from a superior level of responsiveness of pedagogic skills, staff in the area faces two essential impediments in the acceptance of a more open learning culture. Firstly, the access of Internet is rapidly improving, but is still in general too weak and contradictory to allocate any dependence on the solutions of net-based learning [3]. Secondly, the educational culture is opposed to the appreciation of the value of the degrees of open-learning, with succeeding difficulties in re-designing the materials of the course for a more educationally supply, student-centered environment of learning.

The culture of Nepali education is governed by face-to-face teaching. It has a very long history starting from the culture of Gurukul system to the current formal schooling. The appearing processes or practices of utilizing technology and advancement in education have been fostering online learning as a type of distance education and attaining popularity. Online Learning is regarded as one of the different methods or approaches to e-learning (electronic learning). E-learning is considered to be a broader idea of learning, which incorporates the utilization of all electronic ways for learning. On the other hand, Online Learning is particular to the Internet or Intranet arbitrated learning prospects [4]. E-learning is defined as the “utilization of online media, ICT, and web technologies for culture of education”. One of the greatest definitions of e-learning can be: a word covering a broad set of processes and applications, like computer-based learning, web-based learning, digital collaboration and virtual classrooms. It incorporates the content delivery by means of Internet, audio- and videotape, intranet/extranet; interactive TV, satellite broadcast, CD-ROM, and so on. In Nepal, HEIs (Higher education institutions) have begun employing Online Learning as e-learning primarily to assist the conventional on-campus learning and teaching activities. It is supposed that e-learning offers new and current opportunities to both the HEIs and the students by making latest and exciting opportunities.

Table 1: Summary of Major Distance Education Technologies

Technology	Advantages	Disadvantages
Print	Materials Inexpensive Portable High comfort level Readily available	No interactions Limited sensory involvement Requires reading skills Time delay
Voicemail	Low cost Easy to use Increases interactions	Length may be limited No visual cues May involve toll charges
Audio files/CD	Inexpensive Easily accessible Easily duplicated	No visual cues No interaction
Audioconference	Inexpensive Easy to set up	No visual cues Requires hardware
E-mail	Flexible Interactive Convenient	Requires hardware Software variations
Online Chat	Real-time interactions Instant feedback	Requires similar software Must be scheduled Requires hardware
Web-based Education	May incorporate multimedia Worldwide access Interactive	Requires computer Requires Web access May be slow
Videotape/DVD	Inexpensive Easily accessible Easily duplicated Audio and visual elements	Complex to record No interaction Requires hardware
Satellite Videoconference	High realism May be interactive	Expensive hardware Must be scheduled Usually one-way only
Internet Videoconference	High realism May be interactive Relatively inexpensive	Must be scheduled Small windows May be slow, jerky video
Cable/Broadcast Television	Easy to use Easily accessible May be videotaped Includes audio and visual	High production costs Requires hardware No interaction Must be scheduled

Source: 2009, “A Teacher’s Guide to Distance Learning.” <http://fcit.usf.edu/distance/default.htm>

Problem Statement

Nepali students and teachers had no options more than talk and chalk incorporating the textbook and blackboard as the materials of teaching, in the past. Most recently, they could utilize all probable materials of teaching covering video, audio, simulated and animated objects, Internet/Web tools, software tools, electronic pen, smart board, and several more as per the require of the class or lesson they intend. The culture of Nepali education is on a winning streak to generating a splendid shift in the direction of adjusting new and innovative technology [5]. Technology developed (OPL) Open and Distance Learning is considered to be another chance or opportunity for the Nepali Higher education institutions to attain the

students all over the country and beyond. Hence, teaching or tutoring is not restricted within boundaries of all the four walls of a class or classroom; the courses are easily reached to each and every student linked to the Internet from all around the world. And the distance education links the non-formal and formal sector. The open school system is said to be an optional route to the formal school schooling with external examination system, stipulation of school curriculum and differing in the materials of learning in the print form, broadcast telecast, audio-visual cassettes, audiovisual conferencing etc. all the way through resource materials, distance tutor and face-to-face contacts [1]. This kind of education is proposed for all sorts of people for various purpose such as literacy, young and adults, technical, vocational and scientific. This method is most dynamic and potential for any country developing or developed nature. Because of the advancement of technology, more efficient and effective learning materials and equipment's are coming up that would develop the efficiency and quality of distance learning.

Objectives

The key intention of this research is to explore in detail about Integrating E- learning and distance education in Nepal. The conceptual framework for the integrated e-learning and distance education in Nepal Source: Author

The aim of this thesis is to integrating E-learning and distance education in Nepal. The following section will briefly discusses about research paradigm, research design, types of data, sampling design, data analysis and interpretation techniques and explains ethical considerations in this research.

Research paradigm and approach

A research paradigm is explained as a structure of methods, standards and attitude inside which the investigators work and the investigation work takes place [6]. Research paradigms are of two broad categories. They are (1) Positivism and (2) Interpretive.

This research adopts mixed methodology. This research integrates both *positivism* and *hermeneutics*. Hermeneutics is a method in the research since the researcher has gathered descriptive data for analyzing the concern proposed in the research. This research also undergoes positivism since it examines a research hypothesis by analyzing the numerical data gathered from primary respondents.

This research employs both *quantitative* and *qualitative* approaches. Qualitative research also known as inductive method of research is subjective in character [7].

Quantitative analysis uses numerical information. This research shares questionnaires to 150 students in the distance education institutes of Nepal. Alternatively, this research interviews ten officers working in ten various distance education institutes of Nepal for the qualitative analysis.

This research adopts *descriptive research design*. According to Thyer B, the descriptive research attempts to characterize the problem, situation, service, and phenomenon and offers information about the living conditions of a community or characterizes attitudes towards the problem [8]. This research can be employs when the research object is very difficult. Also, it is employed in identifying the connection that exists among the variables. Grinnel and Unrau, points out that descriptive design makes use of the elements of both quantitative and qualitative research strategies in the same research. The current research research is *descriptive* in nature because this research has both quantitative and qualitative analysis [9].

Model Discussion

Pradhan stated about the distance education, a imparting educational method without a face to face interactions are integrated in Nepal [9]. But in recent years, face to face interactions are new and popular mode of education. The delivery of the distance education in Nepal, clearly assists the mode of delivery, depending on the subjects demands as well as the nature of each subjects. In Nepal, the distance education has two main persons like tutor and tutor counselor; here the tutor plays the part of facilitating the subjects whereas the tutor counselor is resource person who is locally available for supporting the students continuously. In Nepal, the difficulties faced in distance education are the under development, poverty and landscape hindrance even after equal access for all people. The radio education program was the first launched distance education in Nepal by the college of education.

Rennie and Mason analyzed the development of distributed learning techniques conducted by many universities to design distance and distributed learning courses in Nepal and Bhutan. The distance and distributed learning has created higher awareness for pedagogic skills, but here the staffs face significant impediments for reaching the students adopting open culture in the process of learning [3]. The firstly, negative aspects is the internet access in Nepal, which are mostly weak and inconsistent to make the net based learning program more difficult. Secondly, the resistant academic culture cannot be recognised properly due to the open learning degrees which make it very difficult to design the subject course material and flexibility in education.

Table No 02 Types of Distance Education

Model	Examples of
Correspondence model	Print
Audio-based models	• Broadcast: IRI • Narrowcast: IAI (via audio tape or CDs) • Two-way radio • Audio conferencing and telephone • Broadcast radio
Televisual models	• Broadcast television (educational and instructional) • Videoconferencing • Video
Computer-based multimedia models	• Interactive video (disc and tape) • CD-ROMs • Digital videodiscs (DVDs/VCDs) • Interactive multimedia
Web-based models	• Computer-mediated communication • Internet-based access to World Wide Web resources • Online courses (e-learning) • Online conferences (webcasts and webinars) • Virtual classes/schools (cyber schools) and universities
Mobile models	• Hand-held devices • Portable media players (podcasting) • Cell phones and smart phones • Tablets • E-readers

Tara stated about the beginning of distance education for computer undeveloped country like Nepal is of great advantage and highly innovative. Even though the Open University Nepal is not materialized yet, the distance education offered has established the high carrier gain[10]. The Distance Education For Computers is known for its alternative model of education in Nepal, while the technological development is getting stronger for careering feasible network for teacher and learner in fixed place, fixed time, fixed person for the purpose of training the learners. The Open University in Nepal has organized advanced computer based education for rural Nepalese in department like health, productivity, economic improvement sustainability disciplines and social system.

Parajuli aims to research the mobile learning practice that has been integrated in Nepal for higher education, as mobile technology are playing the leading technological role for 15 years[11]. The semi-urban as well as the rural undergraduate people can use the mobile education for their educational practices in Gorkha district of Nepal

state. Even though mobile learning was not widely spread in Nepal, the uses of mobiles for educational purpose make the integration process more powerful and effective plan. Obviously there are lots of significant distinctions between the e-learning and mobile learning as it has issues like small screen size, processing power and storage but mobile technology trying to break these barriers. E-learning are known for its real time and self-paced learning but mobile learning are also known for its informal presentation, self-paced and un-tethered quality.

According to Wagley in Nepal, the Kathmandu university school of education offers e-learning environment t for all its students[12]. All the learning courses and the resources for learning each subject through the mode of face to face interaction are provided through online. The Educational Content Management System for e-learning strategies provides all the possible features for learning and assisting for students as well as teachers. ECMS has the most improved technological platform called the Moodle school of education is also being offered in the programs for distance learning through the web 2.0 technology. The course activities and supported email messages are offered through model platform. Thus Nepal offers a completely interactive virtual learning through distance learning in Kathmandu University.

Bajarcharya investigated about the ten most important dimensions of the distance learning in the state of Nepal. The open and distance learning for higher education are in need of improvising the quality assurance while comparing with the traditional learning in the Nepalese context[13]. The development of quality assurance by integrating the qualified open and distance education programs can bring greater standardized learning process. The face to face classes offered in open and distance learning has the most important characteristics like teacher and learner separation, mix media course ware use, institutional accreditation, face to face meetings and tutorials, two ways of communication and process of industrializing the learning courses. E-Learning in Nepal also offers learning objectives instructional strategies through online, asynchronous designed learning material, satisfying learner's demands etc.

CDEC expresses about the Open And Distance Learning (ODL) program in south Asian countries like Bhutan, Pakistan, Nepal, Sri Lanka, etc, which has offered learners to practice various course programs by breaking the barriers like accessing, time, place, researching methodology, curriculum contents and combination of all these aspects[14]. The organizational education program is the distance education which accredited wherever the teachers or learners is at any geographical place or time distance. ODL is known as a umbrella term for education which reaches all the learners from the educational

institution or the tutors. In ODL, the students advantages includes, they can learn from remote or rural communities, migrant families, disabilities, poor parents, ethnic communities and even street children after disasters.

Pangeni briefly explains the cultural practices in Nepal being dominated by the face to face learning can be broken by the open and distance learning programs[4]. The most emerging practices of e- learning all gaining its popularity, so promoting and integrating e-learning and distance learning program in country like Nepal can bring rural students to the world of virtual education. The thematic issues in Nepal is modes of education culture flexible learning, Pedagogical tool of ODL for teachers educations and implementing ODL in Nepal is the core focus for exploring. Many universities and open universities have acquired success in the implementation of ODL in this age of internet.

Kharkurel explores the potentiality of e- learning in Nepal, as e- learning includes formal and informal learning programs through the electronic delivery. The learning tools like web baesd teaching and learning materials, CD-ROMs, educational animation and graphics and e- mail are included in this method. As Nepal is new to the role of developing country the e- leaning seems to be new stranger[15]. However the Nepal's education system which usually relied on traditional learning has recently got out of tract to e-leaning in the Nepalese cities. As the Nepal wants to exploit the e-learning strategies, the Nepal government has given its importance to the information and communication technology for build a knowledge based society for city dwellers and rural people.

Nepal policy mentioned about the open and distance learning vision of Nepal, which are integrated in a full flow for the creating of opportunities for Nepal citizens[16]. The ODL system expanded its full access in schools and higher educational institute for having a new and diversified learning program for children working people, housewives and out of school students. Through ICT applications the open and distance learning gives the qualified education system similar to the traditional education by various delivery mechanisms offered in the several online courses. The ODL has created a conventional education system by expanding the access for interested learners in groups, women, poor people, and marginalized citizens and so on. This ODL is known for its flexible learning due overcome of barriers like physical, geographical and time strategies.

Lodhia (2006) analyzed about the e- learning programs offered in various countries for the welfare of the nations. Distance learning programs can offers valuable opportunities for adults who are working and for children who are basically poor or disable to go for traditional

education system[17]. The distance learning provides the dynamic career and qualified environment virtually from the database index, web indexing and book index. The distance teaching has also offered tutorial classes with instructional designs with various programs for each courses offered in a better teaching and learning methodology. The capacity of the developing Nepal countries works with the support of the government for enhancing their ICT for the purpose of educating the country people.

Acharya explains about the open and distance learning in the context of Nepal. Even though there are increase in popularity in the open and distance education in Nepal, there are also various challenges and prospects in it. In the industrial revolution the distance education concept started emerging[18]. In account of Desmond Keegan, open and distance education made its way as an alternative model for the traditional education. The ODL has the main advantage of feasibility in learning and teaching with the innovative and creativity in the information and communication technological development. The separate teachers were trained to meet the learners need without the need of particular place, time or to meet particular person. The four stages of ODL undergone in Nepal were as follows: tele- learning model, multimedia model, interactive flexible learning model or Taylor model and flexible learning model. Western education system is mostly used in the ODL of Nepal.

Discussion

A brief discussion of the underlying principles behind distance learning is necessary to understand the associated problems. In 1973 Moore introduced the theory of independent study. An important foundation of distance education, it suggests that successful teaching can take place even though teacher and learner are physically separated during the learning process. While this separation can occur in several ways depending on the nature of the course content and delivery medium, this paper will not differentiate between non-traditional, electronically mediated (i.e., real-time, computer network or video teleconferencing) and traditional coursework (i.e., correspondence courses) because many of the barriers exist within both types of distance education. Electronic mediated courses use telephone lines, cable, satellite, and microwave networks to transmit voice, video, and data.

Although distance learning is not new, it has not received respect in the academic community because of the number and seriousness of problems presented here. The dramatic growth of the adult learner population is making distance learning an increasingly popular choice of learning techniques. Further study of student demographics and motivators will help target the adult

learner population and will help institutions develop course materials and techniques appropriately. Close scrutiny of the intrinsic problems in distance education will help overcome problems encountered by students and faculty. Understanding and mitigating technology problems are important, especially with the rapid expansion of technology. Further research into course development techniques will help learning institutions understand which methods work best in the distance learning classroom.

Conclusion And Recommendation

The conclusions were reached to the vitality of conducting in deep research on the area of online learning and distance education which considered the main component of learner and teacher at the time of teaching, a mainstream of the process of instruction that content and instruction are conveyed largely over the Internet. It is important to fill the lack of studies that trying to solve the weak of utilizing e-learning technology to improve the dependence on the solutions of net-based learning for enhancing integrating of e- learning and distance education in Nepal. The research exposed that it is vital to of conducting in deep research to identify the underlying common factors of E-Learning & Distance Education, Policy/ Performance and beneficiaries Satisfaction. Conclusions.

Also, it worthy to examine the impact of E-Learning & Distance Education on the beneficiaries Satisfaction, the Policy Performance and beneficiaries Satisfaction through Policy/Performance as mediator Factor. It vital to of conducting to propose a model for E-Learning & Distance Education in Nepal with particular attention to the influence of the quality of knowledge management.

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The Prediction of Corporate Failure in Nepal

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Abstract:

Mere establishment of organization does not ensure that it runs in the future. Hence this article strives to analyze the reasons of their failure. Also it tries to predict the chance of its failure.

Keywords: corporate failure, Z score model

Background of the Study

Prediction of company's failure is useful to large number of economic agents, including potential investors, lenders, clients, suppliers, etc. This explains the constant attention paid to bankruptcy prediction modeling in the finance and accounting literature ever since the pioneering work by Beaver (1966) [1]. In mid to late 1960s, Beaver (1966) and Altman (1968) published what financial experts today would refer to as the pioneering work in the study and prediction of corporate failure [1,2]. Although the work of these authors was developed, written and published independently of one another. As these works came out at about the same time, the different but the complimentary manner in which each study addressed the concern at hand resonated through the financial community of 1960's America. Today, almost forty-four years after these articles were published, the work of Beaver and Altman is continually cited by contemporary researchers as the basis of their studies. And with the spurt of interest created and generated, academicians and contemporary researchers use it as a foundation to develop, create, and identify newer and more accurate approaches to understanding and predicting corporate bankruptcy.

In the recent years, there is a growing recognition that financial ratios are predictors of corporate financial distress. The pioneering attempt to predict corporate financial failure was made by Beaver (1966)[1]. He selected six ratios as best predictors corporate failure which were current plus long term liabilities to total assets, cash flow to total debt, net income to total assets, working capital to total assets, current ratio, and no credit interval.

Statement of the Problem

Previous research had identified many ratios that were

important in predicting bankruptcy. However, there was no conclusive agreement of which ratios were most useful to assess the likelihood of failure. Altman (1968) noted that ratios measuring profitability, liquidity, solvency, and cash flow were the most significant indicators of bankruptcy. The priorities were not clear as most studies cited different ratios being the most effective indicators of bankruptcy. Moreover, most of the studies did not have absolute test for the importance of the variables [2,3]. The lacks of theoretical support in choosing the appropriate variable that could predict bankruptcy had led researchers to search for other guidelines in variable selection. Therefore, most researchers have selected financial ratios as predictive variables based on their popularity and predictive ability in the previous bankruptcy research studies. This study basically deals with the following issues:

- Which ratios are supposed to be the best predictors of corporate failure?
- Do the financial ratios differ among the failed and non-failed companies?

Objectives of the Study

The main objective of the study is to determine the financial ratios that are useful for predicting corporate failure in context of Nepal.

Review Of Literature

Altman (2000) conducted a study on 'Predicting Financial Distress of Companies: Revising the Z-score and ZETA Models'[6]. The study basically discusses two of the vulnerable models for assessing the distress of industrial corporations. These are the so-called Z-Score model (1968)

and Altman et. al. ZETA (1977)[6, 5]. The ZETA model for assessing bankruptcy risk of corporation demonstrates improved accuracy over existing failure classification model (Z-Score) and, perhaps more importantly, is based on data more relevant to current conditions and to a large number of industrial firms. The ZETA model's bankruptcy classification accuracy ranges from over 96 (93% holdout) percent one period prior to bankruptcy to 70 percent five annual reporting periods prior. The effects of several elements have been assessed involved with the application of discriminant analysis to financial problems. These include linear vs. quadratic analysis for the original and handout samples, introduction of prior probabilities of group membership and costs of error estimates into the classification rule, and comparison of the model's results with naïve bankruptcy classification strategies.

Bonginiet. al. (2007) found that data relating to legal action by creditors to recover unpaid debts, company filing histories, comprehensive audit report/opinion data and firm specific characteristics made a significant contribution to determining corporate failure outcomes among unlisted firms [7]. It was demonstrated that equal sample models provided superior failures forecasted based on their ability to correctly classify both failed and non-failed firms and achieve a classification accuracy that is generally better than models for the listed companies.

The study by Sori and Jalil (2014) developed a failure prediction model for Singaporean companies []. The results showed good performance with a highly correct categorization factuality rate of more than 80 percent. Two variables were determined significant out of 64 financial ratios utilized in this analysis to discriminate among failed and non-failed companies. The significant variables are Cash flow to Sales and Days Sales in Receivable.

Casey et al. (2016) conducted a study for forecasting bankruptcies in a probabilities way. Each of the failed banks was paired with the non-failed banks in terms of assets size, institution type and location; a standard procedure in this type of work [8,]. The contribution to the field of computational finance is to introduce GP's as a potentially competitive probabilistic framework for bankruptcy prediction. Data from the repository of information of the US Federal Deposit Insurance Corporation is used to test the predictions.

This study by Fago(2013) has examined the usefulness of seventeen financial ratios in discrimination of failed companies and non-failed companies[9]. Out of them, the ratios of current assets to total assets, current liabilities to total debt, shareholder's equity to total debts, current assets to net sales, net sales to total assets, net sales capital employed, earnings before interest and tax to total assets, net income to net sales, net income to total assets, cash

flow to net sales and cash flow to current liabilities are statistically significant between failed companies and non-failed companies. Similarly, Mahatto (2014) develops a failure prediction model for Nepalese Companies. The results show good performance with a highly correct categorization factuality rate of 88 percent. Two ratios were determined significant out of 15 financial ratios utilized in this analysis to discriminate among failed and non-failed companies[10]. The significant variables are retained earnings to total assets (RETA) and net profit to total asset (NPTA)

These discussions showed that most of the studies are more concerned with the comparative study of failed and non-failed companies. The findings of these studies have not come to the unanimous conclusions.

Research Design

This study has employed descriptive, correlational and causal comparative research designs to deal with the fundamental issues associated with factors determining corporate failure in the context of in Nepal. The descriptive research design has been adopted for fact-finding and searching adequate information about ratios affecting corporate failure in Nepal

The secondary sources of data have been employed to understand the form of observed relation and to analyze predictive power of financial variables in explaining corporate failure. All the companies listed in Nepal Stock Exchange Ltd. were considered to be considered to be the population for the area under investigation. Only fifteen listed companies have been selected as a sample. The period is 2012 to 2016.

Methods of Data Analysis

Multiple Discriminant Analysis (MDA)is used for the data analysis purpose. Which was introduced in the default prediction literature by Altman (1968)[2]. Since then, it has been applied in many studies.

Significance Test for Difference in Financial Ratios of Failed and Non-Failed Companies Five Years Prior to Failure

Table 4.1

Significance Test for Difference in Financial Ratios of Failed and Non-Failed Companies Five Years Prior to Failure

Financial Ratios	Prior Year to Failure									
	1		2		3		4		5	
	Wilk's Lambda	Sig.	Wilk's Lambda	Sig.	Wilk's Lambda	Sig.	Wilk's Lambda	Sig.	Wilk's Lambda	Sig.
WCTA	0.776	0.075	0.749	0.057	0.658	0.028*	0.727	0.045*	0.796	0.091
NSTA	0.997	0.849	0.868	0.184	0.906	0.285	0.991	0.735	1	0.946
RETA	0.609	0.013*	0.537	0.005*	0.552	0.009*	0.487	0.003*	0.532	0.005*
EBITTA	0.903	0.259	0.942	0.389	0.963	0.509	0.769	0.07	0.847	0.149
NPTA	0.657	0.022*	0.494	0.003	0.501	0.005*	0.572	0.008*	0.741	0.053*
TDTA	0.886	0.218	0.864	0.176	0.999	0.904	0.806	0.1	0.855	0.162
CFTA	0.609	0.013*	0.49	0.003*	0.488	0.004*	0.593	0.011*	0.755	0.06
CFTL	0.827	0.123	0.819	0.114	0.7	0.042*	0.819	0.114	0.937	0.367
NWTL	0.872	0.19	0.94	0.379	0.768	0.082	0.779	0.077	0.922	0.313
NPNW	0.799	0.093	0.915	0.293	0.895	0.258	0.582	0.009*	0.791	0.087
NWSC	0.863	0.174	0.837	0.136	0.594	0.014*	0.666	0.024*	0.677	0.027*
CFCL	0.933	0.352	0.948	0.413	0.819	0.13	0.962	0.486	0.961	0.482
CACL	0.978	0.598	0.993	0.771	0.96	0.494	0.959	0.472	0.961	0.481
CANS	0.939	0.376	0.853	0.158	0.66	0.029*	0.857	0.165	0.936	0.363
CFNS	0.816	0.111	0.85	0.153	0.688	0.038*	0.844	0.145	0.762	0.065

* Significant at 5%

Source: Computed from Annual Reports of Selected Companies

The table 4.1 reveals that retained earnings to total assets (RE/TA), net profit to total assets (NP/TA) and cash flow to total assets (CF/TA) have been observed to be significant difference between failed and non-failed companies five years prior to their failure. Net worth to share capital (NW/SC) ration has been found to be significant for third, fourth and fifth year of failure and insignificant first and second year prior to failure. CA/NS ratios have been observed to be significant in third year only and insignificant in rest of years. Besides, all remaining ratios like NS/TA, EBIT/

TA, TD/TA, CF/TA, CF/TL, NW/SC etc have been seen to be insignificant over five years period of failure.

Tests of Equality of Group Means between Failed and Non-Failed Companies

This table describes about the mean value of fifteen financial ratios which were found significant in failed and non-failed company classification. The mean difference of failed and non-failed companies' Wilk's Lambda, F-statistics and the significance of the test (i.e p-value) are presented in the table.

Table 4.2

Tests of Equality of Group Means between Failed and Non-Failed Companies

Ratios	Basis	Non-failed	Failed	Mean Difference	Wilks' Lambda	F	Sig.
WCTA	Times	0.0294	-0.7196	-0.749	0.776	20.789	0*
NSTA	Times	0.7764	0.5572	-0.2192	0.981	1.415	0.238
RETA	Times	0.1232	-1.4408	-1.564	0.552	58.386	0*
EBITTA	Times	0.1156	0.1704	0.0548	0.991	0.67	0.416
NPTA	Times	0.0962	-0.104	-0.2002	0.614	45.182	0*
TDTA	Times	0.519	1.154	0.635	0.882	9.603	0.003*
CFTA	Times	0.1214	-0.072	-0.1934	0.612	45.582	0*
CFTL	Times	0.5434	-0.0824	-0.6258	0.934	5.063	0.028*
NWTL	Times	2.5634	0.2004	-2.363	0.933	5.184	0.026*
NPNW	Times	0.205	-0.0896	-0.2946	0.814	16.478	0*
NWSC	Times	2.4194	-0.9088	-3.3282	0.752	23.702	0*
CFCL	Times	6.0928	-0.078	-6.1708	0.981	1.409	0.239
CACL	Times	8.4638	1.2112	-7.2526	0.986	1.021	0.316
CANS	Times	2.6782	57.2075	54.5293	0.937	4.844	0.031*
CFNS	Times	0.2702	-9.1132	-9.3834	0.901	7.894	0.006*

***Significant at 5%**

Source: Computed from Annual Reports of Selected Companies

The result of table 4.2 showed that there is significant difference between financial ratios of fifteen failed and non-failed companies since the ratios of failed companies have been reported to be negative except CA/NS and current ratio. On the other hand, the same ratios have been observed to be positive for non-failed companies.

Multivariate Discriminant Function and Application of Failure

The multivariate discriminant analysis has been accurate to 88 percent in discriminating failed and

X_2 = Retained earnings to total assets

X_3 = total Net worth to total liabilities

X_4 = Net sales to total asset

X_5 = Net worth to share capital

Relative Contribution of Financial Ratios in Failure Prediction

Altman (1968) concluded that the adjusted coefficient of variables enables to evaluate each variable's contribution on a relative ground.

Table 4.4

Financial Ratios	Diagonal elements of variance – covariance matrix	Square root of diagonal elements of variance-covariance matrix	Coefficient	Scaled Vector	Ranking
WC/TA	2.809	1.010	2.809	2.84	1
RE/TA	1.78	1.334	-0.543	-0.724	5
NW/TL	2.86	1.691	0.371	0.627	3
NS/TA	0.62	0.787	-0.532	-0.429	4
NW/SC	22.11	4.702	0.145	0.682	2

non-failed companies on the grounds of fifteen financial ratios used in the study out of fifteen companies taken under investigation. The accuracy of multivariate discriminant analysis classification has been improved using stepwise procedures of multivariate discriminant analysis which has decreased the numbers of variables removing step by step. Thus, the step wise study has developed the following multivariate discriminate function (Z-function) for the prediction of failure. It has been stated as follows:

$$Z = 2.809 X_1 - 0.543 X_2 + 0.371 X_3 - 0.532 X_4 + 0.145 X_5$$

Where,

Z = Discriminating score

X_1 = Working Capital to total assets

Relative Contribution of Financial Ratios in Failure Prediction

Source: Computed from Annual Reports of Selected Companies

The Table 4.4 shows that two financial variables only seem to good predictor of corporate failure in the context of Nepal especially for the listed companies. Fifteen ratios have been taken for the investigation for the prediction of bankruptcy. Out of fifteen ratios used, only two ratios have been concluded to predictor of failure based on stepwise procedure. The scaled vectors of WC/TA, RE/TA, NW/TL, NS/TA and NW/SC ratios are 2.84, -0.724, 0.624, -0.429 and 0.682 respectively. The larger scaled vector has more power to discriminate failed and non-failed groups of companies. The most powerful ratio out of fifteen ratios are working capital to total assets, net

sales to share capital, net worth to total liabilities, retained have been found to be the three successful ratios which have been assigned first, second and third rank on the basis of scaled vectors ranking. Thus, it can be concluded that WC/TA, NW/SC and NW/TL ratios are the most powerful ratios of discriminating failed and non-failed companies.

Conclusion

The results revealed that there is a significant difference between financial variable of failed and non-failed companies. The average size of failed companies has been deteriorating five years prior to failure. There is a crystal clear line of demarcation between the financial variables of failed companies and non-failed companies. The result supports the findings of Beaver, 1966; Altman, 1968; and Castanias, 1983 that size of failed companies begins to deteriorate prior of five years to failure. Therefore, it can be concluded that the financial ratios of failed companies have been identified to be poorer than non-failed companies [2].

Analysis revealed that working capital to total asset (WC/TA) for failed companies have been identified to be increasing negatively whereas it has been positively increasing to non-failed companies five years prior to failure. RE/TA, NP/TA, CF/TA, NP/NW, NW/SC and CF/NS ratios of failed companies have been noticed to be negative five years prior to failure whereas the same ratios have been noted to be positive for non-failed companies prior year to failure.

The result revealed that working capital to total assets (WC/TA), net worth to share capital (NW/SC), net worth to total liabilities (NW/TL), net sales to total assets (NS/TA) and retained earnings to total assets (RE/TA) have been determined to discriminate corporate failure based on step wise method under multivariate discriminant analysis. It has also been found that the accuracy of original group classification has been obtained to be 95.2 percent. The type I and type II error have been noted to be 12 and 2 percent respectively.

Recommendation

The company should use multivariate discriminant analysis (MDA) technique to monitor, supervise and control the deviation and it would simply indicate

the condition of the company whether it is sound enough or about to fail. The company should pay attention on working capital to total assets (WC/TA), net worth to share capital (NW/SC), net worth to total liabilities (NW/TL) and retained earnings to total assets (RE/TA) ratios since they have been observed to be the significant ratios determining corporate failure based on Multivariate discriminate analysis (MDA).

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Human Resource Practice and Employees' Commitment: Evidence from Nepalese Insurance Companies

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Abstract

This study is focused on the human resource practice. It has been a matter of concern and is applicable to almost all type of national and international organization. Organization must ensure appropriate human resource practice to attain its objective effectively and efficiently. For our purpose, employees' from Nepalese insurance companies has been regarded as sample to explore the human resource practice. The result showed that there exists relationship between Human Resource Practice and Employees' Commitment. The level of HRP is indifferent in life insurance and non-life insurance companies. Likewise, the level of commitment is not changed with the level of employees (below managerial level or managerial and above level). Finally, the study found that the type of organization (life and non-life) and the level of employees (below managerial and managerial or above) partially impact on the relationship between human resource practices and employees commitment.

Background of the study

Human Resource, unique and vital by its nature, is an inevitable part of any organization. Human resource is valuable and dynamic at the same time. Human Resource Management practices, popularly known as Human Resource practices have been changed radically during the last two decades due to globalization, privatization/deregulation, competition and technological advancements. Success in today's competitive business depends less on advantages associated with economies of scale, sophisticated technology, goodwill but are more relied on human resources and high concern of human resource management practices. These highly unstable environmental have put on organisations to adopt suitable HR practices that augment persistent level of high performance. Organizations require hiring right person for the right job at the right time to grab the organizational opportunities in the face of competition. In fact, the overall performance of any organization depends upon the degree to which human resource is successfully utilized. The success and sustainability of any organization depend on how effectively they manage suitable human resource practices in a distinctive culture, area and situation. The impact of human resource management practices on organizational performance and employee attitudes has

been a leading area of research in the developed world for years. However, very limited number of studies has been conducted on HR practices in the context of developing countries in general. This study has been conducted to explore the relationship between HR practices and employees organizational commitment regarding the Nepalese insurance industry.

An overview of HRM in Nepal

In Nepal, the concept of HRM ascended after the liberalization and privatization policy in 1990. Prior to 1990, human resource management practices were not satisfactory in the majority of the organizations because of the reasons of such as not so precisely defined strategies in public enterprises, poor state of employee participation, distorted communication system between employees and managers due to hierarchic nature of organizations and thus feeling of status and prestige was high among the top level managers and lacked systematic HR planning [1, 2, 3, 4]. Employees believed that nepotism and favouritism were widespread in the recruitment and selection process, decision making practice was highly centralised even to deal with minor HR responsibilities, jobs were not so challenging for managers and the reward system was not properly linked with performance [5,6,7].

Establishment of private business organizations and joint ventures after 1990 gave a new avenue to Nepalese business organizations. It was after the period when organizations were found to be emphasizing on the performance and the practice of paying competitive compensation to the competent employees were started slowly. In Nepal, personnel management is still believed to be pre-occupied with record keeping and operational issues rather than managerial ones [8]. Training and development programmes were highly practiced as means to develop employees' skills and knowledge [9]. However, the Nepali organizations are still on learning phase and thus the foundation of HRM is not yet clearly established. In order to fulfil the need of skilled manpower in corporations, higher education in business administration and management has been widely proliferated [10]. More recently, some developments have been seen in the use of computerised HR information, recruitment of qualified and skilled manpower, interest in the training and development of employees and the like. However, in Nepalese workplaces most prominent HR related issues and problems are: unproductive staff, lack of corporate culture, lack of mechanism to implement labour legislations, low degree of integration and coordination of different business functions, lack of performance based pay system, distorted flow of communication and information, low level of pay and rising absenteeism, proliferating union activities [11]. Organizations unable to complying provision of labour Acts, the role of personnel department is negligible in different HR related matters such as recruitment and selection, training and development and performance evaluation and its implication for career development of employees is not properly understood [12, 13,14]. At national level, there is lack of job opportunities for university graduates on the one hand and in the lack of requisite skills to work on newly created jobs on the other hand [15].

Statement of the Problem

There is no different opinion to the employees' contribution on the success and failure of the organization. Good organizational practice leads to the success of the business whereas bad practices not only makes the organizational failure but has to extinguish from the existence. Since employees are the basic resource and requirement, organization must be capable enough to recruit, select, train, compensate, benefit, retain, secure and recognize them. Good human resource practice leads to employees' commitment towards the organization. Committed employees' means loyal and dedicated employees which are the essence for the attainment of organizational goal. But, some major issues like; whether the basic activities like recruitment and selection, compensation, training and development, job security, organizational culture and employees recognition etc. are enough for employees

commitment or are there some other factors too?; are Nepalese insurance industries aware of HR Practice and managing it to make their employees committed towards the organization?; if organizations are managing HR practices then, what is the contribution of these factors in employees' organizational commitment? etc, are the main concerns of the study.

Research Questions

Based upon the discussion done on statement of the problem, following research questions are presented for the research work:

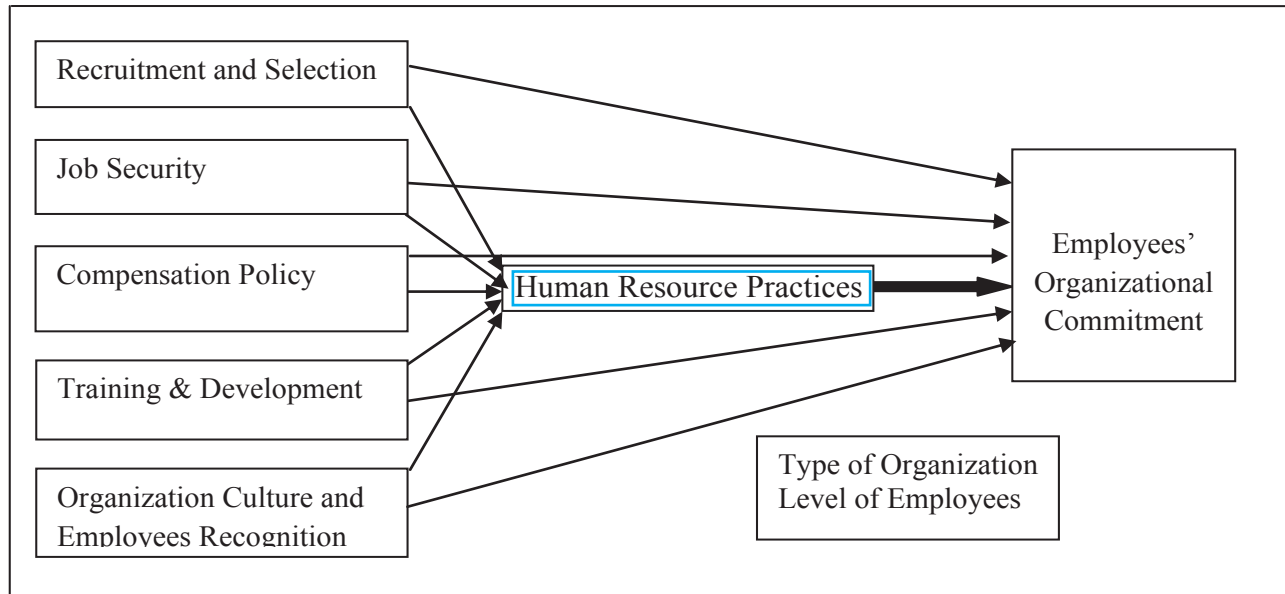
1. What are the different factors of human resource practice that impacts in employees' commitment?
2. What is the relationship between Human Resource Practice and employees' commitment?
3. What theoretical framework can be selected for research to study the relationship between HR Practices and employees' commitment?
4. What is the contribution of factors of HR Practices in employees' commitment?

Objectives of the study

The main objective of this study is to depict concentration towards the relationship of HR Practices and employees' commitment of Nepalese insurance industry. Following are the objectives laid down for this research study:

- To identify the components of Human resource practices leading in Nepalese insurance industry.
- To examine the relationship between HR Practice and Employees' Commitment of Nepalese insurance companies.
- To examine the role of moderating variable on the level of commitment
- To examine the role of moderating variables like type of organization and level of employees on the relationship between HR Practice and Employees Organizational Commitment.

Proposed Conceptual Framework



Hypotheses: Following hypotheses are set for the study

Hypothesis (H1) - Human Resource practice and Employees' organizational commitment are positively correlated.

Hypothesis (H2A) - "Level of Human Resource Practice and Employees' Organizational Commitment of Nepalese insurance industry varies with the type of company

Hypothesis (H2B) - "Level of Human Resource Practice and Employees' Organizational Commitment of Nepalese insurance industry varies with the level of employees.

Hypothesis (H3A) - "The relationship of Human Resource Practice and Employees' Commitment of Nepalese insurance industry varies with the level of employees.

Hypothesis (H3B) - "The relationship of Human Resource Practice and Employees' Commitment of Nepalese insurance industry varies with the level of employees.

Review of Literature

Background of HR Practice

A number of writers have been critical of the growing interest in human resource management (HRM) and its impact on workers. Applebaum *et al.* found the consistent evidence of a positive association between greater use of various practices and positive employee outcomes [16]. The employee outcomes were measures of trust, intrinsic satisfaction, commitment, general job satisfaction and stress. Ramsey *et al.* have reported a thorough test of various competing explanations of the

relationship between HR practices, employee attitudes and corporate performance [17]. Guest has linked HRM and performance whereby Selection, Training, Appraisal, rewards, job design and status and security has been used as HRM Practices and Commitment, Quality and Flexibility as HRM Outcome [18].

Hendry and Pettigrew mainly concerned to identify and classify key environmental influences on HRM [19]. Guest has attempted to capture some of the spirit of this approach by seeking to present it within a coherent framework, specifying some of the links so that the resulting model can at least be tested- and possibly disproved [20]. The central hypothesis is that if an integrated set of HRM practices is applied with a view of achieving the normative goals of high commitment to the organization plus high quality and flexibility, then higher worker performance will result. The assumption is that this will have a positive impact on organizational performance.

Normative approach has its roots firmly in organizational psychology and is built on lower-range, more specific behavioural theories. The assumption is that 'appropriate' HRM practices tap the motivation and commitment of employees.

Review of Literature

Human resource management refers to the policies and practices involved in carrying out the HR aspects of a management position including human resource planning, job analysis, recruitment and selection, orientation, compensation, performance appraisal, training and development, and labor relations [21]. HRM is composed of the policies, practices, and systems that influence employees' behavior, attitude, and performance [45].

Recruitment and selection

Schuster argued that selective hiring is a key practice that creates profits [22]. Huselid examined HR practices of high-performance companies and found that attracting and selecting the right employees increases the employee productivity and contributes to a reduction in turnover [22]. Cho et al. examined pre-employment tests as a key component of selective hiring and found that when employed, these tests can select employees that stay with a company longer. Passing pre-employment tests may give an applicant a stronger sense of belonging to the company, resulting in higher degrees of commitment if employed.

Training and Development

Training develops the necessary employee skills and ability and increases employee satisfaction and commitment to their jobs and workplace through personal development and organization-based self-esteem [23]. Training and development may be related to firm performance in many ways. First, training programmes increase the firm specificity to employee skills, which consecutively increases employee productivity as well as reducing job dissatisfaction that results in employee turnover [22].

Paul and Anantharaman, proposed that career development programmes demonstrate a true organizational interest in the growth of its personnel, which, in turn, stimulates commitment and devotion, subsequently, raising personnel productivity and consequently economical output [24]. Benson, Finegold and Mohrman examined the effect of corporate investment in tuition reimbursement programmes on employee turnover in a large manufacturing company [25]. Study results demonstrated that tuition reimbursement programmes where employees are able to earn certificates and other credentials had an overall positive effect on turnover.

Compensation Policy

Performance-based compensation is the dominant HR practice that firms are in order to evaluate and reward employees' actions [26]. There is a consensus that performance-based compensation has a positive effect upon employee and organizational performance [27, 28]. While performance-based compensation can motivate employees, sometimes employees may be less loyal if they perceive it as a management mechanism to control their behaviour [29, 30]. In such a case, employees are less loyal and committed, thus compensation plans have the opposite effect to the desired outcome [30, 31]. Incentive pay based on firm performance was found to increase commitment to organizational goals, employee cohesiveness and a collective orientation [26]. Cho, Woods, Jang and Erdem suggested that incentive plans

are effective in decreasing staff turnover rates [32].

Job Security

Job security provides an ambiance of self-confidence and self-reliance to the employees. It strengthens their commitment to the company. On one hand, studies have found that today's business environments are far from providing job security to their employees. For example, Givord and Maurin in an analysis of the changes in the risks of involuntary job loss in France between 1982 and 2002, found evidence that technological changes contribute to decreasing the incentive to keep workers for long period of time and works to increase job insecurity [33]. On the other hand Job security requires a certain degree of reciprocity [34]. According to Pfeffer, first, a company must signal a clear message that jobs are secure; then, employees believing that this is true, feel confident and commit themselves to expend extra effort for the company's benefit; finally, having learned that job security contributes to its performance, the company continues to invest in job security. Probst has developed a conceptual model of the antecedents and consequences of job security. Worker characteristics, job characteristics, organizational change and job technology change are included as antecedents [35]. Consequences include psychological health, physical health, organizational withdrawal, unionization activity, organizational commitment and job stress. Job involvement, cultural values, and procedural justices moderate job security. Buitendach and Witte reviewed the relationship between job insecurity, job satisfaction and affective organizational commitment of maintenance workers in a Parastatal in Gauteng [36]. The Study found small but significant relationships between job insecurity and extrinsic job satisfaction and job insecurity and affective organizational commitment.

Krainer, Wayne and Liden found that job security was negatively related to full-time employees' perceptions that temporaries were a threat to their jobs [37]. Furthermore, for those employees with low job security, there was a negative relationship between threat perceptions and performance. On the contrary, for those employees with high job security, the study uncovered a positive relation between perceptions and performance.

Organizational culture and employees' recognition

Organizational culture is the nexus of various aspects like beliefs, values, work styles and relationships that makes one organization different from another. The theoretical link between organisational culture and organisational commitment is that the organisation's prevailing culture does appear to affect important outcomes such as organisational commitment and performance. Organisational cultures can lead to high

level of commitment and performance. This means that organisational commitment is the result of organisational culture. Hofstede's work related four cultural dimensions have been frequently cited by researchers in the past few decades [38]. He collected data 35 years ago from large multinational companies from forty different countries and concluded that "organizations are cultural bounded" [39]. Hofstede proposed four dimensions of national culture: power distance, collectivism, masculinity/femininity and uncertainty avoidance.

HRM Practice and Employees' work-related attitudes

The soft model of HRM, as stated previously, suggests a relationship exists between the use of "appropriate" HRM practices and positive employee attitudes, and while theoretically these relationships remain poorly developed, a number of attitudes are however, widely considered to be an outcome of soft HRM [18,40]. For example, levels of job satisfaction, which is the affective perception that results from the achievement of desired outcomes [41, 42, 43]. High levels of employee commitment have also been found to be related to the use of "appropriate" HRM practice, and results from investing in HRM practices which benefit employees [42]. For example, the provision of opportunities for training and skill development benefits the employee by equipping them with the necessary knowledge, skills and attitudes to function autonomously and responsibly [42]. Furthermore, it improves retention and enables them to cope with change in the work environment [42]. Marchington observed that "despite the appeal of employee involvement in general terms, the evidence would suggest that it has only a limited impact upon employee attitudes and commitment, and even less on behaviour and performance" [46].

Organizational Commitment

Organizational commitment is an employee behaviour which is able to be seen when organizational members are committed to existing groups within the organization". For this study, the definition prescribed by Meyer and Allen has been followed according to which, organizational commitment "is a psychological state that characterizes the employee's relationship with the organization, and has implications for the decision to continue membership in the organization" [43]. Porter *et al.* describes organizational commitment as "an attachment to the organization, characterized by an intention to remain in it; an identification with the values and goals of the organization; and a willingness to exert extra effort on its behalf" [43]. Individuals consider the extent to which their own values and goals relate to that of the organization as part of organizational commitment; therefore it is considered as a linkage between the individual employee and the organization.

Meyer and Allen initially viewed organizational commitment as two-dimensional namely, affective and continuance. Meyer and Allen defined the first dimension as affective commitment stating "positive feelings of identification with, attachment to and involvement in the work organization". Likewise, they defined the second dimension, as continuance commitment which means "the extent that employees are committed to their organization by good worth of the costs that they feel are associated with leaving". Later, after the further research, Allen and Meyer added a third dimension known as normative commitment [47]. Allen and Meyer define normative commitment as "the employee's feelings of obligation to remain with the organization". The calculative or normative perspective refers to an employee's commitment to continue working for the organization based on the notion of weighing cost-benefits of leaving an organization. Thus organizational commitment can be described as "behavioural intention or reaction, determined by the individual's perception of the normative pressure". Common to the three dimensions of organizational commitment is the view that organizational commitment is a psychological state that characterizes organizational members' relationship with the organization and has implications for the decision to continue or discontinue membership in the organization.

Affective Commitment

Meyer and Allen interpret affective commitment as "the employee's emotional attachment to, identification with, and involvement in the organization". Organizational employees, who are committed to an organization on an affective basis, continue working for the organization because they want to. Members who are committed on an affective level stay with the organization because they view their personal employment relationship as congruent to the goals and values of the organization. Affective commitment is a work related attitude with positive feelings towards the organization [44]. In general, affective organizational commitment is concerned with the extent to which an individual identifies with the organization.

Continuance Commitment

Meyer and Allen further emphasize that "employees whose prime association to the organization is based on continuance commitment stay because they need to do so". The strength of continuance commitment is determined by the perceived costs of leaving the organization. This argument supports the view that when given better alternatives, employees may leave the organization.

Normative Commitment

Meyer and Allen explain normative commitment as "a feeling of obligation to continue employment".

Internalized normative beliefs of duty and obligation make individuals obliged to continue relationship in the organization. In terms of the normative dimension, the employees stay because they should do so or it is the proper thing to do.

Research Design

This research study has applied descriptive and inferential analysis to analyze the impact of human resource practices in employees' organizational commitment regarding the insurance companies of Nepal. The analysis was based on the responses (opinion and perception) of respondents (employees). Descriptive analysis presented the position of HR practices in Nepalese insurance companies. This study was based on primary data gathered with the help of a questionnaire comprising three sections. The first section contained demographic questions, and the second section contained 31 statements about the human resource management practices. The third section contained 12 statements related to employees' organizational commitment.

Mediating variables are also considered in this study which plays a great role in the relationship between HR Practices and employees' organizational commitment. Level of employees (below managerial or managerial level) and the type of insurance (life or non-life) has been considered as moderating variables.

This study is based on primary data collected through the questionnaire from the employees' relating to HR practice (Recruitment and Selection, training and development, compensation policy, job security, organizational culture and employee's recognition) for independent variable and employees organizational commitment for dependent variable.

Till the date, there are 25 listed insurance companies operating in Nepal. Out of this only, one insurance company (Rastriya Bima Sansthan) was not included in the study because of its comprehensive nature (included life and non-life insurance, which has been considered as a moderating variable in the study). Thus, the study included respondents (employees) from 24 insurance companies, targeted as a sample size. Altogether more than 415 responses were received, however only 322 employees' responses were in a useable form those were finally comprised as a sample for the study.

Presentation and Analysis of Data

Sample statistics of respondents

Sample statistics of respondents includes the respondent Statistics on the basis of organization type and level of employees. Each of the basis of the respondents

are presented in the section. Employees from non-life insurance companies and life insurance companies were 206 (64%) and 116 (36%) respectively. Likewise, employees below managerial level and managerial or above the level were 217(67.4%) and 105(32.6%) respectively included in the study.

Technique of Analysis

Collected data were tabulated and essential statistical values like percentage, mean and standard deviation were calculated to draw inferences. In order to examine the relationship between the independent and dependent variables, correlation test were carried out between factors and to reduce the items factor analysis were carried out. Under factor analysis, different tests like initial correlation between items, Kaiser-Meyer-Olkin (KMO) and Bartlett's Test, Anti-Image matrix, Initial communalities, Total variance explained and Rotated component Matrix are examined. Principle axis component method is chosen in factor analysis following with Varimax method of rotation and methods are used in factor analysis. Factor loadings are extracted with 0.4 as suppressing value.

Correlation analysis is used as main decision making technique. Correlation between factors of human resource practice and employees' organizational commitment are carried out. Regression analysis has been carried out to draw the inferences. This helps to conclude about the degree of association of variables. To test the significance of the result, F-test and R^2 test have been carried out. Likewise, independent sample t-test is run to know whether the mean scores are significantly different or not. Decisions are made at 5% level of significance.

Summary and Conclusion

All of the items set for the independent variable i.e., Human Resource Practices (HRP) from five factors were retained after Cronbach's Alpha test. Cronbach alpha's value of 0.917 signified the acceptance of all (31) items for the further study. Similarly in the case of dependent variable also, all (12) items were retained with the Cronbach's alpha value of 0.840 which has signified that the formation of questionnaire was a good one.

Out of five proposed HR practices, only four factors are extracted from the factor analysis. These factors include 'Organizational Culture and Employees Recognition', 'Compensation Policy', 'Employees Competency Development Policy' and 'Job Security'. So, considering these four aspects of human resource practices as independent variable and employees' commitment as dependent variable, this study has been carried forward. Mean values of retained variables of each of these factors are above the neutral value, whereas their standard deviation values are more than 1 in most of these items.

Significant correlation is found between the extracted factors. Four factors F1, F2, F3, F4 extracts 31.997%, 10.046%, 7.376% and 6.808% of the total variance and these four factors together extract 56.228 percent.

Regression analysis has given the significant result with the conclusion that human resource factors have significant impact on the employees' organizational commitment. All the factors have positive impact on employees' organizational commitment. Among the factor, 'Employees Competency Development Policy' is observed to be the strongest influencing factor. Likewise, 'Organization Culture and Employees Recognition' is the second most influencing factor. Remaining factors were insignificant. ANOVA test also showed the significant result. Tolerance and VIF test have shown absence of multicollinearity as Tolerance values are less than 1 whereas value of VIF are less than 10. Similarly, K-S test show that data are normally distributed.

Result from Hypothesis Testing

Hypothesis (H1) - "Human Resource practice and Employees' organizational commitment are positively correlated" is accepted. The alternate hypothesis is accepted because they are significantly correlated at one percent the level of significance.

Hypothesis (H2A) - "The level of commitment varies with the type of companies' is failed to be accepted.

Hypothesis (H2B) - "The level of commitment varies with the level of employees" is failed to be accepted.

Hypothesis (H3A) - "The relationship of Human Resource Practice and Employees' Organizational Commitment varies with the type of company (Life and Non-Life)" is partially accepted. (Accepted in the case of Compensation Policy and Employees Competency Development Policy whereas, it is rejected in the case of Organizational Culture and Employees Recognition, Job Security and Employees Commitment.)

Hypothesis (H3B) - "The relationship of human resource practice and Employees' Commitment of Nepalese insurance industry varies with the level of employees (Below manager level and Manager or above level)" is also partially accepted (accepted in the case of Organization Culture and Employees Recognition, Employees Competency Development Policy and Job Security whereas, it is rejected in the case of Compensation Policy and Employees Commitment).

Major Findings

There is positive relationship between human resource practice and employees commitment. There is no

significant difference on the level of commitment on the basis of types of organization and the level of employees. The relationship between human resource practice and employees commitment varies with the type of insurance companies is partially accepted (It is accepted in the case of Compensation Policy and Employees Competency Development Policy whereas, it is rejected in the case of Organizational Culture and Employees Recognition, Job Security and Employees Commitment). The relationship between human resource practice and employees commitment varies with the level of employees is partially accepted (it is accepted in the case of Organization Culture and Employees Recognition, Employees Competency Development Policy and Job Security whereas; it is rejected in the case of Compensation Policy and Employees Commitment).

Discussion and Implication

The reason of one of the training and development item being combined with the items of recruitment and development may be because both of these factors were related to the selection of the best employees which are when maintained and developed (through regular training and development activities) would help the organization to develop competent employees. With this logic, researcher has named the factor as 'Employees Competency development Policy'. Though the number of factors extracted from the factor analysis has reduced to four from the proposed five constructs, extracted factors have been able to extract at least one of the items from each of the proposed constructs. However, the reduction in the number of extracted factors may be because of two reasons; Firstly, factor analysis reduces the number of items. Secondly, the number of factors may have increased if the number of respondents' could have increased. Nepalese insurance industry maintains good HR practice, like they recruit and select competitively, pay salary and benefits on time, concern about employees' job security, etc. Significant correlation among the factors which signify that the factors are more or less related to each other concerning their impact on employees' organizational commitment. 'Job Security' is composed of most agreed statements. It was responded with the highest mean value. Similarly, 'Compensation Policy' is the next factor which is highly comprised of the agreeing statement followed by the third and fourth factors 'Employees Competency Development Policy' and 'Organizational culture and Employees recognition' respectively.

Limitation of the Study

In many cases, limitations open the scope for future research. Following are the major limitations of this research work:

- This research work is originated from the empirical study of other researchers.
- Different scholars and researchers have focused on different types of HR practices. This research work covers only the selected HR Practices.
- This Research work is based on the primary data only.
- This study is based on the perception of employees who work at the corporate office only which may not reflect the employees' perception of the whole industry.

Recommendation for Further Research

The study may be helpful in gaining insight about the human resource aspects at any level of the organization. This research work, based on the insurance industry, has given some important recommendation regarding the human resource practice and employees' organizational commitment. For future research, human resource practice can be linked with employee turnover, job satisfaction, motivation, employees' engagement, stress management and organizational performance to broaden the knowledge on HR practice and employees commitment aspect. The result of this research work can be further extended to compare with the secondary data. For e.g., the attendance and employees turnover rate of insurance company could be tallied and verified with the employees' commitment. Research framework applied in this study has wide range of application which can be applied in almost all type of organizations (Government, public, private, profit or non-profit, product or service oriented, Tourism and hospitality, banking and health sector, etc.).

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Training Culture and Employees Performance in Nepalese Banking Industry

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Abstract

Performance of employees and entire organization largely depends on how skilled employees are engaged in the job. Skilled HR is the only option to operate acquired knowledge and technology, and operationalize action plan. Training culture is essential to establish to reduce cost of operation and increase profitability. This study aims to examine whether Nepalese banking sector has established training culture? and if yes, whether training has significant influence in performance? This study follows descriptive and correlational research design. Structured questionnaire with 5-point Likert scale is used to collect the information. Mean, standard deviation (SD), Correlation and independent sample t-test are used to analyze the data. Result revealed that Nepalese banks have established the training culture. Training environment, training methods, training-reward linkage are the major factors of training culture affecting training satisfaction and employee performance. Employees are satisfied through the skills acquired from training. Training satisfaction and employee performance are affected by gender as well as size of bank.

Keywords: Training environment, Training culture, Training-reward linkage, Training methods, Employee performance

Background of the study

Globalization has changed the shape of business in every sector. Job demands more skills and competencies as the level of business competition has been steeping up. Each organization whatever may be the nature, tries to dig-out new methods of production and value driven supply system for service to optimize the customer satisfaction. They need to trim down the cost in order to increase profit which is possible only through advance technology and motivated employees. Attaining goals of changing technology and employee motivation is not easy task but can be ensured through increasing level of confidence through training and development. This has increased the significance and emergence of institutionalizing the training culture in each organization where banking sector cannot remain in isolation.

Training is the process of enhancing specific skills of employees required for current job. It is the basis of employee performance to meet the demand of job they are involved currently. It is a tool to remove skill deficiency of

employees and rectify the behaviour. Employee training is the only planned strategy for facilitating employees to enhance job-related knowledge, skills and behaviour. Principally, trained employees get satisfied from their job and environmental conditions. The more the level of satisfaction from the job, the more they improve job performance. This creates synergy in the organization which proves that training increases the organizational performance as predicted by many researches [1].

Employees are the indispensable assets as they are source of competitive advantage of any organization [2]. Ability of any organization to train its human resource to be creative, innovative, inventive leads enhancing performance and increase competitive advantage [3].

The highly trained and motivated employees are the powerful source of competitive edge among all resources. To develop the desired knowledge, skills and abilities of the employees, to perform well on the job, requires effective training programs that may also effect employee motivation and commitment [4].

On-the-job and off-the-job both training methods need to be institutionalized in the organizations as training culture making training as reutilized activity. Singh (2014) stated

that both on-the-job and off-the-job training method have positive and significant relationship with employee performance [5]. Training affects organizational competitiveness, revenue and performance. Unfortunately, majority of government, private and even international organizations are not realizing the importance of training culture in their organizations to increase productivity. Many organizations take first option to cut their budget of training when the economy slows down or profits gets decline. Many empirical evidences prove that training and employee performance are positively associated to achieve organizational goals. In competitive business environment, organizations need to provide better product and services at lower price.

It is constant need to identify the training need in individual level as well as organizational level, motivate employee towards training, providing training opportunity unbiased to all the employees. Translating the training skills at job is more challenging task in establishing and institutionalizing training culture in organization. Thus, there must be a training culture of each organization. But, there is live debate among professionals and academicians regarding the effect of training on both employees as well as organizational performance. There is much known about the economics of training in the developed world, studies of issues associated with training in less-developed countries [6].

Employee training has direct impact on productivity and growth [7]. Hossain and Hossain (2012) revealed that non-financial factors like training have a significantly higher impact on the employee's motivation than the financial factors [8]. Shahzadi (2014) reported a significant positive relationship between training and employee performance [9].

Bulut and Culha (2010) revealed that training has a positive influence on employee commitment focusing on employees' emotional and affective field [10]. Positive and significant relationship has established with job characteristics, innovative personality and organizational support and training and development [11]. Khan (2012) concluded that training contributes greatly to employee's performance in comparison with other factors like motivation, technology, management behavior, working environment. The result concluded that organization having good training plans for employees can enhance the performance of employees [12]. Likewise, Saeed and Asghar (2012) examined the essence of training and development efforts of organization and employees job performance indicators [13]. The empirical result stated there is positive and significant relationship between training and employee's job performance. Training not only develops the skills of employees but also sharpens their creativity and assertive behaviour. Training also

enables employees to deal with the customer in an effective manner and respond to their complaints so that customer satisfaction could be increased. Training programs not only develops employees but also help an organization to make best use of their human resources in favor of gaining competitive advantage. It seems mandatory to the firm to set training culture to enhance their abilities and competencies that are needed at the workplace. Training develops self efficacy and results in superior performance by replacing the traditional practices through efficient and effective work practices.

Alrawabdeh (2014) examined the relationship between employees' training and development on employees' performance revealed the positive relation between them [14]. A research conducted by Dabale et al. (2014) concluded that the strong evidence between between training and employee performance [15]. They further concluded that training develops skills and competences, and reduces learning time. Likewise, Falola et al. (2014) described the effectiveness of training and development on employees' performance and organization competitive advantage in the Nigerian banking industry [19]. Kum et al. (2014) explored the positive impact of training and development on employee performance in the context of Singapore[16].. The study concluded that effective employee training leads to an increase in quality of job with potentially fewer mistakes Training and development have significant relationship with employees' performance and productivity (Tahir et al., 2014) in Paksistan.

Wahab et al. (2014) evaluated the employees' motivation and perception about these training and development program and concluded that there is no systematic and strategic approach for conducting training and development programs in the health sector [17]. Idrees et al. (2015) examined the effect training and development on the job performance of the employees in educational sectors which revealed the positive relationship[18].

Organizations, irrespective of their size and nature of business, must retain the best employees, acknowledging their important roles which positively influence on organizational effectiveness. Employee mobility has been increasing as common challenge to the management because of global demand of skilled human capital. In order to cope with such challenge and attain goals, organizations must develop strategies for increasing satisfaction and performance.

In Nepalese banking industry, the competition is ever increasing as there are large number of competitors at one and at the other, Nepal Rastra Bank, a regulatory organization has continuously pressurized to increase paid up capital and deposit while decreasing cost of service to customers through decreasing spread rate.

Organizations are more interested to attract competent and result-oriented employees even with higher job responsibility and additional benefits. This has increased the corporate movement significantly high which is emerging challenge. To cope with this, banks need to institutionalize the advanced training programs to develop employees' skills and direct their talent tightly towards the bank's objectives.

In Nepalese context, investing in training and development is being a gaining issue whether it can be one of the important strategies for improving organizational performance. This study therefore, deals with the issues regarding whether there a training culture in Nepalese organization or not? If yes, is there any relationship between training culture and employee performance in Nepalese banking sector?

Methodology

Primarily, this study follows descriptive design to explore the training culture in Nepalese banking industry. This study further employs correlational designs to deal with fundamental relations between training and development and employee performance. Employees of the commercial and development banks in Kathmandu are considered as population. 250 Well-structured five point Likert scale questionnaires were distributed to the different level employees of commercial and development banks in Kathmandu. Only 200 (100 of each commercial and development bank) usual questionnaires were collected back which maintained 80 percent of response rate.

The first section of questionnaire dealt with the demographic information of respondents such as age, corporate position, years of job experience at current bank, etc. while the second section was designed to explore the training culture in Nepalese banking industry while the section was designed with five point Likert items (1 for strongly dissatisfied, 2 for dissatisfied, 3 for neither dissatisfied nor satisfied, 4 for satisfied and 5 for strongly satisfied) to examine the relationship between satisfaction through training culture and employee performance. Training environment, training method (on-the-job and off-the-job), training- reward linkage, employee satisfaction and employee performance were included. Cronbach's alpha value was obtained to be 0.823 which provides sufficient evidence of reliability of questionnaire. Descriptive frequency analysis, cross tabulation mean scores of responses, correlation coefficient, independent sample t-test, and hierarchical regression are used as statistical tools to draw conclusion.

Results and Discussion

92 percent respondents have reported that their

organizations organize the training and development programs in regular basis. To examine the training culture, training need assessment practice, duration of training, methods of training, unbiased training opportunity to employees, training and development budget, training material and training-reward linkage are asked to the respondents. Table 1, shows the response regarding the above questions in summarized form :

Table 1- Training culture in banking industry

Training culture component	Response (%)	
	Yes	Don't Know/No
Is there training need assessment in regular basis in your organization?	84	16
Does your organization follow on-the-job and off-the-job training as on issue of training?	81	19
Is the training duration for each training session in an average is sufficient?	89	11
Is there regular training and development budget in your organization?	99	1
Does your organization provide sufficient training material in training?	100	0
Do employees get training opportunity unbiased in your organization?	79	21
Does your organization provide credit or priority to the trained employees?	88	12

Table 1 reveals that Nepalese banking industry has set the training culture. Nepal Rastra Bank, a regulatory body of banking sector has enacted the obligatory provision of 3% of the total staff expenses (including all benefits to the staff) as minimum annual training and development budget. This provision has encouraged each bank to institutionalize the training culture.

This part deals with employee satisfaction through training culture of organization. Table 2 shows level of customer satisfaction from the different dimensions of training culture i.e. training environment, methods of training, training-reward linkage.

Table 2 - Employee satisfaction from training culture

SN	Dimensions	Weighted mean	S.D
1	Training environment	3.43	0.72
2	Training methods	4.1	0.92
3	Training-reward linkage	4.35	0.8

The mean value of each statement representing the training and development environment lies between 3.28 and 3.69 with average mean value of response 3.43 and s.d. 0.72. This value is above cut-off value 3 indicating respondents are satisfied with the measuring statement regarding T&D environment. So, it can be concluded that the respondents are satisfied with the training environment.

Among the statement, majority of the respondents (66 percent) agree on statement 'they can discuss openly at training session' with average response 3.63 and s.d. 0.8 this indicates that the training contents can be easily understood. While only 49 percent respondents are

satisfied with mean value 3.26 and s.d. 0.83 on the statement I remain fresh till last moment of the training indicating that trainees do not agree with overload training information.

The mean value of statements representing the training methods lies between 4.21 and 3.89 with average mean value of response 4.1 and s.d. 0.92. This value is above cut-off value 3 indicating respondents are satisfied with the measuring statement regarding training methods applied for training. So, it can be concluded that the respondents are satisfied with the training methods used for bank employees.

Among the statements, majority of the respondents (74 percent) agree on statement with average response 4.21 and s.d. 0.93 that they learn effectively because of effective training method. While 54 percent respondents are satisfied with mean value 3.89 and s.d. 1.02 on the statement 'training methods are updated in my organization.' which indicate that the trainers need to adapt advance way of transfer of skills and knowledge.

Likewise, respondents have shown their satisfaction towards training-reward linkage with mean average mean value 4.35 and s.d 0.8 indicating that training program is linked with promotion, transfer, job rotation, growth opportunity, salary and benefits. Average response on various statements representing the training-reward linkage lies between 4.5 and 3.91. This value is above cut-off value 3 indicating respondents are satisfied with the measuring statement regarding training-reward linkage in the organization. So, it can be concluded that the respondents are satisfied with the training-reward linkage in bank.

Among the statements, majority of the respondents (79 percent) agree on statement with average response 4.35 and s.d. 0.95 that respective banks of respondents have provision of giving value i.e. priority on promotion and other benefits. While 58 percent respondents are satisfied with mean value 3.91 and s.d. 0.87 on the statement 'trainees get immediate benefits after training.'

This section deals with employee satisfaction from training culture and employee performance in Nepalese banking industry. Table 3 shows the mean satisfaction with the statement stating performance of employees.

Table 3 - Performance satisfaction from training culture

The overall i.e. weighted average mean satisfaction regarding performance improvement through training culture of the bank is obtained to be 3.77 with SD 0.88 indicating that respondent agree with the statements stating the improving performance through training culture in the banking industry. There is not greater

Statements	Mean	SD
Training environment in the bank helped me to increase job performance.	3.82	0.91
Training environment in the bank helped me to cooperate with other to increase job performance.	3.91	0.97
Training environment in the bank helped participating each employee so that overall job performance has increased.	3.62	1.1
Training provided by the office helped me to change knowledge into skills which helps to improve performance.	3.73	0.83
Training provided by the office helped me increasing confidence level to improve performance.	3.74	0.74
Training programs help me to decrease wastage of time and other resources which increases the performance.	3.74	0.89
Training method used to transfer the knowledge helped me to increase job performance.	3.67	0.91
Training linkage with reward system motivated me to increase the effort to the job.	3.85	0.92
Training-reward linkage helped to empowerment employees which increases the job performance.	3.93	1.05
Training-reward linkage helped me to increase the quality of work.	3.65	0.53
Training-reward linkage ensures the promotion which helped me to be one of the best performers.	3.87	0.81
Weighted Average Mean satisfaction	3.77	0.88

variation in the response of respondents (SD 0.88). This provides sufficient evidence proving that the training culture helps to improve employee job performance.

Correlation analysis has been carried out to examine the direction and magnitude of relationship of training culture and employee performance. Table 4 shows the correlation between employee job performance and dimensions of training culture.

Table 4: Pearson's correlation matrix showing the correlation between employee performance and factors of training culture

	TE	TM	TRL	EP
TE	1			
TM	0.523**	1		
TRL	0.394**	0.416**	1	
EP	0.583**	0.619**	0.574**	1

This table presents bivariate Pearson correlation coefficient between employee performance and training culture dimensions in Nepalese commercial and development banks. Factors notations are used as: employee performance EP, Training Environment TE, Training methods TM and Training-reward Linkage TRL.

Notes:

1. **sign indicates that correlation is significant at 1 percent level.
2. *sign indicates that correlation is significant at 5 percent level.

The result reveals that there is positive relationship between employee job performance and all the factors of training culture. EP has highest positive relationship ($r = 0.619^{**}$) with training methods while positive but smallest among other is with training-rewards linkage.

This indicates that training methods have direct concern to translate knowledge into skills and immediately affect on job performance. Training-reward linkage is the area of organizational policy and trust of employees towards. This has raised the emergence of ensuring the growth opportunities be linked with training participation and training transfer.

Training culture satisfaction as well as the employee job performance may vary with the size of bank i.e. commercial banks and development banks. They also may be different in gender of the employee respondents. Table 5 presents the t-statistics to test whether size of bank mediates the employee satisfaction and employee performance through training culture. Descriptive statistics shows the difference in mean satisfaction value. To test whether such differences are by chance or they are statistically varied, Levene's Test for Equality of Variance is used.

Table 5 - Mediating effect of size of bank on employee satisfaction and employee job performance

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	Sig. (2-tailed)
TS	Equal variances assumed	10.888	0.001	-5.777	0.000
	Equal Variances not assumed			-7.407	0.000
EP	Equal variances assumed	2.438	0.022	-6.863	0.000
	Equal Variances not assumed			-8.392	0.000

Result reveals that there is significant evidence for accepting the hypothesis that the satisfaction level of employee respondents from commercial banks and development banks differ significantly. Likewise, the hypothesis that there is significant difference between the employee job performance of the

trained employees in commercial and development banks is accepted.

Likewise, gender can have mediating role in satisfaction from training culture and employee job performance. Table 6 shows statistics for testing the mediating effect of gender on satisfaction from training culture and employee performance.

Table 6 - Mediating effect of gender on employee satisfaction and employee job performance

Table 6 reveals that the satisfaction level from training culture of male and female differ

significantly. In the similar fashion, the gender mediates

		Levene's Test for Equality of Variances		t-test for Equality of Means	
		F	Sig.	t	Sig. (2-tailed)
TS	Equal variances assumed	9.792	0.005	-2.335	0.000
	Equal Variances not assumed			-5.701	0.000
EP	Equal variances assumed	3.438	0.036	-8.363	0.000
	Equal Variances not assumed			-10.312	0.000

the employee job performance

Conclusion

The major conclusion of this study is that Nepalese banking industry has established the training culture as to compete in most competitive business environment. Training not only increases the job skills but also motivates the employee which leads increase in the employee job performance. Through training culture, organizations can fulfill the mandatory provision to develop employee's well being and guarantee of growth opportunities. Training culture is one of the most essential dimensions in an organization's development and success. It is hence vital for an employer to understand what motivates the employees and how to maximize their overall job performance. Result shows the positive and significant correlation between employee performance and components of training culture. Study also concludes that training method is the major factor of training culture followed by training environment and training-reward linkage. It has been found that size of the bank and gender of trainee respondent mediate the employee satisfaction and employee job performance.

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E-readiness to Implement Branchless Banking for Social Cash Transfer in Nepal

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Abstract

E-readiness is the level of ICT usage that citizens of a nation use it to make their life easier and convenient. The government of Nepal has its regular popular programme of social cash transfer to its target groups and distribution of direct cash to beneficiaries through manual process. Since the programme is popular among citizens and political parties, the number of ghost beneficiaries is increased day by day. The process of cash transfer needs to be carried out through branchless banking to identify exact beneficiaries and transfer social cash in easy and convenient way, however the concept is very much new to both government and beneficiaries. This research paper explored e-readiness to implement branchless banking for social cash transfer through mixed research design and concluded that ICT infrastructure, human resources, banking awareness and outreach of financial institutions need to be enhanced.

Keywords E-readiness, ICT, cash transfer, branchless banking

Introduction

Governments around the world are mandated to serve their citizens, protecting lives and property, providing vital health, education services, etc [9]. The government of Nepal has its regular programme of social cash transfer to its target groups like senior citizens, widow, children, etc since 1995 [8]. There is practice of maintaining the list of target group beneficiaries on manual basis, only few local bodies have adopted the process of digitization. The social cash transfer has been carried out manually by local bodies. Carrying huge amount of money from district headquarter to Village Development Committee (VDC) office is very much risk for local bodies and local bodies are directly disturbing cash to the beneficiaries. And carrying direct cash by old age people from VDC office to their home is also of high risk [18][16]. The programme has been very much popular among target groups and political parties.

There has been provision of cash transfer through banking channel to beneficiaries [21]. However, the presence of banking channels are very much minimal at rural areas of

Nepal, rather banking channels are concentrate at district headquarter. Because of banking policy of maximizing profit, banking channels are attracted towards urban areas only; social cash transfer beneficiaries couldn't be accomplished through traditional banking channel. The financial inclusion rate of Nepalese people is only 35% [20]. Most of the beneficiaries are out of banking facilities and are below poverty line. The branchless banking is a new innovative idea to reach to poor and unbanked people of rural areas.

Through the proper use of technology, banks and their customers can interact remotely in a trusted way through existing local retail outlets [10]. Branchless banking is a strategy of distribution channels to expand the concept of the traditional bank branch [22]. The use of technology, such as mobile phones and bank cards to conduct financial transactions electronically and remotely using third party outlets known as agents, financial services provider allows customers to use financial services without going to bank branches [2]. In addition to transactional services, branchless banking provides basic cash deposit and withdrawal and also government remittances for the

poor [7]. The financial services provider is supported by a government licensed financial institution. Branchless banking has great potential to extend the distribution of financial services to poor people who are not reached by traditional bank branch networks; it lowers the cost of delivery, including costs both to banks for building and maintaining a delivery channel and to customers of accessing services [10][13]. The concept of branchless banking has been booming in developing countries. It has a huge potential to provide financial services to low-income households of remote and rural areas that are not reached by traditional banks [14]. This research paper has tried to explore e-readiness to implement branchless banking for social cash transfer in Nepal.

E-readiness is a measure of the degree to which a country, nation or economy may be ready, willing or prepared to obtain benefits which arise from ICT [17].

Objective

The main objective of this paper is to explore e-readiness to implement branchless banking for social cash transfer.

Literature Review

The introduction of new information technology has a ripple effect, raising new ethical, social, and political issues that must be dealt with on the individual, social, and political levels. These issues have five moral dimensions: information rights and obligations, property rights and obligations, system quality, quality of life, and accountability and control [23].

Service delivery is an essential function in relation between government bodies and citizens. It is a part of complex relation between government, society and citizens. The government as a key public service provider, citizens has a right to demand quality services fast, easy at moderate cost. The image of government depends on service delivery with quality services at affordable price to its citizens [4]. Through the proper utilization and implementation of technology and digital tools, the service delivery of local government could be more effective and challenges could be minimized [5]. Effective public service delivery is one of the key parameters to measure the goodness of governance. Therefore, government should be willing to formulate new strategies for effective public service delivery [19].

The rapid development of ICT has helped in exploring new opportunities for service delivery and income generation [11]. ICT is a potential tool of efficient public service delivery. It offers new possibilities for communication between people and organization and increases the quality and quantity of interaction with people. It enhances the

transparency and access to organization [19]. With the implementation of ICT-enabled public service delivery, it improves access to public services, increases efficiency, transparency and accountability of government [4].

With the innovation in technologies, globalization and regulatory disruption, there has been huge changes in global payments history. The global payment networks have transformed the lives of millions and billions people and many industries that were deprived of banking facilities [15]. Technology helped banks to reach the doorsteps of the customer by overcoming the limitations on geographical/ physical reach in branch banking and easing the resource and volume constraints [12]. Non-availability or limited availability of banking services in the rural areas has been the most common reason cited for considering payment “not feasible” through banks [16].

The branchless banking is a new innovative idea to reach to poor and unbanked people of rural areas. It is a strategy of distribution channels which are used to provide financial services through the growth and development of technology and helps to expand the concept of the traditional bank branch [3]. This technology has become a common mechanism to extend financial services to the economically deprived populations in the developing regions of the world [1]. The usage of branchless banking services has the potential of improving service delivery, reducing overall fiduciary risks and leakage in the system. The payments are made directly into beneficiaries’ accounts. It facilitates beneficiaries with access to the modern financial system and prospect for future financial inclusion [18]. The POS (Point of Sale) machine is very much popular for branchless banking because of its special characteristics such as light weight, resistant, equipped with printer and fingerprint sensor, online and offline mode of transaction and easy card reader [13]. The biometrics is a feature measured from the human body that is distinguishing enough to be used for user authentication [6].

Methodology

The research paper adopted mixed research techniques and chose the convergent parallel design. In order to collect quantitative data, the researcher followed survey method and used questionnaire tool to collect primary data. Likewise, the researcher followed in-depth interview for qualitative data.

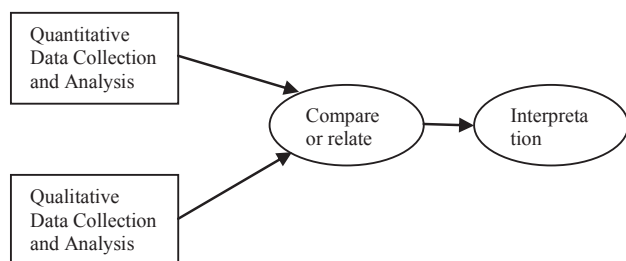


Figure 1: Convergent parallel mixed research design

The primary respondents were Village Development Committee (VDC) secretary, who were the frontlines of social cash transfer to target groups. The researcher used secondary data collected from various articles, books, research papers, etc. Besides, the researcher working experience was also used. The researcher worked with Ministry of Federal Affairs and Local Development (MoFALD) as Management Information System (MIS) Specialist for more than 4 years. He designed, and developed MIS and implemented branchless banking for social cash transfer.

Results and Discussion

Nepal is divided into three ecological regions namely Himalayan, Mountain and Terai. In this research paper, 12 districts of Nepal, one or more districts from each ecological zone were selected. From Himalayan region Illam, Dhankuta, Lalitpur and Khabre districts were selected. Similarly from Terai region Kailali, Rupendehi, Dang, Jhapa, Kanchapur and Rautahat were selected. From Mountain region Mustang and Sindhupalchowk districts were selected.

The data were collected from 373 respondents from municipality and VDC level. Through the SPSS computing device the researcher has computed the data.

Table 1: Existing ICT status of respondents' office

Particulars	No of respondents	Percentage
Computer at office	253	67.83
Access to electricity	350	93.83
Solar backup	51	13.67
Digital camera	51	13.67
Scanner	46	12.33
Photocopy machine	100	26.81
Telephone facility	80	21.45
Access to internet	55	14.75

Table 1 shows ICT status of respondents' office, 68% of respondents have computer at their office with 94% access to electricity. This indicates that there is good access of electricity facilities and moderate number of computers.

But only 21% have access to telephone facilities and 15% have access to internet, it indicates that government needs to improve telephonic and internet facilities at local level. Through internet facilities, local governance work can be more effective and efficient. Local staff can easily send necessary files to district and central level easily. Regarding ecological wise ICT status of respondents' office, 146 respondents from Hill and only 24 respondents from Mountain have computer at office. The access to internet in Mountain is very low. Only 5 respondents from Mountain have access to internet. It shows that Internet Service Providers (ISPs) are more focusing providing their services to easy and accessible area only. The government needs to bring policy towards providing internet facilities to Mountain region so that ISPs can also provide internet facilities there as well.

Table 2 : Existing human resource capacity in ICT of respondents

Particulars	No of respondents	Percentage
Trained on MS-office package	80	21.45
Can operate MS-office package	132	35.39
Trained on internet surfing	35	9.38
Can surf internet	98	26.27
Have e-mail address	101	27.08
Use of internet for official work	54	14.48

Table 2 shows existing human resource capacity in ICT. Out of total respondents, 35% of respondents can operate Microsoft Office (MS-Office) package and only 14% use internet for their official work. This indicates that government needs to start programme of ICT training and capacity building for local staff.

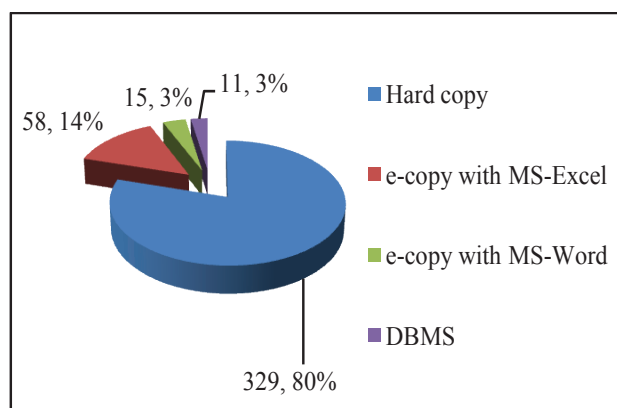


Figure 2: Current social security allowance beneficiaries' data maintained at local level

At local level, social security allowance beneficiaries' data has been maintained in hard copy, 88% of respondents maintain data in hard copy, 15% maintain in MS-Excel and only 3% use Database Management System (DBMS) software to maintain beneficiaries list. Since, the beneficiaries list has been maintained in hard copy, it is time consuming to get timely report from local level and there is more chance of editing data easily. This could be one of the reasons that there are high rate of ghost beneficiaries. Now, government needs to bring programme of deploying DBMS with necessary equipment with rigorous training at local level.

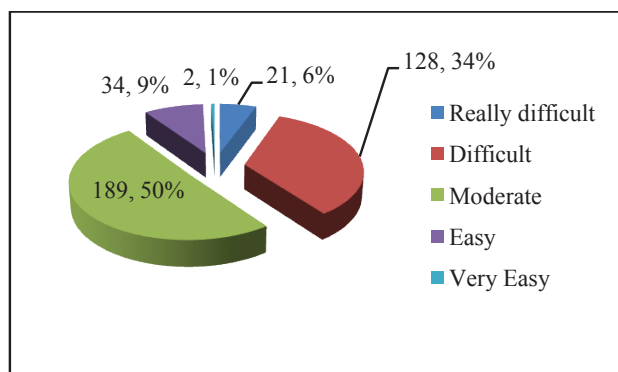


Figure 3: Perception of respondents for updating beneficiaries' data

Since the use of DBMS software is very much minimal, around 40% of respondents feel difficult to update beneficiaries' data. DBMS software helps to maintain data easy, quick access and easy update. This indicates that maintaining beneficiaries' data in DBMS helps local employees to maintain and update data easily. Since, beneficiaries list are maintained manually in hard copy, it is very much natural feeling difficult to update the list.

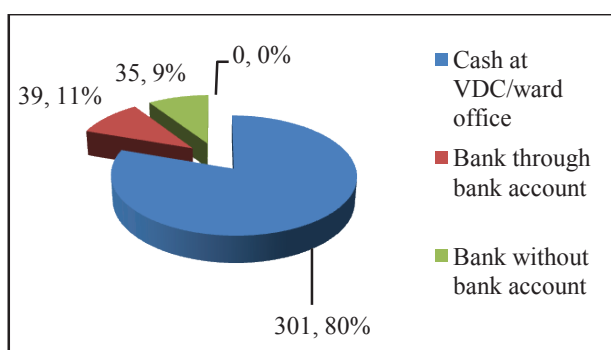


Figure 4: Prevalent practice of social security payment mode to beneficiaries

According to social security guideline prepared by Government of Nepal (GoN), there is a provision of social cash transfer through banking channel to the beneficiaries. In this context, government facilitates beneficiaries

opening personal bank account and transfer into the bank account so that beneficiaries can easily withdraw cash on their need basis. However, the practice of payment through personal bank account was only 11%. More surprise is that there was also practice of payment through bank without personal bank account, 9% of respondents shared such type of practice for social cash transfer. Still, traditional approach of direct physical cash payment to beneficiary hand is in practice, 80% of respondents were in practice of distributing physical cash at VDC office.

Figure 4 clearly shows that banks and banking channels were very much low at rural areas of Nepal. It is also true that banks are not able to provide banking services from each VDC office. Banks are more profit oriented and have to do more exercise on opening bank branch office at rural areas. Moreover, the presence of branchless banking/agent bank was 0%. However, branchless banking is a new innovative idea to reach to unbanked and poor people of rural areas. The government should motivate banks towards providing banking facilities at rural areas also.

Table 3: Existing information practice as to payment to beneficiaries

Information about payment to beneficiaries	No of respondents	Percentage
Time and location is pre-determined	180	48.3
Knows during visit to VDC office	131	35.1
Public notice/announcement	268	71.8
Others (including announcement through FM)	110	29.5

Table 3 shows that payment to beneficiaries was not fixed, however there was fixed date accordingly to social security guideline. 48% of respondents shared that time and location was pre-determined, 35% of respondents shared that beneficiary knows during visit to VDC office, 72% of respondents used public notice/announcement about information of payment to beneficiaries and 30% of respondents used others media and announcement through FM. Now, it is clear that there is need of branchless banking for social cash transfer. In branchless banking, banking agents open personal bank account of every beneficiary and beneficiary biometrics (fingerprint) is also recorded through Point of Sale (PoS) machine. The local government transfer cash into beneficiaries' personal account and as per convenient, beneficiaries can easily withdrawn amount from bank agent. Thus, it is easy for both beneficiary and VDC staff as well. It is not necessary to announce public notice from FM and other media regarding social cash transfer to beneficiary. Once there is proper mechanism cash transfer through branchless banking, only agent's activities has to be monitored by

VDC staff and beneficiary does not need to visit to VDC office time to time for payment.

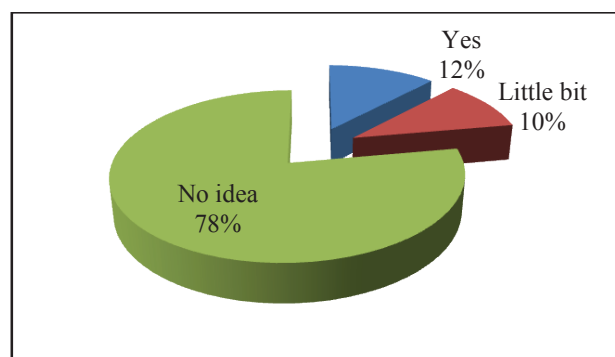


Figure 3: Knowledge of respondents on branchless banking

Figure 3 shows that the practice of agent/branchless banking is negligible. And around 78% research participants do not have idea on agent/branchless banking.

The in-depth interview with VDC secretaries was focus on current practice of cash transfer, usage of ICT tools, roles and responsibilities, concept of branchless banking, benefits of branchless banking and e-readiness to implement branchless banking for social cash transfer.

Dhana Bahadur Magar (name changed), the VDC secretary of Samayajee VDC of Dadeldhura district shared that it's his responsibilities to distribute social security allowances to target beneficiaries on quarterly basic. In most of the cases, cash transfer from district to VDC is delay so beneficiaries approach to VDC office daily. It's always high risk for him to carry huge amount of cash from district headquarter to VDC office and distribute direct cash to beneficiaries. There are few cases that beneficiaries lost cash while returning back to home. Moreover, he shared that he doesn't have any knowledge on ICT tools, has not been trained yet in operating ICT tools and maintain data in electronic format. With the help of office assistant, he has prepared beneficiaries list in register. He smiled and said that he has keen interest to learn ICT tools like computer, email and internet, etc. But he has mobile phone, just to communicate with members of family and service seekers.

The researcher discussed about benefits of database, ICT tools and concept of branchless banking and its working modality. He laughed and replied that there is no any bank rather there are few co-operatives. Once he knew of branchless banking, he shared branchless banking is really new for him and if implemented he roles and responsibilities shifts to monitoring rather than distribution and maintain transparency and accountability.

After in-depth interview, he shared it should be the way to transfer cash to target groups. However he is not ready to implement it soon. Moreover, he claimed that if he has

been trained and provided necessary equipment he can implement it and share with others as well.

Conclusion

The GoN has its regular programme of social cash transfer to its target groups through local level in the form of direct cash. In most of the cases, beneficiaries list is maintained in hard copy so VDC staff feels difficult to maintain data accurate and up to date. The concept of branchless banking is innovative and very much new to all VDC secretaries. However, they have keen interest to implement and shift their roles to monitoring. The existing ICT infrastructure, human resources, institutional readiness, banking awareness, etc are not sufficient to implement branchless banking. Therefore, through existing capacity, level is e-readiness is not satisfactory to implement branchless banking for social cash transfer.

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Managing Cyber Security Risks in Nepalese Organizations

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Abstract

The internet is constantly changing the way we live and conduct business. E-service encompasses a series of necessary steps for institutions to develop and administer to ensure successful implementation of services at large. This paper discusses the growth trend of e-service, cyber security and challenges to overcome the situation for effective service delivery. Content analysis and survey approach was used to generate data in the case study. The study has claimed that the virtual nature of the internet, and its recreational aspects, can blind young people and novice users to its considerable capacity to do harm in e-service. The study has concluded that e-service is essential for managing future complications and responding to current and past incidents to build trust from people. The insight on reducing current and future vulnerabilities, the probabilities of a threat, and the costs associated with potential outcomes support their mitigation. Some of the issues related to e-service can be regulatory, legal, technical and procedural measures as well as customer education, capacity building and licensing.

Key Words Cyber Security, E-service, Critical Infrastructure, Information Communication and Technology, Electronic Transaction

Introduction

The world is rapidly transforming into one society driven by an outstanding increase in the amount of communication between civilizations. It has really become information driven society, in which information and communication technology is playing important and indispensable role. Keeping up with the twenty-first century, governments around the world are embracing Information Technology (IT). In every region of the globe - from developing countries to industrialized ones - central and local governments are putting critical information online, automating bulky processes and interacting electronically with their citizens [6]. The arrival of new information and communication technologies (ICTs) has significantly enhanced our capabilities to collect, process, and distribute information [4]. Almost all developing countries regard ICTs as an important factor while preparing their national development plans. This paper discusses about the area which has been given outstanding attention regarding

the use of ICT in the quest of good governance, usually termed as e-governance.

E-government has been considered as a narrower discipline dealing with the development of online services to the citizen, more the 'e' on any particular government service - such as e-tax, e-transportation or e-health [3]. E-governance is a wider concept that defines and assesses the impacts technologies are having on the practice and administration of governments and the relationships between public servants and the wider society, such as dealings with the elected bodies or outside groups such as not for profits organizations, NGOs or private sector/ corporate entities. E-governance encompasses a series of necessary steps for government agencies to develop and administer to ensure successful implementation of e-government services to the public at large.

There is a widespread curiosity among citizens about e-government. E-government encompasses to explain

the relation and benefits through e-government to provide various kinds of services to its people via public administration from bureaucracy to service provider [7].

E-government Implementation in Nepal

There are many dimensions streamlined and drivers identified to make our New Nepal dreams come true. One of such dimensions is the reformation of the government. Governance and its service process has been felt to be well reengineered to fulfill the aspirations of its citizens. Information and Communication Technology (ICT) and its tools may help its effective and efficient transformation.

In regard to this, the government of Nepal has prepared e-government Master Plan (eGMP) Consulting Report, which is an attempt to lay the ground work for e-government transformation. E-government vision has been to fulfill citizen-centered service, transparent service, networked government and knowledge based society. The mission statement has included as "Improve the quality of people's life without any discrimination, transcending regional and racial differences, and realize socio-economic development by building a transparent government and providing value added quality services through ICT".

Although there are some missing elements in the eGMP, it may lead to the successful e-government in Nepal. All plans are continuously evolved so that the eGMP can be evaluated and updated. Establishing good coordination between government organizations to make seriously committed environment may help implement e-Gov successfully.

Technology Trends

The internet is constantly changing the way we live and conduct business. These changes are occurring both in the ways that we currently experience (e-commerce, real-time information access, e-learning, expanded communication options, and so forth), and in ways we have yet to experience. Convergence of voice, video & data is on anvil and existing communication networks are paving way to all IP enabled Networks such as Next Generation Networks (NGN). Therefore as a society we are just beginning to unlock the potential of the internet.

A growing percentage of access is through broadband connections, and users and organizations are increasingly interconnected across physical and logical networks, organizational boundaries, and national borders. As the fabric of connectivity has broadened, the volume of electronic information exchanged through what is popularly known as cyberspace has grown dramatically and expanded beyond traditional traffic to include

multimedia, process control signals and other forms of data. New applications and services that use ICT infrastructure capabilities are constantly emerging. With the rapid growth of internet, network security has become a major concern for policy makers & regulators worldwide. A private network when connected to the internet is connected to more than 50,000 unknown networks and all their users [9]. The development of robust IP networks with possibility of one billion connected people increase the security threats further. Protection of services and the consumers from data theft, fraud, denial of service attacks, hacking, cyber warfare, terrorist and antinational activities become a challenge [10]. Some cyber-attacks like those against systems controlling infrastructure would have debilitating effect. According to an international estimate one in 295 emails is virus infected and 3 in 100 emails carry malware [11]. Sophos Labs tracked and analyzed 95,000 malware pieces every day in 2010, which is nearly twice the number of malware pieces tracked in 2009. More than 3500 malicious websites are blocked per day and 89.4% mails are spam. The majority of the attacks (32%) are phishing followed by virus (29%) and network scanning/probing (18%) [2]. Thus cyber security may become of paramount importance as broadband may not be limited to provide vital services to citizens but will also be used as core to provide various citizen centric services.

Social network attacks are coming up and expected to be one of the major sources of attacks in near future because of the volume of users and the amount of personal information posted. Users' inherent trust in their online friends is what makes these networks a prime target. For example, users may be prompted to follow a link on someone's page, which could redirect users to a malicious website.

Social engineering techniques on social networks are on the rise. Social engineering is term for psychological tricks used to persuade people to undermine their own online security. This may include opening an email attachment, clicking a button, following a link, or filling in a form with sensitive personal information. All sorts of scams, and many methods used to spread malware, make use of social engineering techniques, and target human desires & fears as well as just plain curiosity to get past the caution one should be exercising when online [5].

Since the introduction of the iPhone, the popularity of smart phones has grown over the last several years. More and more users of smart phone get involved in several online activities thereby creating a potential shift in cyber attacks as cyber criminals may target end users via mobile platforms. As with other platforms, the attackers would like to explore where the most users are, and where these users are the least protected. Cloud computing refers to a type of computing that relies on sharing computing resources rather than maintaining and supporting local

servers. Cloud computing is a growing trend due to its considerable cost savings opportunities for organizations. The growing use of cloud computing will make it a prime target for attack.

Migration from legacy network to next generation network will provide platform for development of many useful applications and sharing of information. The critical data of an organization containing personal data, critical enterprise resources etc are potential source of attack because of following two main reasons:

1. First is the ubiquity of the Internet. Access to vulnerable devices will continue to increase with growing number of devices connected on Internet.
2. Second is the popularity of easy-to-use operating systems and development environments. Overall ingenuity and knowledge required by hackers is drastically reduced and for a hacker it is much easier to create applications that can be distributed on Internet [5].

National Information Technology Center (NITC) as an E-government Implementation Hub

Use of e-governance is to raise the quality of services delivered by governments to citizens and businesses. Most governments in the developed world have moved towards implementation of IT to deliver services to the citizens as well as better govern their internal programs. Today wide ranges of e-governance projects are being implemented at different parts of the country including the projects designed to reduce digital divide in rural areas that have been ignored in the past.

E-governance has been a radical concept that covers wide range of IT enabled reforms including as

1. Prioritize the governments need to use IT and the Internet to provide services between government agencies, citizens, and business
2. Improve the democratic values of the government process and administrations through more transparency, accountability, and involvement
3. Make the internal operation of public administrations more efficient
4. Change the mindset of the administration for successful implementation of e-Governance
5. Create awareness of IT in the top bureaucracy
6. Expand access of IT to the common people through establishment of self sustaining Tele- center in rural part of the country

NITC co-locates servers of different governmental organizations and agencies in Government Integrated Data Center (GIDC). There are large numbers of Nepal governmental organizations that have been hosting their servers in GIDC. NITC is the main implementing body of e-government in Nepal. Developing human resource in the field of IT is the first & foremost need to implement e-government. It is difficult to implement e-government without IT literate human resource. To empower the ICT literacy NITC has been conducting basic, advance and expert level computer training course along with ICT awareness training programs and workshops inside and outside the Kathmandu valley. NITC has already trained more 2350 people from different government agencies and NGOs (NITC, 2016). NITC provides consultancy and advisory service about ICT to all the government organizations and departments within the country. NITC conducts research and development work relating to ICT for the development of ICT sector in Nepal.

The approach to tele-center was instigated in order to shrink the digital divide that evolved from the situation in which substantial number of citizen in the developing country lack to obtain the rights of developmental progress. In general, through the concept of Tele-center, it is aimed to provide the deficit community with the ease of modern Information Technological services such as internet, email, fax, photocopy, scan etc in order to help them reach the realm of development.

Establishment of tele-center helps to reduce the information and knowledge poverty, consequent trivial boundary relation in developmental effort to showcase major changes in modern information and communication sector. At present, it is strongly felt that with the establishment of tele-center, developmental methodology based on Information and Communication technology should also go hand in hand. Tele-centers can also be used in local level to be integrated with government services. The local level employees can be trained to use e-government services such as land registration, tax records etc.

Cyber Crime, Its Changing Nature and Case of Nepal

Cyber crime has been one of the fastest growing areas of crime. More and more criminals are exploiting the speed, convenience and anonymity that modern technologies offer in order to commit a diverse range of criminal activities. These include attacks against computer data and systems, identity theft, the distribution of child sexual abuse images, internet auction fraud, the penetration of online financial services, as well as the deployment of viruses, Botnets, and various email scams such as phishing.

In the past, cybercrime has been committed by individuals or small groups of individuals. However, we are now seeing an emerging trend with traditional organized crime syndicates and criminally minded technology professionals working together and pooling their resources and expertise.

This approach has been very effective for the criminals involved. In 2007 and 2008 the cost of cybercrime worldwide was estimated at approximately USD eight billion. As for corporate cyber espionage, cyber criminals have stolen intellectual property from businesses worldwide worth up to USD one trillion [1].

Nepal's cyber world is ruled by Electronic Transaction Act (ETA) 2063 that protects users online against cyber crimes. Though the cyber law is present but due to lack of proper monitoring and updates it serves little use in protecting users online. The dynamics of internet has grown phenomenally where the ETA has been fixed and constant. Internet provides easy accessibility and other facilities but at the same technology also threatens the nation in lack of proper mechanism and policies which needs to be researched and worked on.

Nepal has seen ups and downs in its technology but due to its limited policies and regulation Nepal faces a huge hindrance in the coming days. Technology has been passed on but with little governance, and lack of proper mechanism and measures to cater the need at time of emergency, Nepal faces a huge threat or challenge in overcoming the online threat. Cyber laws have become essential in view of the rapid developments in information technology. Online communication has given rise to a new global commerce in ideas, information and services. Information Technology (IT) is changing almost all aspects of human activity like communication, trade, culture, education, entertainment, and knowledge. With the rapid advances in computer technology over the past few years, there has been increasing concern in many countries for the need to develop and modernize the law in order to take full advantage of technological improvements and at the same time to guarantee that states can respond to computer crime and related criminal law issues associated with these developments. The cyber law encompasses a wide variety of legal issues which includes intellectual property, privacy, freedom of expression, and jurisdiction.

Prior to 2004, the government of Nepal dealt with cyber crimes under the Public Offence Act. Nepal Police dealt with cyber crimes but they were not aware about the technical aspects of these crimes, which meant that the sanctions were not effective and relative to the crime. Later The Electronic Transaction and Digital Signature Act 2004, also known as the cyber law, was passed. This law was forecast to be landmark legislation for the

development of IT industry in Nepal. Under Act of 2004, hacking, deleting data, stealing e-documents, software piracy and posting defamatory information invite criminal and civil sanctioning to individuals and institutions. Under this law, the government can punish cyber offenders with up to five years of imprisonment and/or a fine of up to fifty thousand rupees. However, much depends on the severity of the crime. The law has tightened the security for banking transactions through electronic means, which should boost the economic activities across the Internet via Nepal.

The biggest challenge before the cyber law is its integration with the legacy system of laws applicable to the physical world. The unique structure of the Internet has raised several legal concerns. While grounded in physical computers and other electronic devices, the Internet is independent of any geographic location. While real individuals connect to the Internet and interact with others, it is possible for them to withhold personal information and make their real identities anonymous. If there are laws that could govern the Internet, then it appears that such laws would be fundamentally different from laws that geographic nations use today. Since the Internet defies geographical boundaries, national laws will no longer apply. Instead, an entirely new set of laws will be created to address concerns like intellectual property and individual rights. In effect, the Internet will exist as its own sovereign nation.

Electronic Transaction Act and its Implementation

It is means to make legal provisions for authentication and regularization of the recognition, validity, integrity and reliability of generation ,production, processing, storage, communication and transmission system of electronic records by making the transactions to be carried out by means of electronic data exchange or by any other means of electronic communications, reliable and secured, and where as, for controlling the acts of unauthorized use of electronic records or of making amendment in such records through the illegal manner.

A digital signature is an electric signature, just like your handwritten signature, is used to authenticate your identity. Public-key cryptography makes this possible. Public-key cryptography involves the use of two cryptographic keys, one private and one public. Whatever the public key encrypts, the private key can decrypt, and vice versa. The user (say A) keeps his private key and the public key is available to anyone. Suppose A wants to send a message to B, how does a digital signature work? 'A' uses digital signature software to pass the message through a mathematic function (so-called one-way hashing) then produces a message digest which is the

summary (hash code) of the message [1, 2]. A then uses the software to encrypt the message digest with his private key. The result is the digital signature. Then A appends the digital signature to the document and sends it to B. When A gets B's document, he uses his public key to decrypt the signature then gets a message digest. If this works, it proves that the signature is from A because only A owns the private key. B then runs the message through the same hashing function used by A to get a message digest. If the two processes produce the same message digest, B knows the message is originally from A and has not been changed. We know this is reliable because it is not possible to get the original message from the message digest because the hash function is one-way and the message encrypted by A's private key can only be decrypted by A's public key.

IT Policy and Emerging Challenges of e-government

Policies are used to set a standard for performance. Through policy, an organization can develop clear expectations for students, parents, teachers and administrators. It provides a framework for consistent actions regardless of district or school in a region, or even state-wide. Federal and state laws set a policy framework for the use of technology within the school system. All states and school districts are required to have technology plans in compliance with federal policies.

First and foremost, proper policies protect the institution from non-compliance with the law. Clear organizational guidelines allow organizational leaders to avoid overlooking any legal imperatives which might otherwise go unnoticed. In addition, ensuring that persons with disabilities are able to communicate and learn is a moral responsibility. Accessibility benefits everyone, not just people with disabilities. The world's least developed countries including Nepal have availed themselves of the opportunity to rapidly develop education, health, agriculture, tourism, trade and various other sectors using information technology (IT). Hence, it has become essential to formulate a policy at the earliest for developing information technology with a view to boosting up national economy. The information technology policy shall be formulated to make information technology accessible to the general public and increase employment through this means, build a knowledge-based society and establish knowledge-based industries.

Depending on a country's economic, social, and technological reality, before an e-government program can progress, it must overcome a series of challenges, including low internet penetration, Infrastructure restrictions, digital divide, and concern regarding privacy and security, limited number of qualified IT specialists, unavailability of payment gateway, lack of digital signature and lack of IT literacy among the citizens.

IT policy is a significant and important step in the right direction towards the developing the ICT sector and represent the society as knowledge based society. But however several challenges have beset Nepal's efforts aimed at building upon the initial momentum that it gained in the ICT domain. Due to the lack of political constancy deterred Nepal from effectively capitalizing on the promise Unleashed by digital opportunities as the country found itself confronting a host of competing priorities ranging from the ones posed by security challenges to that of endemic poverty and poor governance. In the planning process, the government expressed its desire to meld Nepal into a knowledge-based society. The broad objective for the IT sector was to promote IT as a tool for social and economic development; to promote social development by using IT to improve agricultural, health, education, and other services and sectors; to promote economic development by establishing an IT park to produce and export low-cost software and eliminate the poverty from country which is the one of major problem for Nepal.

We have the experience of failure for completely implementing the Policy and over the last few years with scarce resources tied up in security efforts, implementation of the IT Policy has slipped from the government's priority list. Although the institutional provisions have been put in place, the key implementing body is too under-resourced to effectively oversee implementation. We know that e-governance in Nepal is enhancing but still not fully developed. But we can assume this process of finalizing the IT policy was a long but inclusive one.

Today we have still many problems. Political and Social Instability, Funding depend upon highly politicized and very limited facility is provided by government which is not enough and it is not fully utilized are problem in past years. So from learning the lesson from previous chapter of implementing and developing IT Policies we have to address every aspect that reflect IT Sectors. An implementation programmed involving both the government and private sector still needs to be encouraged and supported to maximize the potential for IT in Nepal.

Critical Infrastructure and its Protection

Every day, products and services that support our way of life flow, almost seamlessly, to and from our homes, communities, and government. Making this possible are the systems and networks (the roads, airports, power plants, and communication facilities) that make up the infrastructure for our society, an infrastructure often taken for granted. If just one of these systems in the infrastructure is disrupted there could be dire consequences. Some elements of the infrastructure that are essential for operations of the economy and government are the minimum termed as critical infrastructure. As

per ITU critical infrastructure means the computers, computer systems, and/or networks, whether physical or virtual, and/or the computer programs, computer data, content data and/or traffic data so vital to a country that the incapacity or destruction of or interference with such systems and assets would have a debilitating impact on security, national or economic security, national public health and safety, or any combination of those matters. Today, there are many critical sectors whose operations depend on ICT in a big way and therefore it becomes very important to protect these sectors from cyber threat.

Conclusion and Way Forward

The virtual nature of the internet, and its recreational aspects, can blind especially young people and novice users to its considerable capacity to do harm in e-governance. The consequence can be horrendous both for organisations (companies, administrative or community organisations) and individuals who fall victim to it. Controlling the technological risks means more than hunting down hackers or setting up technological barriers in enhancing the governance system. The most serious consequences are sometimes due to sheer negligence resulting from incompetence, misconceived or poorly implemented technology, excessive authority for system administrations, mismanagement etc.

It is important to make all internet stakeholders aware of the importance of the security issues involved and of the basic measures which, if clearly stated and intelligently implemented, will strengthen then user confidence in data processing and communication technologies, including the Internet. The internet should be an asset for everyone and not of exclusive benefit to criminal activity. Steps must be taken to foster a culture of and multidisciplinary approach to security and to control the risk that information technologies will be used to criminal ends. Both States and organisations must have a strategic vision of these problems. Heightening awareness of security issues must not be limited to promoting a culture of security. There must first be an information technology culture. The stakeholders must also be given the means to learn to manage the technological, operational and information-related risks they incur in using the new technologies. Cyber security concerns cannot be dealt with easily by market forces or by regulation but require a novel mix of solutions. These concerns are not the exclusive domain of economists, political scientists, lawyers, business policy or management experts, or computer specialists-or even of national security experts or telecom regulators. Rather, a highly diverse group of stakeholders or key actors-working in their own domains and in concert-has a potential role in orchestrating the set of functions that in aggregate result in an effective cyber security policy.

E-governance is essential about managing future risk and responding to current and past incidents and attacks to build trust from people. Managing future risk requires

insight into current and future vulnerabilities and how to prevent or reduce them, the probabilities of a threat, and the costs associated with potential outcomes and how to mitigate them. Responding to current and past incidents and attacks requires knowledge of what has happened, methods of preventing similar incidents from being successful in the future, and possible legal or other remedial actions against the perpetrators. Some of the issues for consideration related to e-governance can be licensing and regulatory measures, legal measure, technical and procedural measures and customer education and capacity building.

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Challenges to Transform the E-governance for Nepalese Labour Migrants

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Abstract

Nepal in the past years has taken speed in the development of ICT delivery. Government has brought about projects to emphasize the development of ICT infrastructure not only in urban areas but also in the rural areas. One of the important areas of ICT delivery is that for the Nepalese Labour Migrants. Working group generation leave their home country to find employment in foreign environment in large numbers daily. This trend is foreseen to continue due to the cheap labour demand in the preferred destination because of the development targets of these countries and sided by the unemployment for the desired status of work in Nepal. However, migrants in great numbers find themselves in ill fit jobs resulting to serious mishaps both physically and mentally. The job seekers are mostly directed by the local agencies. The agencies are closely collaborated with the foreign serving country agencies that actually bring in the jobs. It is at this starting point that misunderstanding occurs with the type of job, promised benefits and promised working environment. Transformation of Nepalese e-governance is needed to empower this labour market industry. This paper explores the various challenges to transform its service delivery in an efficient and user friendly e-governance for the foreign labour migrants of Nepal.

Keywords: E-governance, E-Government, policy, labour migrants, portal, transformation, user-centric

Introduction

With the digital disruption and the development of ICT infrastructure, governments all over the world have taken steps to transform the governmental administration in how the processes work and their service delivery to the public sectors. Although, Nepal falls under the least developed country category in the world, it has not stayed away from the awareness of communication via the internet. Ambitious plans of both the government and the private sectors have rapidly increased the access of broadband and wireless. The competition among the communication service providers and the falling price of the broadband connectivity to Nepal has benefited the growth of usage of data. The cheap smart phone availability in the country, has given opportunity for the innovative application

development in the local styles especially in the private sectors. Governmental sectors in Nepal are attempting to change their public service delivery via the internet. One of the sectors that need attention is the labour migrant industry. The large gaps in the procedures of this industry cannot be overtaken by sluggish corrections. A total procedural change, can be brought about, with only a transformative governmental administration and its service delivery. This study intends to explore the challenges for transforming the governmental services for this industry.

E-Governance for Nepalese Labour Migrant

Labour Migrant industry in Nepal falls under priority sector because government of Nepal has been encouraging the sending of Nepalese people abroad for jobs. Thousands of

Nepalese working class leaves the country weekly. In the form of remittance, these sectors contribute a large portion of the country's GDP [1]. However, the government has not transformed its traditional style of procedures for this industry. The silo modes of informative system in the governmental interconnected departments are incomplete or confusing. There is no complete or holistic approach [2][3], for a prospective job seeker to fulfill his wish of seeking job nor systematic method of viewing the connection of advertised jobs in the governmental portal. This leads to not only difficulties to search for proper job placements but also to be cheated by job givers. The job givers are mainly the local recruitment agencies who are connected to the agencies in the foreign country where job recruitment is done. Information misled confiscation of passports during job and unsatisfactory job benefits often lead the workers into frustration and disappointment [3, 4, 6]. Stressful work environment lead to depression or even suicides [7] or quitting of jobs.

Methodology

On the basis of the quantitative requirement analysis from the labour migrants for a better e-governance, the study further explores the challenges for e-governance transformation of the labour migrant industry of Nepal.

Transformation of the e-Governance

Governments all over the world are transforming their services delivery via the internet. Digital disruption has brought about the necessity to delivery services via web portals and smart applications. The accessibility of smart phones and the innovation of user friendly applications have pressured government to work in efficient manner for public service delivery. The deployment projects for smart cities have brought about the necessity of usage of consolidated data from one government sector to another. Large volumes of the variety of data in real time are being processed and analyzed for decision making. Many governments have transformed their services by adopting smart technologies like big data. Big data is playing an important role to transform local and federal governmental services delivery[8]. Some of the applications are in education, weather study, health and disease spread control, fraud management, transportation and traffic control, multi-purpose smart cards, security control, disaster control, citizen benefit cards and smart city services delivery [9,10,11,12]. Smart technology can improve decision making and bring about organizational efficiency. The drill down real time capability is the output of the analytical systems used after mining the collaborative data. Descriptive reporting on the statistics of the history and even real time events make proof on what is going on. Predictive analytics assist to forecast and come up with statistical models used for further

actions. Prescriptive modules focus on optimization and randomized testing. These analytics can evolve the traditional services into transformational government which is the evolutionary state of the e-government [13]. It is here discussed that the transformational government can occur to aggregate with other government agencies, syndicate for better services delivery, integrate with external sources and innovate for better benefits with third party partners.

Why transformation needed in the Nepalese Labour Migrant E-governance.

The governmental labour migration e-services are provided and interlinked with several departments under the Ministry of Labour and Employment. The main departments being the Department of Foreign Employment, Department of Labour, Foreign Employment Promotion Board, Occupational Safety and Health project and Employment Permit System Korea Section. The existing governmental web service delivery, observed by the researchers, is not adequate in providing a holistic approach to guiding the Nepalese workers in seeking foreign jobs. The complexity of the labour industry has become large enough and is being studied by various national and international researchers and organizations. The challenges of improvement in the procedures are classified as gaps [3, 4, 5]. Some research study have recommended a wholesome approach to resolve the gaps [2, 3].

The wholesome approach can be brought by a transformation of the existing delivery by a one window portal access for migrant e-governance services delivery. The one window shall have all labour migrant related access from policy and guideline documentations, smart applications related to job search, on-line registration and grievance handling, record keeping and tracking, and features that can be used for third party service benefits.

Understanding the Requirement of the Migrant Users for a transformative system

The UK Strategy [14] emphasized that IT delivery services must be built around citizen or business centric. This would bring about efficiency and better customer experience and at the same time reducing duplication and paper works. Likewise, opinions in the form of need analysis for the governmental service delivery of the labour migrant was taken up in this paper. Studies have been undertaken regarding the difficulties faced by the labour migrants during job placement and in times when they face problems in jobs mentioned above as gaps. On the basis of this study the requirement analysis was done by the researchers to collect their opinion

for a requirement of e-governance transformation. Transformation requirement was interrogated to migrants who were on the process of applying for foreign jobs in Kathmandu and two cities outside the capital. Results of 384 respondents' (male 85.2% and females 14.8%) clean data were analyzed in SPSS 20 for the following categories (components grouped from exploratory factor analysis) of e-governance service delivery.

- Requirement for Governmental policy, additional procedures and transparency in role and responsibilities (Altogether 21 questions in 5 Likert scale)
- Requirement for Governmental Information System (Altogether 9 questions in 5 Likert scale)
- Requirement for Labour Migrant User Interactions (Altogether 14 questions in 5 Likert scale)
- Requirement for third party contacts and willingness to share data (Altogether 22 questions in 5 Likert scale)

Table 1-Labour Migrant's Requirement Analysis

Component	"Strongly Disagree" and "Disagree"	"Undecided"	"Agree" and "Strongly Agree"
GovPolicy	0.5%	12.2%	87.2%
GovInfoSystem	1.6%	14%	78.6
GovUserInteract	1%	10.4%	88.5%
GovOpenData	1.8%	19.5%	78.6%

The above table shows that the respondents clearly agree to added procedures, transparent information system, willingness to interact and willingness to share their data for their own benefits. Thus, it can be assumed that the random sampling of participants demand a transformation of the existing system.

Challenges foreseen for Nepalese Labour Migrant E-governance transformation

Bureaucratic decision

The governmental processes for the labour migration is outlined in the Foreign Employment Act [15]. These procedures do not highlight a holistic approach. Decentralized informative system mentioned in Policy 2068 [16] still is not materialized fully. There is avoidance of automation which results to costly and time taking labour permit from concerned governmental departments [4]. E-governance is expected to bring transparency and efficiency. The decision from top level of this industry

will be hesitant until it is strategically planned and falls under the outstanding project of the government.

ICT Delivery

Government of Nepal has taken big steps in developing the internet infrastructure to urban as well as the rural areas. Tourism has played an important role to assist in the internet access to trekking areas which are usually remote. The cable television facility is asked to be replaced by digital delivery. This has brought about the fast laying of fibre cables to the home. Telecommunication plays a bigger role in internet access with 3G and 4G services. The falling rate of the cross boarder connectivity has made the usability affordable. Cheaper smart phone availability in the country has brought about the popularity of social networking and innovative applications. It is believed that ICT will not hinder the delivery of e-governance services.

Funding

Since, this involves a large contribution to the GDP of the country, it must fall under a prominent project and hence the allocation of the budget can be obtained easily from governmental budgeting or be assisted by leading global organizations from poverty alleviation programs funded.

Role and responsibility

The most important goal for transformation is the attitude of the Nepalese governmental bodies. Sustainability goals must be incorporated in the strategic design of the transformative system. It shall also take care of the long term role and responsibility right up to the operation and maintenance of the system. Dashboard and visualization must be used by the administrative staffs in decision making [13]. Likewise, the project of a transformative e-governance must be seriously taken by the leading ministry and interlinking departments. Limited resource availability excuses cannot bring about the responsibility in the administration. Procedures must be outlined with the role and responsibility of the departments. Feedback mechanism, monitoring and auditing of the procedures must be mandatory with corrective powers to execute. Acceptance of change must be well prepared during the procedural transformation.

Ownership

There is always technology behind the system. Latest technology based hardware, software, data storage responsibility and environment to run the technology must be strategically planned whether it is to be installed locally or in cloud environment. Ownership of operation and maintenance and perpetual addition of features must be incorporated in the project from the very beginning. Sustainability is dependent on the ownership strategy.

Technology and Security

The wholesome solution of e-governance can be introduced with leapfrog towards the adaptation of latest technology like big data and advanced analytics hosted locally or in cloud and delivered over one window web portal. The technology know-how cannot be built in few months-times. It is suggestible that latest technology be impacted by means of training initially so that the context is well understood. Partnership programs with experienced leading companies can be built. Security from being breached must be taken care by bringing in enterprise solution with security controlling tools.

Knowledge and Expert Handling

Local knowledge can be built with constant training to the local people and staffs. The trained manpower must be withheld with attractive job incentive and opportunity to explore innovation. Data scientist becomes the key player in the sustainability of the system. If data scientist quit jobs after being well adapted, the department who is fully responsible for running the system, must take full responsibility to assure the continuity and hence sustainability. Newer requirements will pop up more frequently than expected. The data scientist team must be well recruited to know and inject the newer sources of data values. Analytics are outcome of the system and must be well interpreted for quick decision makings.

User willingness to use

Trust in the system lies in what values are produced to the users. The users being governmental members or even citizens must utilize the values from the system. Trust is also dependent upon the latest updates, clean and reliable data and usefulness of data. The availability of the system must be very high. Trust and frequency of use depends largely on the ease of use. If citizen do not understand how to use it becomes a challenge in the sustainability of the system. Usage can be increased by applying technology in smart phones by introducing innovative local suitable applications. Trust of data is also related to personal information being watched. This could be protected and used only for governmental usage. Third party sharing can be provisioned only for users who permit to do so.

To increase the usability, web-based feedback mechanism from the users, must be part of the monitoring and operation of the system. Newer requirement can attract the citizens from using it. Hence, surveying for feedback and enhancement must be a continual process for sustainability of the e-governance. Counters for clicks must be available to attract the usage more. Such governmental sites must be delivered as far as possible free of ICT service especially to the citizens.

Collaboration and willing to share

Sources of data must be started small. The data ingestion must be planned from the beginning of the project. Willingness to collaborate timely between departments of governmental sectors must be agreed from the very beginning of project design. Sharing of corrective and clean data must be pictured well. Data policies must be floated to take care of security, intellectual property and ownership, privacy and liability. Entering a new era of sharing data the concerned data can be integrated into the governmental open data platform. Researchers will use this information for developing innovative applications and usage. Third party business houses can well utilize the open data information for enhancing their business. This open data is sometimes discussed about as the twenty-first-century asset [17] for also the small and medium-sized enterprises. The willingness to share data from various governmental sectors enriches the collaborative sharing of data.

Conclusion and Recommendation

Nepal is transforming governmental systems into digital systems by means of web delivery, M2M delivery and smart phone applications. Some of the existing governmental service delivery practices are for examination results that are released in short time, public complain handling with tracking mechanism, governmental statistics single portal information access, web based survey mechanism, postal delivery and tracking, voting result and individual taxations. The government of Nepal has encouraged the growth of ICT index by incorporating some ICT infrastructure projects along with encouraging the CSP (communication service providers). Broadband backbone and last mile access projects are prioritized along with the hype of mobile penetration with speed focused data services. However, the Labour Migrant industry lies way behind the efficient service delivery. On the basis of the labour migrant requirement analysis this paper has suggested that a labour migrant e-governance has to be transformed with a holistic approach. The holistic approach can be leapfrogged with the adoption of smart technology like big data as learnt from the success stories of many transformation of e-governance globally. In the context of Nepal, the prominent challenges that can be faced are discussed here. It is further recommended to take up the qualitative study from government side to explore the challenges for the transformation of the existing labour migrant e-governance delivery.

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Application of Training for Employees Working in Rural Zone

(Study on Banking Business in Nepal)

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Abstract

Human resources are the back bone of the business organization irrespective to the areas rural or urban. The study tries to explore to what extent employees working in rural areas are facilitated with training. The method adopted in the research is qualitative. Existing researches were reviewed to find the gap. The source of information is the people worked in the rural area in banking sectors. Ten employees and existing employees were contacted for the interviews. Their responses were rigorously analyzed.

Keywords On the job training, Off the job training, Training strategy, Training evaluation, Training need analysis.

Introduction

Training is defined as a process of learning and the path of getting something new knowledge which involves the use of acquired knowledge directing at better performance of the employees, while development involves not only the related process of developing but also helps the employees in building up their personalities, at the same time as, improving their progress towards the actualization of their full abilities and capabilities or skill. It is the training and development programs that bring about great, wonderful or tremendous change in terms of *knowledge, job skills, attitudes and behavior* of the employees.

The organization always needs to have trained, skilled and experienced people in order that the total performance may be improved, the performance can be accomplished and the objectives of an organization can be achieved. So, the thorough, sound or complete banking as well as other business organizations move along the training and development programs for their employees.

So, training and development activities are the significant activities in banking business organization in Nepal because of the high costs associated with employee turnover. And the major objective of each and every Nepalese banking business organization is to improve employee's performance which can never be possible without the effectiveness and efficiency of employees.

Therefore, the human resource management system came into effect as a management reform to address and redress the training programs, to develop employee's efficiencies for better performance.

In banking business, HR Managers more concentrate their mind on the training program for the growth of employee's efficiency so that they can easily be faced the changing technological and others environmental factors to cope.

After getting these programs, the employees are not only well familiar, acquainted or aware with what is expected of them but also how they want to increase, improve or enhance their skills and competence level. It's a great path or opportunity to achieve overall organizational development, effectiveness and efficiency in a desired by business organization.

The bank management appoints leaders, the managers, who influence as well as inspire their employees, so that they can make goal directed efforts to produce the desired results. The bank management motivates their employees for the accomplishment given task to achieve the organizational goals. For this they build up competencies and ethical standards. Besides that the management of the bank business direct the employees towards defined and targeted objectives of the bank while providing effective training and development programs to their employees.

They stimulate and motivate them, so that the tasks can be carried out effectively and efficiently.

In banking or any other business organization, before the training programs being formulated and implemented, the need of training is identified. It is ensured whether training can serve the purpose. Depending on the needs of various jobs functions, different methods of training programs are conducted, such as, *on-and-off the job methods, special lectures methods, conferences and seminars*.

The major objectives and goal of on-the-job techniques for training program is to make participate the organizational employees in learning while they are at work, whereas on the other hand the major objectives of, off-the-job training program, the employees need to leave the work place so as to spend the desired time and duration in the learning process. Similarly, Special lectures methods of training program goal are to create the awareness of essential knowledge. And lastly, By way of arranging conferences methods of training activities, various discussions are held on the points of common interest, in regard to the organization and various issues, ideas are collected and experience is shared in order to deal with the problems.

With critical discussions, the participants of seminars study various aspects and the complexities of particular jobs and tasks. Thus, the sole purpose of training and development programs is to build the necessary skills of the employees and to create positive feelings among them.

It's a fact that man can do things what he believes he can. Thus, a true leader is the most influential person to build and develop self-confidence of the employees. He is a source of inspiration to his subordinates. He struggles to introduce and teach the team spirit by making his members believe that they are capable of doing challenging tasks.

This is how the employees learn many things and develop their personalities while improving organizational competence under the healthy environment of an organization.

In human resource management one thing is proved that a trained and skilled employee is far better than the one who is untrained and unskilled. He becomes competent and performs his assigned task independently.

In fact, it's funny instance but it exposes the fact, as training is all encompassing - it covers all necessary skills of the employees required in the workplace either they work in rural sectors or urban sectors while motivating them to work in a desired and capable manner.

In baking business the major benefits of training and

development programs that are provided to their employees are that, the employees who are trained, need lesser supervision than those who are not.

A trainee or learner acquires new knowledge, skills and attitudes and applies them in job situations successfully. So, the training program in banking business organization is a way to generate the confidence among the employees, so that they can easily operate the tasks without any obstacle and obstruction with all efficiency and effectiveness.

So, to manage and conduct such programs in banking organization is to save money because a company is likely to bear and consume heavy expenditure on hiring new employees.

In this way, training and development is one of the best investments of a banking business organization in Nepal and a great way to expand the span of management.

But unluckily, most of the Nepalese banking organizations do not tend to put forth much effort into implementing effective training techniques. Few banking organization who implement the training program, are using cheap substitutes and non-trained employees to help develop the new hires.

Right now in modern banking business organizations are facing great pressure to change these days - to facilitate and encourage whole-employees development and fulfillment - beyond traditional training.

Need for Training

Training needs are: globalization, need of leadership, increased value placed on intangible assets & human capital. focus on link to business strategy, customer's services & quality emphasis. new technology, high performances, model at work system, economic changes and attracting & retaining talent.

Purpose of the study

The main purpose of this study is to investigate how training is being imparted.

Literature Review

In modern, fast age and dynamic world of the banking business and its uncertainty environment, the available employees must be well capable, skilled and efficient to face the changing environment for the accomplishment of given task to achieve the future desired goal of an organization. For this, employees or human resources must be provided training program to motivate them so that the effective performance can be get as expected by organization. So, the organization should invest

certain ratio of capital in training program to make their employees efficient, competent to face uncertainties and take effective decision in a certain period of time in order to compete in competitive market [1].

Effective training program provided by the business organization is not only beneficial to employees, but also for the business firm in several ways, such as, it plays a central and important role in building and maintaining capabilities, both on individual and business organizational level that support to participate in the process of organization environmental change [2].

Furthermore, the training program provided to organizational employees improves the preservation and retaining capacity of talented workforce, which decreasing the unplanned and unexpected job rotation of the workers [3].

Thus, the business organization came to conclude that, the long-term commitment of the business firms in future towards its employees and increases the level of employee's motivation [4].

The aim of the effective training programs aimed towards the improvement of employee's performance. Training program in business firm refers to bridging the gap between the standard desired performance and the current performance.

So, training could be provided through different methods and techniques such as on the job training, off the job training, vestibule training, teaching methods etc. The training program is a group work that enables employees to participate actively on the job that creates or harvests better performance, hence improving organizational performance.

Thus, Training programs in banking or any other business firm directed towards not only to develops employees but also support an organization to make best use of employees in favor of attaining competitive advantage.

Therefore, it seems compulsory by the business firm to formulate plan for such a training programs for its employees to improve and increase their skills, abilities, efficiencies and competencies which are needed at the environment of workplace [5].

Moreover it also enable the organizational employees to arrange and transact with their customer in an effective or productive manner and easily respond and reply or answer to their complaints in timely manner [5].

Actually, training program provided to employees in business firm, improves self-efficiency and results in greater performance on job, by changing the traditional

fragile or weak practices by efficient and effective work related practices [6].

Actually, training in an organization refers to formulate the planned that direct towards the aimed that enhance the elements of individual job performance [7]. So, the training program in banking or other business firms provided to their employees, is all about to improve the capacities, skills and efficiencies of the workers that looks to be compulsory for the achievement of organizational goals. On the other hand training programs in an organization may also support the workforce to minimize their nervousness or frustration, created by the work on job [8].

Training program is very fruitful to those workers who feel themselves that, they do not have skill and ability to perform a task with the desired level of performance, often decide to leave the firm, otherwise their stay at firm will not increase productivity [9].

In order to achieve organizational goals in future, providing training program to their employees is much essential. It shapes and sharps knowledge of employees as well as organizational performance required to accomplish the goal of it.

So, it can be called as an important and an imperious instrument or device for the organization to modernize the performance of the entire workforce for organizational growth and success. It is those techniques that always beneficial for both employers and employees of an organization. If the employees of an organization are well trained, then they will become more effective and efficient as well as productive.

On the other hand, by providing the complete training program by business organization can develop and improve the quality and efficiency of the current

Thus, the training program is not only significant to the employees to increase their efficiency and productivity but also to motivate and inspire the organizational workforce by letting them know, how important their jobs are and providing them all the information they require to perform those jobs [10].

The common benefits received from employee training in an organization are: Increased productivity, Increased profitability, Developed competency, Improved quality, Better communication, Change management, Personality development, Easy to manage conflict, Developing future potential, Increased job satisfaction and morale, Increased motivation Increased capacity to adopt new technologies and methods, Increased innovation in strategies and products and Reduced employee turnover

Job performance plays an important role to accomplish the given work in a certain period of time for achievement of good goal in future. According to the several research works on creativity on worker, emphasized the fact that the satisfied employees with their job will have higher job performance, thus they retain the job but those work force who are not satisfied with their job, the worst performance perform by them and try to leave the job [11].

Similarly, various scholars stated and found that organizational employees are more likely to turnover who are they are unsatisfied and not happy with their job, are not inspired to show their good performance.

Thus, finally the human resource management came to the conclusion that employees could be only satisfied when they feel themselves skilled or capable to perform their given jobs, which can be accomplished through the superior training programs in an organization.

So, the role and requirement of training practices should be recognized by the top executives to enables to create the better working environment that finally improves the inspirational level as well as the performance of the employees in an organization.

According to Pfeffer the effective, capable and skilled that is well-trained human resources are more skillful of attaining performance objectives and gaining competitive advantage in the market [12].

Lawler suggest that, training program is measured as the steps of training is determined as the process of empowering organizational workforce to accomplish the tasks with better competence, thus management should considered the human resources to be a vital or significant element for strategic performance[13].

3.4 The relationship between Training and employees performance

According to Purcell, most of the above research studies provides the proof that there is strong, smooth and positive relation among the human resource management practices and the organizational performance [14].

Training and development program is considered as the vital program of human resource management practices as mentioned by Guest that affects positively the quality of the workforce knowledge, efficiencies, capabilities and skills which results in higher employees performance on the workplace or job[24]. Thus the relation between the training and employees performance finally contributes to the top organizational performance.

The study of the Farooq. M, and Aslam. M. K describes the positive connection among training and employee performance [15].

Thus, we can forecast from this finding that it is not possible for the business firm to increase or to achieve higher profits without best utilization of its human workforce, and it can only be done when business firm is capable to encounter its employees job related requirement in appropriate technique.

So, the only way to identify the deprived want of employees and then building their need competence level is training and development program so that they may perform efficiently for the accomplishment of organizational goals in future.

Method

The method adopted in the research is interview with key personnel of banking sectors.

Based on the views their opinions are summarized.

Findings

- The major finding from the interview of employees working in related banking business is, there is positive relationship between training and employee's performance. When training is provided to employees, the efficiency will be increased in workplace.
- Another finding from the employee's interview working in bank is, training motivates the employees to activate their task in workplace.
- The desire of training to the employees, change their mind set which direct them to do better performance.
- The training needs Identifies, performance goals and the knowledge, skills and abilities needed by a company's workforce to achieve those goals.
- One more finding from the training need identified the gap in training delivering or training providing, i.e. in banking sector training is given through teaching methods that are not applicable to increase and motivate employees' performance.
- Needs of the training in banking sector identified that, it support to speed up the employees transition to adopting the environmental change.
- The important finding from need of training in banking business is, to reduce the risk and impact on the business and ensure that your people are not only prepared for the change but fully prepared to perform in work place.
- Training support the trainee to achieve his goals and dreams in his life et all.

- Training were designed:
 - a) Seminar and workshop.
 - b) Lectures and Demonstrations
 - c) Simulations.
 - d) On-the-job training (OJT)
 - e) Audiovisual Enhancements to Training
 - f) Off the job training.
 - g) Lecture and discussion
 - h) Video and film
 - i) Laboratory demonstration
 - j) Job rotation

Training in banking sector is very applicable not only to urban area but to the rural branches also it is useful for the better performance to achieve future goal.

Various designs to provide the training for the banking employees are available but the best among them is finding from interviews or questionnaire is *Audiovisual Enhancements to Training*, On-the-job training (OJT) and Job rotation.

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Employees Motivation, Satisfaction and Productivity In Hotel Radisson.

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Abstract

The study was conducted entitled as "Employees Motivation, Satisfaction and Productivity in Hotel Radisson". The major objectives of the study are to investigate the factors influencing employees for motivation, to analyze the effect of trade union in the effectiveness of work. Also, the study mainly focuses on the motivation and satisfaction with the level of productivity. Here, the research design in the study is Descriptive Research Design which helps to identify the determining factors for the motivation and satisfaction like pay, promotion, job security and working environment. This study is taken to the employees of Hotel Radisson thorough quota sampling and the interview schedule where taken. The sample area is Lazimpat, Kathmandu. The sampling frame is list of all employees of Radisson. The sample size is 50 for the study. Also, Casual Comparative Research Design is used. The study was done with the employee of the Radisson Hotel Kathmandu on their satisfaction, motivation and productivity. The hotel has been running since last eighteen years and most of the employees in the hotel are older working for more than ten years. Different variables were analyzed and the conclusions were made to depict the employee's motivation, satisfaction and productivity in Hotel Radisson.

Keywords Motivation, Satisfaction and Productivity

Introduction

Employee satisfaction is related with customer satisfaction and employee performance in hotel. Hotel industry is belonging to service industry. In today's world, service industries are the source of economic leadership, hotel industry get into a new age. Therefore, developing human resources and using technology to operate hotel businesses become more important. "To many travelers, a hotel room is a hotel room is a hotel room, and what separates one hotel from another is the quality of service. It is what people remember." Service is a hotel's most important product and good service does not just happen. It is a team effort, requiring constant attention, training, and supervision. Providing good service to reach customer satisfaction is the essential task in this field. To provide good service, we have to reach employee satisfaction first. Employee is the first line to receive customer, their satisfaction will affect service quality.

Research Problem

This research provides insight to employees' motivation, job satisfaction with that of productivity. The study of

employee satisfaction in hotel industry is a broad term. When trying to motivate workers, managers often forget that the desire to do the job must come from within the employee. The manager can set the stage for motivation to happen, but cannot force motivation to occur. What managers can do is to take employee desires into account and to create an environment where employee satisfies with it. In this way, employee can work happy then deliver good service for customers. Doing survey of employee satisfaction can get to know their demand in hotel industry. As the employees start delivering his performance to the organization the sad part is that he or she is leaving the hotel and moving to another organization. The Research Gap is this research is mainly based on the study of employees working in a specific hotel. Rest of the research are being carried out in other hotel and also some of the research were conducted to analyze the comparative study. But there was sample survey done and the research is conducted in the specific organization.

Research Questions

➤ Are there other factors motivating employees to gain productivity?

- To what extent are employees satisfied to achieve productivity?
- What are the suggestions for effective worker participation for productivity?

Purpose of the study

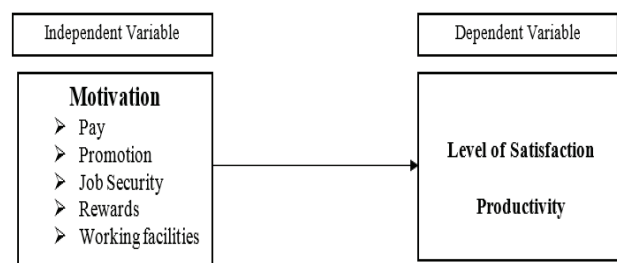
- To investigate the factors influencing employees for their motivation.
- To analyze the link between employees motivation and productivity.
- To measure the link between employees motivation and satisfaction.

Review of Literature

According to the survey, some of the most important factors in their work were opportunities to develop, learn, and take part in the decision-making process [1]. Overall, hotel employees reported that the three things they most wanted from their employer were:

(1) good wages, (2) job security, and (3) opportunities for advancement and development. Good working conditions, ranked number four by the respondents, is another high-potential motivator. [2]. The managers try to make the store a pleasant environment because if employees are happy with their jobs, customers will sense that [3].

Theoretical Framework



Research Methodology

Research Design

The research design in the study is Descriptive Research Design which helps to identify the factors for employee's motivation, satisfaction and productivity. Also, casual comparative research design is used as the hypothesis is formulated.

Population and Sample

This study is taken to the employees of Hotel Radisson where interview schedule is given. The sampling population is all the employees of Hotel Radisson. Target

population is all middle level and top level managers of Hotel Radisson. The sampling frame is list of all employees. The sample size is 50 for the study.

The Sampling Procedure

The data shall be generated by both primary and secondary data where a questionnaire has been generated to ask respondents.

➤ Sampling Area

The sample area is Lazimpat, Kathmandu

➤ Sample Frame

All the list of employees of Hotel Radisson.

➤ Unit of Analysis

The study is to be conducted on the individualization of data through interview schedule to respondents

➤ Data Collection Strategy

The data for the study is collected from July 10, 2017 and July 17, 2017. Participants includes from different level. The primary data has been collected by developing a questionnaire and secondary data through online websites, journals article and other relevant sources.

➤ Analysis of Data

All the unusable surveys were removed and all the variables were coded. The survey contains several set of questions which consist of multiple choices. Likert Scale is to be used in the study. These questions are scaled in five different Likert Scale strongly agree, agree, neutral, disagree and strongly disagree.

Data Presentation, Interpretation and Analysis

This chapter presents the data presentation its interpretation and discussion over findings. The data are based on research objectives and employees motivation, satisfaction and productivity in Hotel Radisson.

Respondent Profile

Responses by Gender

Table 1- Gender based Respondents

Particulars	Percentage
Male	90%
Female	10%
Total	100%

In table 1, it represents that 90 percent of the respondents are male and 10 percent are the female respondents.

Responses by Education Level

Table 2- Education level based respondents.

Particulars	Percentage
Intermediate	50%
Bachelor's degree	30%
Master's Degree	10%
Others	10%

In table 2, it shows 50 percent of the respondents are from intermediate level, 30% are from bachelor degree, 10% are master level and 10% are have other qualification level that is below tenth standard.

Responses by Marriage

Table 3-Marriage based Responses

Particulars	Percentage
Married	100%
Unmarried	0%

In table 3, the respondents who are married is 100 percent and there is no respondent who are unmarried.

Responses by Monthly Income

Table 4- Monthly Income based Responses

Particulars	Percentage
20000-25000	10%
25000-30000	30%
30000 and above	60%

In table 4, the monthly income having 20000-25000 is 10 percent, 25000-30000 is 30 percent and 30000 and above is 6 percent.

Responses by Work Experience

Table 5-Work based Experience

Particulars	Percentage
1-5 years	20%
5 to 10 years	20%
10-15 years	40%
15 years and above	20%

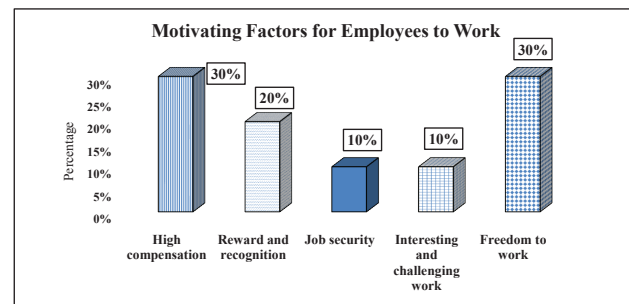
In table 5, 20 percent of respondent have work from 1 to 5 years, 20 percent from 5-10 years, 40 percent have 10-15 years of experience and 20 percent have 15 years and above.

Table 6-Strong Trade Union makes the Workers Participation more Effective.

Particulars	Percentage
Yes	70%
No	30%

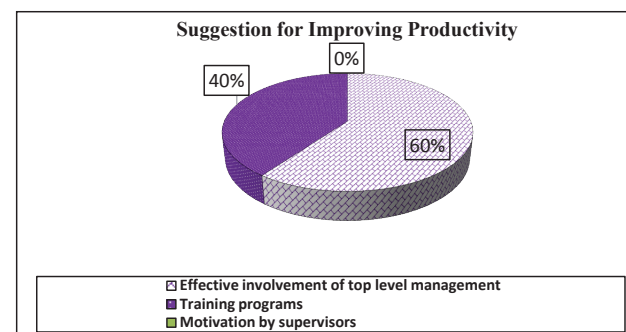
In table 6, the respondent who believes that he strong trade union makes the workers participation more effective is 70 percent and 30 percent of respondent believe it is not productive.

Figure 1- Motivating Factors for Employees to work



In figure 1, it shows High compensation and Freedom to work motivated the employees to work, 20 percent of the respondent says reward and recognition and 10 percent of people says job security and interesting works.

Figure 2- Suggestion for Improving Productivity



In figure 2, it depicts 60 percent of the respondents says the productivity can be gained by effective involvement of top level management and 40 percent respondents thinks by increasing training programs.

Data Interpretation

Table 7- Correlation between Employees' Motivation and Employees' Satisfaction

Correlations			
		Motivation	Satisfaction
Motivation	Pearson Correlation	1	.591**
	Sig. (2-tailed)		.000
	N	50	50
Satisfaction	Pearson Correlation	.591**	1
	Sig. (2-tailed)	.000	
	N	50	50
**. Correlation is significant at the 0.01 level (2-tailed).			

In table 7, as the correlation is 0.591 which is nearer to one so the motivation of employees leads to satisfaction of employees.

Table 8-Correlation between Employees' Motivation and Employees' Productivity.

Correlations			
		Motivation	Productivity
Motivation	Pearson Correlation	1	.854**
	Sig. (2-tailed)		.000
	N	50	50
Productivity	Pearson Correlation	.854**	1
	Sig. (2-tailed)	.000	
	N	50	50
**. Correlation is significant at the 0.01 level (2-tailed).			

In table 8, as the correlation is 0.84 which is very closer to one so the motivation of employees leads to higher level of productivity.

Table 9- t-test for significant difference between male and female respondents with the employees' motivation

Gender		N	Mean	Std. Deviation	t-value	p - value
Motivation	Male	45	2.6444	.46979	3.039	0.004
	Female	5	2.0000	0.00000		

In figure 9, it is inferred that p value of employees motivation is 0.004 in which alternative is accepted. Hence, it is concluded that there is significant difference

between male and female respondents with the employees' motivation.

Major Findings

- It represents that 90 percent of the respondents are male and 10 percent are the female respondents.
- It shows 50 percent of the respondents are from intermediate level, 30% are from bachelor degree, 10% are master level and 10% are have other qualification level that is below tenth standard.
- Similarly, the respondents who are married is 100 percent and there is no respondent who are unmarried.
- Here, the monthly income having 20000-25000 is 10 percent, 25000-30000 is 30 percent and 30000 and above is 6 percent.
- As here, 20 percent of respondent have work from 1 to 5 years, 20 percent from 5-10 years, 40 percent have 10-15 years of experience and 20 percent have 15 years and above.
- The respondent who believe that he strong trade union makes the workers participation more effective is 70 percent and 30 percent of respondent believe it is not productive.
- It shows High compensation and Freedom to work motivated the employees to work, 20 percent of the respondent says reward and recognition and 10 percent of people says job security and interesting works.
- It depicts 60 percent of the respondents says the productivity can be gained by effective involvement of top level management and 40 percent respondents thinks by increasing training programs.
- As the correlation is 0.591 which is nearer to one so the motivation of employees leads to satisfaction of employees.
- As the correlation is 0.84 which is very closer to one so the motivation of employees leads to higher level of productivity.
- It is inferred that p value of employees motivation is 0.004 in which alternative is accepted. Hence, it is concluded that there is significant difference between male and female respondents with the employees' motivation.

Conclusion

Employee motivation, satisfaction and productivity is very important in the human resource management. Employees are motivated for the various reasons that are beneficial to the organization. The reasons include retention of the well-performing employees, increasing productivity or output of the organization, improve teamwork and the morale of employees. Other reasons are reducing the operation costs, decreasing employee's turnover and reducing absenteeism.

Thus the research questions were explored and it was found that people working in Radisson are mostly motivated by high compensation and they tend to desire the freedom to work. Several indicators were analyzed and overall it is found that motivated is positively related with the level of employee's satisfaction i.e. when employees are motivated they are more satisfied with their job. Also the study shows that employees' motivation leads to productivity as the employees who are more motivated depict efficiency and effectiveness in their work. This research shall provide an assistance to upcoming researchers and also give some general ideas. Beside it may possess some limitations like this study is based on Hotel Radisson only so there may not be generalizability.

Recommendation

Some of the recommendations are as follows:

➤ As per the survey, more emphasis is to be given in compensating employees and they should not be in any pressure to the employees by the top level managers.

➤ Effective training programs also enhance the enthusiasm of the employees so they should be well trained by several programs.

➤ Employees' motivation is the core issue so several indicators like job security, work environment, pay and promotion are to be managed to achieve the employees' satisfaction and productivity.

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Multi-Generational Differences: Bridging Learning Gap in the Classrooms

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Abstract

Today's undergraduates are increasingly more diverse than ever before. They are in many cases more technologically proficient than their faculty. The discrepancy in the level of technological proficiency has created a major challenge in the learning process in higher education. The circumstances are caused by differences in learning preferences among the multi-generational in today's college and university students. The Net Generation students exhibit distinct learning preferences; while the Baby Boomers and Gen X lecturers are still implementing boring unmotivated, disinterested, and disengaged teaching styles. Despite their being digitally literate, the Net Generations are still lacking in the academic literacy skills that are the foundation of further success in school and in adult life. Therefore, this paper focuses on multi-generational differences in bridging learning gap in the classrooms.

Keywords Digital Age, Multi-Generational in Higher Education, Learning Preference

Introduction

Today's undergraduates are increasingly more diverse than ever before. They are in many cases more technologically proficient than their faculty [1]. The discrepancy in the level of technological proficiency has created a major challenge in the learning process in higher education. For example, many college students perceive their lecturers' teaching style is boring [2, 3] unmotivated, disinterested, and disengaged [4] because the use of technology is uninspiring and they claim themselves having much more access to information than the professors do [5,6]. On the contrary, lecturers observe that students behave inappropriate because they are doing something else during lectures, such as sending and receiving e-mails or text messages, surfing the Web, or doing homework [4,7,8,9].

The circumstances are caused by the multi-generational differences in today's college and university students. There are four generations in higher education, namely Baby Boomers (born in 1946-1965), Gen X (born in 1966-1976), Millennials (born in 1977-1994), and Gen Z (born in 1995 onwards) [11]. Currently, undergraduate students belong to the Millennials and Generation Z, well-known as the Net Generations. The Millennial students were born into a fully-digital world, are the most technologically-

savvy generational group, and have grown up using the internet for school and leisure [12]; but Gen Z students, the newest net generation, are more Internet savvy and expert than their Gen Y forerunners [11].

The Net Generation students exhibit distinct learning preferences. For example, taking notes in class is not their ways because they want to type notes, communications, essays, and term papers on their PC/Mac or iPhone [12]. Moreover, their learning preferences tend toward teamwork [13, 14] group projects [15, 16] experiential activities [13, 17] and the use of technology [13].

On the other hand, most of the lecturers and professors come from Baby Boomer generation. They were born into an analogue, print-dominated age, and the internet was in its infancy [18]. Therefore, they are not satisfied with fully online courses based on online communication [17]. Most of them favor teacher-centered methods of instruction with organized lecture [19]. They prefer their students to arrive on time, be prepared for class, take note [19], therefore, find it quite difficult working with Millennial students [20].

In addition, a small portion of lecturers belong to Generation X who are the first generation of computer literate group as most have used technology since grade

school [21] and are comfortable with technology [19]. This generation has experienced the rapid transition from print to electronic information and has adapted to and embraced the online world, while at the same time sharing the values of the Baby Boomers [18]. They prefer students to read the assignment prior to class and doing lecture over group work and case studies for learning new material [22].

The gap between the learning preferences has made the Net Generation students who have been so influenced by technology feel disconnected from Baby Boomer and Gen X faculty who are less proficient with technology and the Internet [23]. However, being digitally literate and information savvy are not enough to be considered information literate because evidence claims that the Net Generations are still lacking in the academic literacy skills that are the foundation of further success in school and in adult life [24].

To stimulate the learning process for the generation that grew up with the Internet is a major challenge for the older generation faculty. Nevertheless, it is the responsibility of today's educators to build a bridge between the knowledge students already have and the content that they need to learn to be successful inside and outside of university [25]. Therefore, this paper focuses on multi-generational differences in bridging learning gap in the classrooms.

Literature Review

Digital age has reshaped students' learning styles [26] and has transformed organizations, including higher education institutions, in doing every aspect of a business. However, digital transformation is not only about technology, it is about bringing together the power of technology with a culture that embraces the change that it can lead for the organization. This section will review learning preferences of the Net Generations and challenges faced by the Net Generations.

Learning Preferences of the Net Generations

The Net Generation students prefer experiential learning based on "seeking, sieving, and synthesizing" [27, 26, 28, 29, 30, 14] "trial-and-error" learning, and problem-based learning over "passive story-telling" [14] with technological elements. They have become accustomed to interactivity and do not respond well to the lecture [17, 7]. They desire their lecturers to be supportive, open and positive [31].

They favor to read from a computer screen than from a printed book or paper [32]. If the text is less than five pages, they prefer to read it on their laptops [33]. If it is more than ten pages, they prefer to have it printed [34, 33, 35]. Consequently, they prefer to get an article off the

Web, rather than finding it on a shelf in the library [19].

They prefer to multitask and have difficulty focusing on one thing [36]. In addition, they demand immediate feedback on their work, as they are accustomed to information access 24/7 [36, 19, 37].

Because this generation has been raised doing things in teams, they prefer group projects, and may even have difficulty with individualized thinking [15, 16, 14]. They like teamwork, but they prefer to collaborate and work in teams with their generational peers [38, 39]. Therefore, the idea of going to a library to sit alone and read a book quietly means disconnected to the reality of their pressured lives because they want to work in groups [14].

Net Generation students tend to respond enthusiastically if given more responsibility, as they believe their skills and talents are recognized [31]. They are likely to perform best when given challenging tasks [32] because they are achievement-oriented and heavily pressured to excel academically by their Baby Boomer parents [40].

Their need to be socially connected means that they want a face-to-face interaction. This generation of students prefers technological and collaborative experiences that exhibit clear goals, enhance motivation, and involve authentic learning activities. They gravitate towards group activity and appreciate the social aspects of learning [41, 12, 36, 13].

With these learning preferences, learning environments in the higher education institution must allow students "to gain knowledge, skills and experience" (Shaw & Fairhurst, 2008) and lecturers become learning facilitators, rather than intellectual authorities [14]. Many lecturers and professors have been changing from "teacher-centered" to "learner-centered" teaching methods for more than a decade [42]. But the shift is influenced on the availability of the infrastructures and facilities to access technology in the institutions,

Challenges faced by the Net Generations

Considering the characteristics of the Net generations, there is some concern about the effects on their learning process [12]. Routine multitasking behavior may have shortened their attention span and caused them to lack critical thinking skills and introspection [43].

Moreover, information-seeking activities which take place anywhere at any time using search engines, peers or chat rooms rather than by seeking advice from teachers or librarians, have resulted into a growing concern of the effectiveness of searching and the ability of the Net Generation users to be able to recognize and filter out misleading or poor-quality information [44, 45]. Likewise,

their understanding of the legal and ethical considerations of copyright and intellectual property as well as the critical thinking skills that underpin information literacy should be observed [46].

This circumstance is due to the immature problem-solving skills, limited vocabulary and subject knowledge, and incomplete conceptual models of the internet, which tend to develop with age and experience [18]. They are very much like other young adults in their need for guidance and assistance to define goals, and to plan the exact paths and resources needed to achieve these goals [47].

Furthermore, lecturers detect that quite a lot of Net Generation students prefer not to read, seemingly cannot sit and listen and rely too heavily on a cut-and-paste approach to assignments [17]. They also lack communication skills and do not respond well to lecture [4, 45, 37].

Conclusion and Recommendations

Universities need to be competitive and offer high quality facilities to attract students to their institutions. When students choose which universities to apply to, their decision is usually influenced by what the university can offer in quality of education and facilities, as well as reputation and track-record [48].

Students learn more when the teaching method is consistent with their learning styles [19], learn best when they interact with the course material, and therefore, need the faculty member's guidance and clarification, particularly with difficult subject matter [49].

The dramatic contrast between the Net Generations and previous generations of lecturer has forced the higher education to focus on the importance of learned-centered techniques blended with the latest technology. If Baby Boomer and Gen X lecturers do not want to change and adopt these techniques, the students may not come to class because they need to feel connected to the lecturer and to each other, as well as face-to-face and online. If educators continue to teach in the same manner, then little value will be added to the classroom curriculum [12].

To bridge the learning gap in the classroom, many faculty and universities are now experimenting with courses that utilize both fully online and face-to-face instruction. Within the context of blended courses, this definition can be related to the combination of web and face-to-face that is necessary to produce a course utilizing the best of both instructional worlds, "finding a harmonious balance between online access to knowledge and face-to-face human interaction" [50] or the "thoughtful integration of classroom face-to-face learning experiences with online experiences" [51].

Faculty, students, and administrators are realizing a number of advantages in these blended courses and many see them as offering the best of both instructional worlds. For example, by putting course materials on the Web, students can access the material at any time of day and review it as needed, which provides them with increased flexibility [52, 53, 54]. By reducing time and space commitment, access is easier and thus many students have come to prefer these courses over the face-to-face counterparts.

In addition, there is an increase in interaction over what students and faculty typically perceive in face-to-face courses [55, 56, 57]. Web resources, and course management systems offer easier access to both students and faculty through discussion groups and e-mail, and they also allow access to material and experts who might not be available otherwise. The end result is a learning environment where students can be actively engaged, potentially learning more than in a traditional on-campus classroom.

Moreover, blended courses have the potential to facilitate a community of inquiry. By forcing students to be independent and have control over their learning, blended formats can help foster critical thinking and facilitate collaborative learning [51]. To maximize the benefit of individualizing instruction through blending, Schwartzman and Tuttle [58] provided redundancy to students in the form of audio, video, and textual versions of modules and increased the variety of ways students could engage the material. Without the bounds of in-class time, students can spend as much time as necessary to master the material.

An increase in student engagement in blended courses also occurs as students and faculty experience a level of comfort facilitated by student-to-student and faculty-to-student interactions [58]. When students become comfortable with the instructor and their peers, they become more involved with the course material.

Courses that replace a portion of face-to-face instruction with Web components allow for the flexibility of utilizing Web resources to reduce the on-campus time, yet allow face-to-face interaction as well. Just how many of the face-to-face components are replaced with online instruction varies widely by universities and instructors. This mix is influenced by many factors including the course instructional goals, student characteristics, instructor experience and teaching style, discipline, developmental level, and online resources [50]. There is no defined standard as to how much or what part of courses goes online and it varies widely [51]. **Aycock, Garnham, & Kaleta**, however, many replace 25-50% of in-class time with Web components [56, 55, 53].

To build upon their Information Age mindset, it seems that the Net Generation students need some guidance and assistance to develop further knowledge of issues like privacy and intellectual property that are increasingly important in our Information Society [10, 46].

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Neuromanagement: Development Pattern and Research Paradigm

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Abstract

Neuromanagement, a new interdisciplinary presented by Chinese scholar in 2006, has attracted the attentions of global researchers. Neuromanagement is now stimulating the development of modern management science in a broad and profound way. In this thesis, we analyzed the general development situation of neuromanagement, demonstrated the development paradigm and major related problems of neuromanagement from the ecological mechanism of disciplinary development, and presented a sustainable eco-system based on the knowledge systems of neuromanagement to accelerate the development of the above subjects. We divided research targets of management science into four layers, including discovering new phenomena and characters, coming up with new theory and methodology. Besides, we provided major research approaches of neuromanagement according to different research target layers that have been mentioned above, and concluded the research paradigm of neuromanagement from the viewpoint of the entire discipline.

Keywords: Neuromanagement, Disciplinary Development, Scientific Problems, Ecology Mechanism, Research Method, Research Paradigm

Introduction

The traditional producing methods and working conditions have been transformed thoroughly by the breakthrough of modern intellectual technology and the popularization of global website. Brainwork will become the resource of innovation and the main method of labor among human beings. The scientific theory and method of managing brainwork has already become a new problem that is worthy to be researched thoroughly. The development of neural science, brain science and the technology of observing experiments have provided novel theoretical basis and technical methods of analyzing and discovering people's psychological mechanisms via

nerve movement characteristics. In 2002, Smith and his cooperators discovered some characteristics of brain neuron movements of decision-making via positron emission tomography (PET) and published the first thesis discussing issues related with both management science and neuroscience in *Management Science* [1]. A Chinese researcher, Qingguo Ma, presented the concept of Neuromanagement in 2006, which signaled the emergence of such a novel scientific discipline [2][3]. Famous journals such as *MIS Quarterly*, *Information Systems Research*, *Journal of Marketing Research* and even *Science* have published research theses that are closely correlated with neural science [4][5][6][7]. In 2006, the journal of *Frontiers* ordered neuromanagement

as a “frontier theme of research”, which made neural management an important leading edge of global academic research.

Professor Qingguo Ma stated that neuromanagement is a modern interdisciplinary subject system discovering the inner mechanisms of management, refining new rules of management and presenting new management theories through procedures and theories in the aspect of neuroscience. The development of neuromanagement has been providing new theoretical bases and technical methods for designing brain-like artificial intelligence faced on advanced functions of human’s brains. At the same time, the prosperousness of brain science and neuroscience may exert its influence on modern psychology, pedagogy, linguistics, social science, economics, law and military science. Several interdisciplinary subjects can be generated between neuroscience and subjects that mentioned above [8][9][10][11][12][13]. The management problems in interdisciplinary subjects that are mentioned above are considered as objects in the study of neuromanagement. In conclusion, neuromanagement has a significant effect over the development of modern management science with widespread connections with other correlated subjects. In this situation, the thorough analysis of the characteristics of neuromanagement and the construction of the research paradigm shall become fundamental problems that shall be discussed and clarified urgently. In this thesis, we demonstrate the backgrounds, developing models and research paradigms of neuromanagement so as to offer references and guidelines for the development of neuromanagement and other correlated subjects.

The Development of Neuromanagement

The Current Situation of Neuromanagement

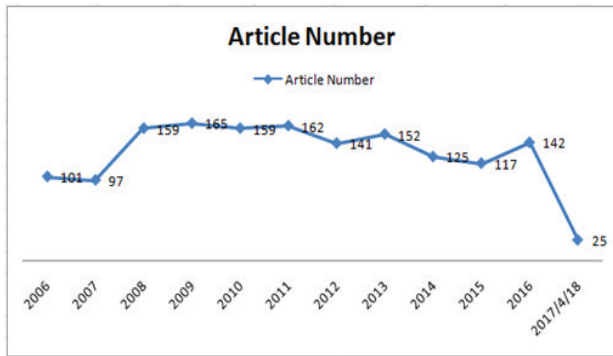
Habitually, a discipline contains three main components including research objects, basic theories and research methods. The fundamental research objects are issues and their inner mechanisms of management science that are related with people’s physical behavior and mental movements. The basic theories of neuromanagement can be traced back to brain science, neural science, management science, psychology, information technology and new-formed theories during the period of neuromanagement research. As is an interdisciplinary subject, the research methods of neuromanagement shall be based on regular methods that are used in neural science and relative methods that are applied in natural science, engineering and social science are also required.

The background of neuromanagement has been analyzed and illustrated systematically by researchers including professor Qingguo Ma [2][3][14][15]. In 1891, Canal established Neuron Doctrine. In 1906, Sherrington presented the concept of synapse. In 1926,

Adrian discovered that the neurons are discharging and delivering information via the frequency of their electric movements. All the discoveries mentioned above boosted the development of neuroscience and inspired people to study the function of the neurons inside the brain instead of the anatomical structures of the brain. In 1940s, the results of neuroscience research began to be equipped in the field of computational mathematics and its related disciplines. In 1943, McCulloch and Pitts presented the M-P Nerve Network Model. In 1949, Hebb presented the rules of study of nerve network. In 1957, Rosenblatt presented the model of Perceptron, which induced the development of interdisciplinary subjects between information technology and neuroscience. Molecular biology researchers, including the British researcher Crick who had discovered the structure of DNA molecules, turned into the aspect of neuroscience and formed a new branch of discipline as molecular neuroscience. The development of neuroscience is mainly focused on fundamental neuroscience and basic physical functions of people’s brain.

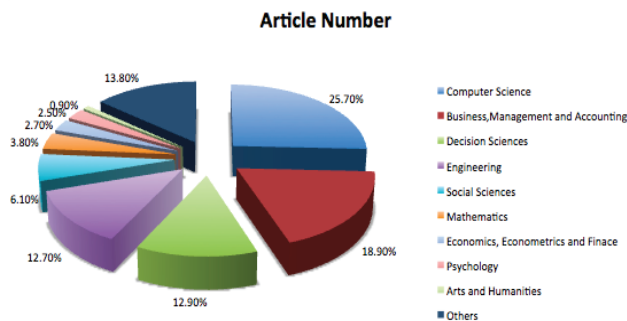
In 1970s, the combination of neuroscience, brain science and psychology offered people a breakthrough among the research of brain’s advanced functions such as learning, memory and language comprehension. The present of fMRI (functional Magnetic Resonance Imaging) in 1990s provides people a new technical approach of observing the movements of brain directly without any physical trauma. Those new technical discoveries not only constructed bases of brain-like design projects that are related with computational neuroscience and engineering subjects such as artificial intelligence science, but also generated more interdisciplinary subjects with social science such as economics and marketing. In 1992, Cacioppo and Berntson published the thesis *Social psychological contributions to the decade of the brain: Doctrine of multilevel analysis* in the journal of *American Psychologist* and founded the discipline of Social Neuroscience [16]. In 1997, Carnegie Mellon University held the first conference named Neurobehavioral Economics. In 2000, Princeton University used the terminology of Neural Economics in its workshop on Neural Economics for the first time [3]. In 2002, Vernon Smith, who had won the Nobel Prize in Economics, mentioned the new tendency of using cerebral imaging technology to discover some neural economical issues. An enormous quantity of problems of decision making are involved in the research of neural economics, which stimulates the development of relevant disciplines such as Decision Neuroscience and Neuromarketing that are closely correlated with management science [2]. In 2006, professor Qingguo Ma analyzed the development tendency of Neural Economics, presented the concept of Neuromanagement and demonstrated its difference and relationship towards relevant disciplines [3].

Neuromanagement has already formed a widespread influence power thanks to the development of itself in the recent years. By searching key words of the theses on the website of Scopus, which is known as the biggest



scientific theses database, 1545 theses related with neuromanagement have been published since 2006. The theses counted above do not contain theses discussing problems of pure computational techniques. The yearly distribution of those theses is shown as Figure 1.

Figure 1 – Article Number



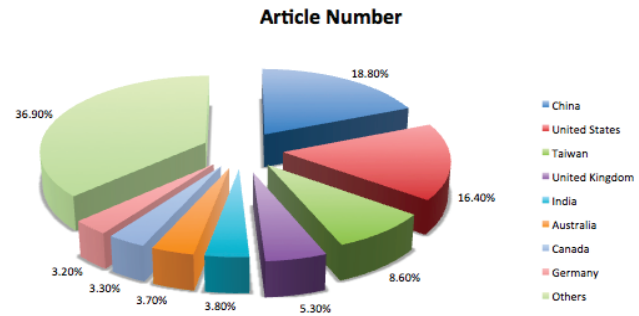
As is shown in Figure 1, the total numbers of relative theses in a whole year are kept in the level of about 140 since 2008.

Besides, the theses are correlated with a variety of aspects including computer science, business and even mathematics. The distribution of the theses that belong to different disciplines is shown in Figure 2.

Figure 2 – Article Number II

All the 1545 theses that can be found in Scopus belong to 23 different disciplines, and theses in the class of computer science are mainly discussing issues of Neural Artificial Intelligence Science (NAIS) and Neural Information System Science (NISS). From this, we may conclude that the development of neuromanagement shall be considered from the viewpoint of connecting disciplines in an appropriate way.

Figure 3 – Article number III



From Figure 3, we may find out that 18.8% of the authors of those 1545 theses in Scopus are from Mainland China, which indicates that China is leading the trend of studying neuromanagement and the global influence of Chinese researchers in neuromanagement is significant.

The development pattern of Neuromanagement

The development of modern disciplines is based on the construction and innovation of its knowledge system. The characteristics of the evolvement follow the intrinsic mechanism of ecology, which can be shown from Figure 4.

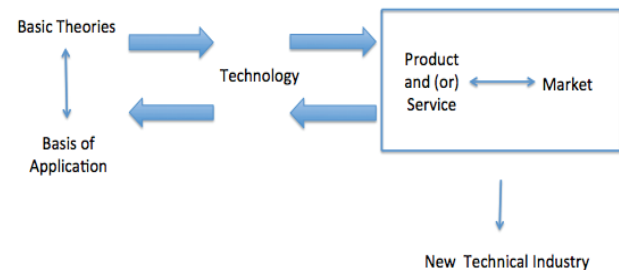


Figure 4 – Characteristics of Evolvement

The biological mechanisms of disciplinary development are mainly shown in two aspects.

First, the connection inside basic theories and applied knowledge, the connection between basic theories and the basis of application and the connection between products and the market present the multiple micro-spiral characteristics of disciplinary development.

Second, the connection between scientific research and applied technology and the connection between technology and technical industry present two big double-spiral structures of disciplinary development.

Based on the characteristics mentioned above, the development of neuromanagement shall be constructed on the structure shown in Figure 4. Besides, the supporting circumstances and driving mechanisms of neuromanagement shall be properly constructed so as to

guarantee its prosperousness.

The main knowledge system of neuromanagement is shown in Figure 5.

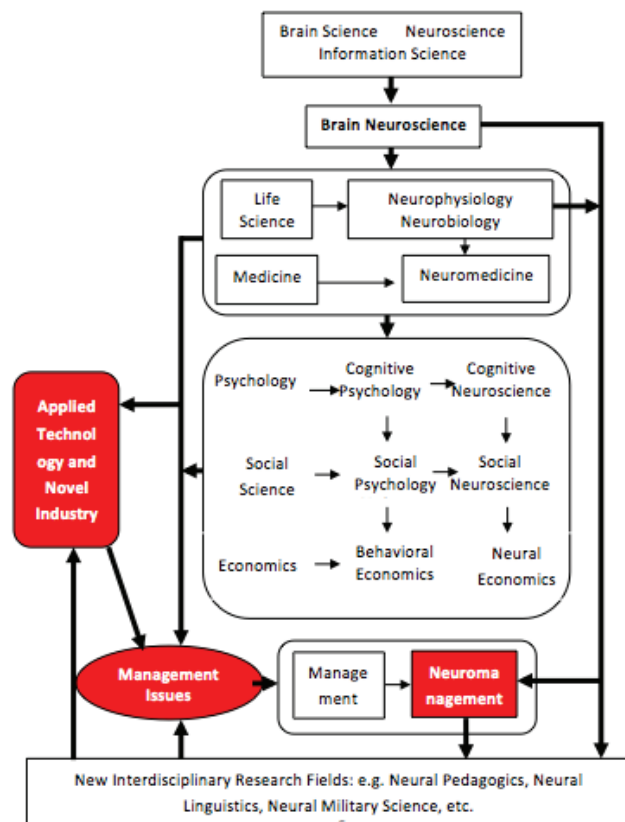


Figure 5 – The Knowledge System of Neuromanagement

To begin with, the new knowledge generated by the development of neuroscience and new techniques such as fMRI stimulated the development of brain neuroscience in the recent years. The combination of brain neuroscience and life science established the foundation of the development of psychology, social science and economics and finally generated interdisciplinary subjects such as neural pedagogics and neural military science. Researching management issues embedded in different disciplines via neurophysiology and brain neuroscience methods may establish novel interdisciplinary subjects, and new management problems brought by the application of those subjects may enrich the content of neuromanagement.

Through the analyses that are shown above, we may construct the frame of knowledge system for neuromanagement based on its basic theories and correlated techniques. The innovational eco-chain for the development of neuromanagement shall be formed and refined from the connections between neuromanagement and other relative disciplines that are shown in Figure 4 and Figure 5.

Besides, we may analyze and research new management problems that are generated by a variety of new disciplines thoroughly and prospectively in order to draw new theories or methods of neuromanagement and find appropriate resolutions for those issues. The new theories and research approaches may be applied to flourish innovational technical industry and finally form a sustainable eco-chain induced by management issues.

Scientific issues of Neuromanagement

Fundamental Theoretical issues of Neuromanagement

The research of neuromanagement is now facing many fundamental and theoretical difficulties since it is correlated with neurological mechanisms of brains' advanced functions and complex social situations that have not been completely decoded by scientists. We summarized all the 1545 theses collected from Scopus and distributed all the main theoretical issues of those theses into four categories.

The first main issue is finding the brain neurological mechanisms (i.e. the origin) of emotions and behaviors. Most of the management issues are related to people's emotions and behaviors. In the past, the researches of emotions and behaviors are mainly built on subjective reports or assessments to estimate people's reflection towards the exterior. Revealing the neurological mechanisms of people's emotions and behaviors has already become a pivotal issue of neuromanagement. From the research reports that already exist in 2017, brain neuroscience has already studied micro-mechanisms of neurons, sequences of amino acid molecules, ion channels and nerve circulations and integral mechanisms of the entire brain. A variety of research results are already formed [17]. Cognitive neurology also achieved several breakthroughs in the aspect of neurological mechanisms of brain's advanced functions that are related with cognition [8]. In the recent years, interdisciplinary subjects such as social neurology and neural economics all researched the characteristics of brain's movement from different viewpoints. Nonetheless, brain's movements that are studied in management science not only contain complex brain functions. Actually, they are also significantly affected by spiritual factors such as people's memory, emotion and specified situations. Researchers have already discovered a large quantity of phenomena under specific experimental conditions and limited samples. Methods that are able to generate powerful evidences of discovering new knowledge and integrate all the phenomena into a systematical, fundamental theory with the combination of brains' micro-mechanisms and integrated mechanisms are urgently required to be found by researchers. The research of the problems above are correlated with systematic mechanisms of relation

between physical movement and mental movement, which are not likely to be completely demonstrated in a few years, that have been studied by human beings for over one thousand years. Nonetheless, incomplete theories or even hypotheses based on existing research results shall be crucial in researching correlated management issues and developing the discipline of neuromanagement.

The second main issue is finding the inner neurological mechanism (i.e. the relation) of behaviors related with management science. In some specific situations, intrinsic and extrinsic stimuli may trigger a series of mental and physical responses after being filtered by people's attraction monitor inside their brains. Those responses may manifest and be detected in a variety of forms. As the technology of experimental observing is abundantly developed and the concept of big data is increasingly well-known, analyzing people's activities in specific circumstances via real-time information observing facilities and big data analysis for online behaviors has become a new trend in the research of management science. The existing research results are mainly constructing connections between people's subjective reports or mental assessments and their physical responses (e.g. electroencephalogram, skin potential, electrocardiogram, breath, pulse and body temperature) or emotional behaviors (e.g. voice, facial expression, posture and gesture) through relativity analysis, machine learning and data mining. The research results mentioned above are constrained by the limitation of subjective information delivery, the inaccuracy of mental assessments and the complexity of analyzing data with high percentage of redundancy. Acquiring proper methods of constructing neurological mechanism models among people's mental movements and physical behaviors and providing heuristic knowledge or integrated identification approaches based on neural movement processes shall become another fundamental problem in neuromanagement. This problem needs to be solved by analyzing people's entire nerve moderating mechanism, which contains the moderating mechanism of Central Nervous System (people's brain and spinal marrow) and Peripheral Nervous System. Researches that are correlated with this issue may provide powerful support on making a breakthrough in such a bottleneck problem.

The third main issue is establishing the theoretical basis of organizational behavior for neuromanagement. The mental and behavioral rules of individuals or groups in the organization and the behaviors of an organization as a whole are main objects in the research of organizational behavior. The main theoretical issue is to find new theories or methods to manage people's behaviors and refine the neurological mechanisms of organizational behavior. The neurological mechanism of

behavior management in different types of organizations, the neurological mechanism of innovation and self-stimulation, the neurological mechanism of leadership and group decision making, the neurological mechanism of personality and career-fitting management, the neurological mechanism of people's view of value and the formation of non-government organizations (NGO) are all detailed issues that are worthy to be researched. The research of these problems shall be combined with the intrinsic structure of the organization, people's social connection and social circumstances. Large quantities of studying approaches can be equipped according to the social influence and characteristics of those issues.

The fourth main issue is constructing micro mechanisms of neuromanagement over macro phenomena. In the past, research of management science among macro objects was based on analyzing their influence factors. By the increase of the complexity of influence factors and modern managing circumstances, former approaches are obsolete as we can hardly draw intrinsic mechanisms and predict the potential of the developmental tendency from these methods. Thus, discovering the micro mechanisms of macro phenomena thoroughly and illustrating macro phenomena from both the angle of micro mechanism and macro analysis have become the new trend of neuromanagement research. For example, researchers are able to construct artificial societies that are composed by intellectual agents and let artificial societies evolve parallel to the real society by applying computational experimental methods such as parallel computation. Agents are capable of simulating people's mental and physical movements in the real world. Analyzing the complex macro phenomena based on the micro processes of interacting between intellectual agents is already an effective method for researching and predicting phenomena in the real world. This novel approach has been equipped in the research of global epidemiology, online information propagation and behavioral finance [18][19][20]. In the circumstance of modernized information network, a variety of social and economical macro phenomena are interactively affected by factors such as physical space, cyber space and psychosocial science. Only if researchers analyze the evolution process of these phenomena via Cyber Psychosocial and Physical Computation (CPPC) can they cognize those phenomena's intrinsic mechanisms and predict their future tendencies [21][22][23]. In conclusion, the problem of studying the interactive behaviors of intellectual agents and providing new micro mechanism theories of neuromanagement for artificial society modeling, CPPC and macro analyses are fundamental and theoretical issues of neuromanagement. Finding the solutions of these problems will develop researches in macro analysis of neuromanagement.

Basic Applied Problems of Neuromanagement

The applied researches of neuromanagement mainly aim at solving issues that are correlated with people's minds and behaviors during their life practice. The research findings usually provide people with theoretical guides or technical projects that are used to solve issues that are mentioned above. For example, people are designing new methods related to neuromanagement to optimize people's decisions, design information systems and manage production in the field of management science and engineering. Besides, new theories and methods related with neuromanagement are also equipped in public management by analyzing macro phenomena and provide governments with new managing ideas. Some new guidelines of emotional education, transcultural cognition, art innovation and military commanding in the aspect of education, culture, art and military are engendered thanks to people's resolutions of applied problems of neuromanagement. Neuromanagement may also help designing new projects of writing brain-like computer programs that are compatible with several advanced functions or characteristics of people's brains. We may easily find out that applied issues in real society induce people's research projects in the aspects that are mentioned above. Those projects shall be tightly combined with the status of actual application of relative disciplines.

Research Paradigms of Neuromanagement

Research Methods of Neuromanagement

Research methods are tools or approaches of discovering new phenomena, presenting new viewpoints and revealing new intrinsic rules. The research methods of neuromanagement are based on experimental approaches and technical methods or neuroscience. Researchers study on neuromanagement issues and explore the neurological mechanisms through observing people's neural movements. The major research methods of neuromanagement are concluded in Figure 6.

Experiments of people's neural movements are mainly correlated with human's brain and body (including human's face and relative organs such as eyes, mouth, ear and nose). The experiments over people's brains aim at examining the brain neurological mechanisms by analyzing the structure, function and neural movements of brains. The researches and experiments of people's bodies aim at collecting the data of physical responses or performances that are controlled by the moderate system of people's brains. Finally, researchers may comprehend, estimate or even compute people's mental conditions. In these research events, apart from reading people's subjective reports, researchers shall construct mathematical models and prove their validity via methods such as mathematical modeling and computational simulation.

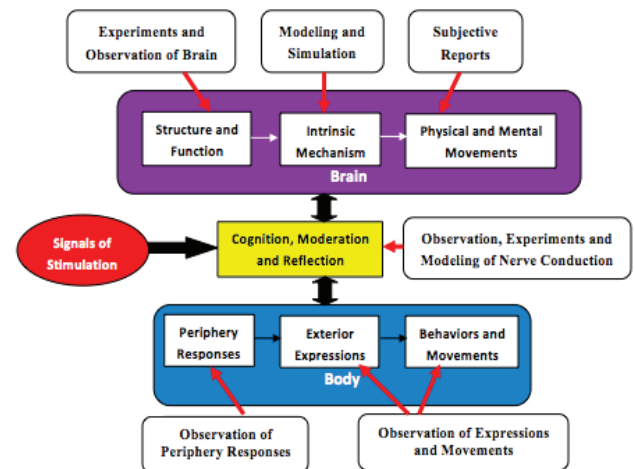


Figure 6 – The Observation of Neural Movements and Research Methods of Neuromanagement

Widely used technical methods of neuromanagement include fMRI (Functional Magnetic Resonance Imaging), fNIRS (Functional Near-Infrared Spectroscopy), EEG (Electroencephalogram), MEG (Magnetoencephalography), ERP (Event-Related Potential), PET (Positron Emission Tomography), tDCS (Transcranial Direct Current Stimulation), TMS (Transcranial Magnetic Stimulation), Eye Tracking, ECG (Electrocardiography), EMG (Electromyography) and other techniques such as hormone level assessment, physical signal monitoring and observation for people's exterior changes. The experimental techniques and methods are concluded as shown in Table 1.

It is quite noticeable that the experimental observational techniques have different inner principles and they are observing people's nerve movements from different angles. As a result, those techniques all have some kinds of limitations. For example, BOLD-fMRI (Blood Oxygen Level Dependent Functional Magnetic Resonance Imaging), a specific type of fMRI, can observe the condition of stimulation of brain's different partitions by observing the blood oxygen level of neurons in those partitions. The resolution ratio of BOLD-fMRI is rather low as the change of blood oxygen level may happen in 2-3 seconds later than the activation of these neurons. In the recent years, scientists found that there are lots of false positive results that are given by fMRI observation [24], which induced researchers' attraction on the reliability of scientific facilities. Besides, the SPM (Statistical Parametric Mapping) software that is used to analyze data drawn by fMRI are analyzing the results by checking the probability of individual active points and the statistical correlation coefficients of different active points without considering the real connections and relations of neurons. Thus, researchers shall deeply analyze the connection structure of people's neurons by combining SPM analysis

and DTI (Diffusion Tensor Image) data of fMRI. In this way, we may demonstrate the activation model of neural system from the conducting processes of neural signals. The electric signals of people's brain that are collected by EEG or ERP are brain's intrinsic electric signals that are collected from people's skin. As the signals are conducted from people's brain to their skin, large quantities of noise disturbance that are generated in the process of conducting can be collected inside the graphs recorded by EEG or ERP facilities, which may eventually contribute to inaccurate observation and research results. Thus, fusion analysis of different observation techniques has become a new trend in the development of modernized neural experiment and observation technology. We need to notice that the mental and physical movements in behaviors that are related to management science correlate with lots of brain's advanced functions, and these functions are affected by complex factors such as memory and emotion. According to existing results of experiments, brain's functional partitions that are in charge of advanced functions are both instable and complex. We shall discover the connections of brain's functional partitions and brain's advanced functions from three different aspects. At first, we need to analyze the circumstances and complex effective factors in real situations and finally find accurate variables to measure people's activities. Second, we need to separate people's brains in a more accurate way based on the widely accepted Brodmann's partition, which separated people's brain into 52 different partitions. Meta analysis may also be equipped in the process of dividing functional zones of brains in a more reliable way. Finally, the methods that are used in big data analysis may be equipped in researching brain's functional networks connecting many different cerebral functional zones. Novel, steady and persuasive discoveries may be found by this kind of research approaches [25]. In total, issues that are researched in neuromanagement are more complex than those that are researched in neuroscience. Suitable methods that are used to solve neuromanagement issues need to be shaped from sufficient amount of practice that are based on experimental techniques of neuroscience and combined with multiple research approaches.

Layers And Targets of the Research of Neuromanagement

Research paradigms are disciplinary paradigms that are reflected from studying methods, demonstrating methods and academic evaluating criteria. In the research of neuromanagement, research paradigms are related with the discoveries or research projects of phenomena's characteristics and inner rules on different layers. The main research paradigms of neuromanagement can be concluded as is shown in Table 2 based on research targets from different layers.

We may find out from Table 2 that the target of the first layer is usually located on correctly discovering new phenomena or characteristics. The target of the second layer is to discover the connections or affecting factors of new phenomena so as to account for existing phenomena and rules. The target of the third layer is to find some social phenomena's systematic mechanisms and make accurate prediction over the future tendency of them. The target of the fourth layer is to present new theories and approaches to manage the change of management issues. We need to notice that active movement processes of uncertain factors from different aspects may significantly affect the change of objects in the society under the condition of highly advanced information network. In this situation, the change of objects may not form a steady random distribution. The data collected by questionnaires is considered to be problematic in its reliability, since the inaccuracy and incompatibility of people's subjective comprehension and expression cannot be ignored. Besides, there are other complex factors that will affect the accuracy of these data, some of which are hard to be controlled. Although observation data from statistics sampling is considered to be valid, research results that are got from hypothesis proving, econometrics modeling and structured equation modeling can hardly utilize large quantities of detailed information inside the data. Thus, how to find ways to combine big data analysis techniques (e.g. data mining (DM), machine learning (ML)) and management methods that are mentioned above is a valuable neuromanagement problem. Furthermore, it is worthy for researchers to discover the issue of constructing new research paradigms from the angle of revealing phenomena's intrinsic mechanisms for neuromanagement.

Summary and Discussion

Neuromanagement is a modern interdisciplinary subject presented by researchers from China, which is now exerting wide and profound influences among the study and development of modern management and other correlated disciplines. Chinese researchers have already formed a vigorous team of researching neuromanagement thanks to the development of this subject in the recent decade. Chinese researchers are major research powers in the discipline of neuromanagement and their national influences are strong. In the future, Neuromanagement shall update its theoretical basis and construct sustainable eco-chains of research development from the angle of fundamental theories, relative applied technology, new technical industries and cooperation with other relative disciplines. Main issues of neuromanagement include fundamental theoretical issues such as neurological origins of people's mental and physical movements, the neurological mechanisms and connections between people's behaviors, the theoretical bases of organizational

behaviors and micro mechanisms of macro phenomena of neuromanagement and applied management issues found in the practice of many disciplines that are related with people's minds and behaviors. The research paradigms of neuromanagement shall aim at different research layers of its targets among management issues and combine with multiple research approaches. The research paradigms may be based on experiment methods of neurosciences and shall be gradually formed on the basis of large quantities of research and practice in the future. In this thesis, we want to provide readers with reference and guidelines of stimulating the development of neuromanagement. Our viewpoints and contents may be criticized, revised and completed by researchers who are interested in the discipline of neuroscience.

Acknowledgments

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Table 1 – Experiment Techniques and Research Methods

Research Issues	Experiment Techniques	Research Methods
Characteristics of cerebral nerve movements	fMRI, fNIRS, EEG, MEG, ERP, PET, tDCS and TMS(fNIRS, EEG, ERP, tDCS and TMS can be equipped in observation of real circumstances such as working and studying situations)	Observing people's brain neural movements, discovering brain's function zones or new characteristics of brain's function networks and proving research results via techniques such as tDCS and TMS
Brain mechanisms of mental movements	Combination of multiple experiment techniques of observing brain's neural movements	Constructing systematic models via mathematics modeling and simulation technology based on subjective reports and Meta analysis, able to account for existing phenomena appropriately and analyze or predict people's mental movements that are triggered by the change of influence factors
Cognizing, moderating and feedback mechanisms of central and peripheral nervous system	Combination of SPR, ECG, EMG and other experiment techniques used to observe people's neural movements	Analyzing the correlation of neural movements and people's exterior physical responses based on existing theories and research results, providing systematic models by using techniques related with mathematics modeling and simulation technology, accounting for existing phenomena and predicting the tendency of those phenomena
Exterior physical responses of mental movements	SPR, ECG, EMG and other physical signal monitoring techniques	Analyzing the connection between those physical responses caused by mental movements based on subjective reports and Meta analysis, accounting for phenomena by using the cognizing, moderating and feedback system of nervous systems
Exterior behavioral responses of mental movements	Video, audio, infrared thermography and other relative techniques	Analyzing the connection between behavioral responses caused by mental movements under specific circumstances based on subjective reports and behavioral analysis, accounting for phenomena by using the cognizing, moderating and feedback system of nervous systems
Neuromanagement issues of organizational behaviors	Video, audio, infrared thermography and other relative techniques over both groups and individuals in real situations of organizational activities	Observing exterior changes of individuals and groups under real circumstances, researching relative issues by combining neuroscience and organizational behavioral science
Neuromanagement issues of macro phenomena	Big data observing and analyzing techniques of individual and group behaviors under real situations	Illustrating macro phenomena through neurological analysis of the behaviors of individuals, groups and organizations based on macro statistics data among people's physical space and cyber space behaviors, predicting the change of macro phenomena from the change of different influence factors

Table 1 – Experiment Techniques and Research Methods

Layer	Research Target	Research Paradigm
The first layer	Discovering new phenomena and new characteristics of objects	Discovering new phenomena and characteristics via experimental observation, survey and interview, case research and statistics analysis, Proving the results above through hypothesis test and other proving methods
The second layer	Discovering the rules of the change of the objects	Concluding the changing rules via big sample research, Meta analysis and structured equation modeling, demonstrating existing phenomena and characteristics
The third layer	Discovering the intrinsic mechanisms of the change of the objects	Thoroughly researching the influence factors of the change of the objects, Presenting systematic mechanisms via modeling and simulating computation, demonstrating existing phenomena and characteristics appropriately and predicting the condition and tendency of the change of the objects caused by the change of environmental influence factors
The fourth layer	Presenting new methods or theories to manage the change of the objects	Presenting and proving new management methods and theories based on understanding the mechanisms of the change of the objects

Research on CyberPsychology Computation of Customers' Online Shopping Behavior Using EEG Analysis

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Abstract

In order to get an edge in the competition, the analysis of the behavior of the network users has become an important subject for the e-business enterprises. In this paper, the concept of Cyber Psychology Computation is introduced to build the relevant experiment, the simulation shopping website is established, the information of the user interface is collected, and the EEG spectrum of the subjects is recorded by EEG recorder. Using the waveform decomposition method of EEG signal to get the waveform of the subjects at different frequencies, we compare with the subjective evaluation of the interface operation video and the subject to evaluate the different behavior of the user. Then, with the EEG signal to verify, we analyze customers' online shopping behavior and the psychological state of the intuitive analysis of user behavior analysis from the customer itself. This paper also introduces the AIDA consumer behavior analysis model to decompose the subjects of the shopping behavior, with more accurate explanation of the psychological state and its relationship with the EEG signal.

Keywords CyberPsychology Computation, Online shopping behavior, EEG analysis, Neuro-Management

Introduction

Online shopping is no longer a fresh topic in the modern society. However, the emergence and rise of the Internet have developed in just a few decades and the age of online shopping is even less than twenty years. Owing to the cross-region nature of the Internet that brings a variety of options, convenient payment methods and national support policies, online shopping is in a stage of rapid development.

Common methods of collecting cyber users' behaviors include collecting users' web browsing behavior, page metadata, click behavior and transformation effects,

etc. Then the acquired data is analyzed with clustering modeling, association analysis, anomaly detection and other data mining strategies. The common feature of these analysis methods is that all the data is generated from the interface log, mouse and keyboard operation when the user goes through the web page. In other words, the business analysis of the customers is from a third party, rather than directly from the customers.

Considering that existing methods all have some limitations, it is very worthy of study on what kind of method can be used to measure the user's mental state. Cyber psychology computation belongs to the intersection of cognitive psychology and physiological psychology.

It combines the research methods of psychological science and neuroscience and tries to use the changes of physiological signals in the brain to reflect the process of user's cognition and establish a calculation relationship between user's physiological and psychological characteristic.

The focus of this paper is that in a simulation environment, by collecting the EEG signals of online shopping users, decomposing the waveforms in the way of wavelet transforms and superimposing them according to different frequencies, subjects' waveforms of different frequencies will be attained, corresponding relationships between the physiological signal and the psychological state will be explored and subjects' different psychological states corresponding to different online shopping behaviors will be obtained, combined with the interface of the subjects and subjective evaluation; and then relationships between them will be established with the mathematical model so that the EEG signals of online shopping behaviors can be graphically displayed.

This method of user data acquisition and analysis measures the users' psychological state more accurately and objectively, compared to the site analysis and questionnaire survey. The method is not limited to a simple data mining analysis. It instead reflects the users' shopping behavior and the psychological characteristics through the establishment of physiological and psychological calculation relationship, which is a more sustainable method with the ability to cope with dynamic changes.

This paper is divided into five parts and the specific content is as follows. The research methods used by this paper and the theoretical basis of research contents will be explained in the second section. The third section will show the specific details of the process of relevant experiments, data acquisition and data analysis. Later, The fourth section shows the relationships between the behavior of the user and the mental state reflected by the EEG signal in the online shopping behavior according to the relevant theory of cyber psychological calculation and the results of data analysis. Finally, The fifth part puts forward the research conclusion of this paper and point out the limitations of the study and the possible development directions.

Cyber Psychology Computation

Cyber Psychology Computation is to establish the calculation relationship between cyber behaviors and psychological characteristics of users, with cyber behavior as the input variable and psychological characteristic as the output variable, seeking to establish a prediction model for cyber psychology[1]. In fact, psychological response of users is the result of a series of neurological activities

dominated by brain mechanisms. Usually, psychological reactions can lead to physiological signals (such as EEG, skin temperature, etc.), external manifestations (such as speech status, expression, posture, action, etc.) and follow-up behavior changes[2-3].

Thus, when it comes to a real environment, psychology computation can be used to analyze the expression of physiological signals, external manifestations, and follow-up behavior based on fusion features that correspond to specific reflections in the brain region. The goal of the cyber psychological computation is to reach unanimous conclusions between psychology computation of the psychological characteristics of the users in the cyberspace and subjective comments of users.

Traditional cyber psychological computation is divided into four stages, namely, the generation of cyber behaviors of users, the collection of behavioral data, the behavioral data analysis for psychological characteristics and the generation of feedback on psychological characteristics of users according to the analysis[4].

The first stage is the generation of cyber behaviors of users. At this stage, users' behaviors may include web browsing, content search, instant messaging, social networking interaction and multiplayer online games. The behaviors of the users are mainly recorded in web log files generated by the server or browser.

The second stage is the collection of behavioral data. Researchers collect cyber behaviors of users by web mining and other ways. They collect the information including operation records and operating time of mouse and keyboard of users and establish a personal database based on different users storage information.

The third stage is the behavioral data analysis for psychological characteristics. Researchers work on data mining, analyze cyber behaviors of users and on above basis predict the psychological characteristics, potential motivation and personality of users as well as their social attitude and mental health status.

The fourth stage is the generation of feedback on psychological characteristics of users according to the analysis. The feedback includes providing the users' psychological characteristics report for businesses as well as the mental health report and psychological treatment support for the users themselves.

EEG Signals and Their Analysis Methods

Introduction to EEG

EEG(Electroencephalogram)is an electrophysiological monitoring method to record electricity activity of brain.

The analysis of EEG signals plays a crucial role in clinical functional diagnosis and brain cognitive studies. In cognitive science research, the EEG signal is used widely because it contains the nerve activity of the cerebral cortex information that stores emotional, thought, spiritual and psychological activities and other rich content[5]. In addition, due to EEG analysis is noninvasive with high time resolution, it is usually applied to research that focuses on the information transfer and processing. Thus, using EEG signals to carry out cognitive analysis has become the choice of many scholars all over the world.

According to different frequency bands, EEG is mainly classified by the following categories as shown in Table-1.

Table 1-Categories of brain waves

δ wave	0.4 ~ 4Hz	20 ~ 200 μ V	Common in adults, deep sleep or extreme fatigues status
θ wave	5 ~ 8Hz	10 ~ 50 μ V	Common in adults in frustration and depression
α wave	9 ~ 13Hz	20 ~ 100 μ V	Basic rhythm of normal brain waves; frequency is constant; Common in the sober, quiet and eyes closed time.
β wave	14 ~ 30Hz	5 ~ 20 μ V	When adults are nervous or excited

Method of EEG analysis

EEG analysis of multiple analysis methods are mainly classified as three categories: time domain analysis, frequency domain analysis and time-frequency analysis.

As the EEG signal is a non-stationary random continuous signal, it is necessary to do time-frequency analysis. Time-frequency analysis is a combination of time and frequency to comprehensively analyze the changes of EEG signals, including Fourier transform analysis and wavelet transform analysis[6-8].

Fourier transform method has some limitations. On the one hand, Fourier transform is suitable for stationary signal analysis, while the EEG signal is non-stationary signal. On the other hand, Fourier transform is a whole transformation, which can only demonstrate the overall effect of the signal. That is to say, Fourier transform can not express the specific characteristics of the EEG signal at a certain time. Thus, the wavelet transform is to make up for this shortcoming. Thanks to its time domain window and the frequency domain window shape can be changed, in the time domain and frequency domain wavelet transform can better display local features.

However, after the orthogonal wavelet transform, the high frequency component can not continue to be decomposed, so the wavelet transform is more suitable for the low frequency signal. In contrast, the wavelet packet transform can provide a more precise decomposition of the high frequency component, and the time-frequency localization analysis can be carried out for the signal containing a large amount of medium and high frequency information. Wavelet packet decomposition can conduct multi-level frequency band division and adaptive selection of the corresponding frequency band to match the spectrum according to the signal characteristics. Thus, the at time-frequency resolution is well improved.

Since the object of study is non-stationary brain waves, it is very important for the accurate display of local detailed information. Therefore, in this paper, wavelet packet decomposition method will be used.

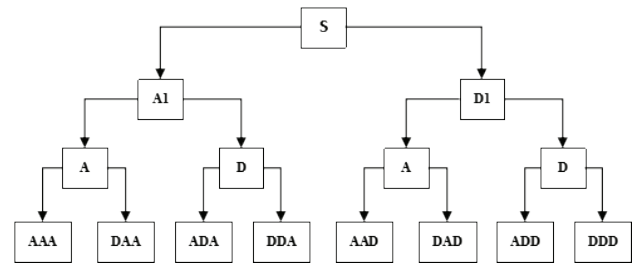


Figure 1-Wavelet packet analysis tree

In order to clarify the wavelet packet decomposition in detail, we take an example in Figure 2.1. There is a three-layer wavelet packet decomposition of the signal S. Assume that the signal S is 1024 Hz, and then the Nyquist frequency is 512 Hz, then in the third layer we decompose the original signal into 8 frequency band where each band is 64Hz. In Figure 2.1, each wavelet in the figure A represents the low frequency component, and D represents the high frequency component. In this way, we can get the equation below.

$$S = AAA3 + DAA3 + ADA3 + DDA3 + AAD3 + DAD3 + ADD3 + DDD3$$

AIDA consumer behavior analysis model

When we analysis the online shopping behavior, AIDA consumer behavior analysis model is used. AIDA model is a model of consumer behavior analysis, which is summarized by Heinz M. Goldmann. Its specific meaning is that the effect of the sales staff's persuasion to consumers is hierarchical. When the sales staff do the consumer analysis, the impact can be divided level by level into Attention, Interest, Desire and Action[9].



Figure 2-AIDA consumer behavior analysis model

In the stage of Attention, businesses usually consider strategies like fancy packaging and novelty advertising to arouse the attention of consumers;

In the stage of Interest, businesses will make exquisite user interface, considered text introduction, pictures and video to dig needs of consumers and stimulate consumer interest to purchase.

In the stage of Desire, businesses will employ various means to arouse the desire of consumers to buy. When customers believe that the benefits are greater than the payment, they will desire to purchase.

In the stage of Action, businesses focus on enhancing of consumer confidence, such as providing perfect after-sales service, express insurance, and quality insurance, so that consumers believe that their consumption action is worthy.

In summary, when designing consumer interface within market campaigns, businesses are not only for artistic creation purposes, but also for business purposes. Thus, the principle of AIDA analysis is applied widely to maximize influence on consumers.

Experiment for Cyber Psychology Computation

Experimental equipment and environment

The experiment was in the nerve electrophysiological examination room at Huashan Hospital. The environment was well ventilated, quiet with low interference. We used Z2N-F-20-C EEG recorder produced by NCC Medical Co., LTD. The international standard of 10-20 dual-lead 8-channel EEG information collection was satisfied and the machine worked normally. Therefore, the environment and equipment met the experimental requirements.

Experimental process

This experiment selected three subjects. In our own virtual shopping website, subjects played the role of consumers, and could browse and buy the screen display of goods shown on the website freely. Subjects were wearing an EEG headset recorder to collect the EEG signals during the experiment, and the subjects' behavior on the user interface were all recorded by our screen recording software. The subjects were asked to open the product link to fill out the first impression on the merchandise interface and fill out their preferences for the goods after they knew

the information of goods. In the end of all operations, we immediately interviewed the subjects, the psychological changes in the operation and so on.

Then we will correspond to the operation of the EEG signal and the subjects, and the subjects subjective assessment of their behavior experience as a reference to observe the subjects in different shopping psychological state, the display of EEG Signal characteristics.

Our virtual shopping site simulation Taobao interface, including a total of four kinds of goods, where the brand kitchenware flagship store provided non-stick pan, South Korea purchasing shop provided women's fashion clothing, private digital store provided the iPhone5 and brand clothing store provided baby socks. The reason of the construction of virtual shopping site is that in the real shopping site environment, the interface content is more complex than our virtual site complex, including advertising, animation, plug-ins, etc. These factors will distract the attention of the subjects..

The preliminary processing

EEG artifacts usually exist because of the head shake or electrode loosening and other reasons. In order to remove such artifacts, we proceeded to take the average reference electrode, that is to say, the voltage values measured at the eight electrode positions were averaged. The reason is that the entire head is approximately spherical, and we think that the sum potential of the positive and negative electrodes is equal to zero.

Since the sampling frequency of this experimental data is 128Hz, the Nyquist frequency is 64Hz, so we can calculate the frequency of each band is about 1Hz. So in this experiment, we will use db10 wavelet packet. The signal is decomposed by six layers, and 64 wavelet packets can be obtained in the sixth layer. Then according to the previous definition of the frequency band for different waveforms, we can decompose the various types of rhythm wave waveform, as follows:

$$\delta:S1 = S6,0 + S6,1 + S6,2 + S6,3, [0 - 4Hz]$$

$$\theta:S2 = S6,4 + S6,5 + S6,6 + S6,7, [5 - 8Hz]$$

$$\alpha:S3 = S6,8 + S6,9 + \dots + S6,12, [9 - 13Hz]$$

$$\beta:S4 = S6,13 + S6,14 + \dots + S6,29, [14 - 30Hz]$$

We use Matlab to do wavelet packet decomposition and reconstruction. Take Subject 1 for example. We get the wavelet packet tree and the original signal waveform as shown in Figure 3.

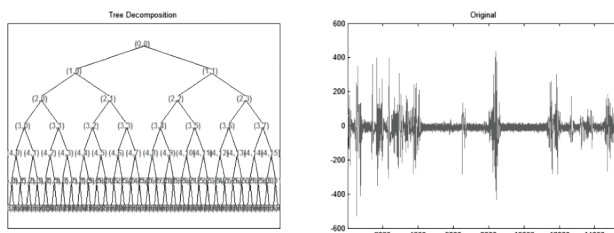


Figure 3- Subject 1 Wavelet Analysis Tree with Original Waveform

Waveforms of δ , θ , α and β wave for Subject 1 are shown in Figure 4.

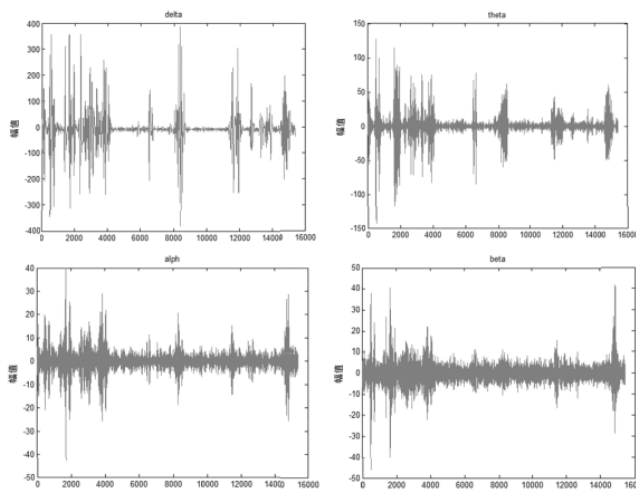


Figure 4- Waveforms of δ , θ , α and β wave (From left to right, from top to bottom) for Subject 1

Experiment Data, Analysis and Results

Records of shopping behavior

The basic information of three subjects is listed in Table 2.

Table 2-Basic Information of Subjects

	Gender	Age	Degree of Education	Online Shopping Experience
Subject 1	Female	20-29	Bachelor	>5 years
Subject 2	Male	20-29	Master	>5 years
Subject 3	Male	<20	Bachelor	1-5 years

We recorded each subject's behavior through a screen record software, and divided their operation procedure into seven classes, which could be seen in Table 4.2. We will use this classification approach in the subsequent waveform display.

Table 3- Decomposition and Classification of Subjects' Operation Procedure

Begin the experiment	Class 0
Visit the product link	Class 1
Grade the first impression of the product The grade is x	Class 2 -x
Click next step after glance over the product	Class 3
Grade the browsing process of the product The grade is y and buy/not buy is 0/1	Class 4 -y-0/1
Start to browsing the product detail	Class 5
Staring over the product detail	Class 6

We use the five-grade marking system. Rated the degree of preference from bottom to top, as 1 for hate and 5 for adore, to record the subjects' first impression and browsing process towards the online stores. The results are listed in the subsequent tables.

Table 4 and Table 5 are from Subject 1.

Table 4- Browsing and Operating Information of Subject 1

Browsing Order	First Impression	Degree of Preference during Browsing Process	Whether or Not Will She Buy It Immediately.
Supor Non-Stick Pan	3	3	No
iPhone	4	4	No
Booties	5	5	Yes

Table 5-The Record of Browsing Process from Subject 1

Video (Seconds)	Length	Behavior Record	Behavior Classification
65		Visit the online store	0
76		Click the non-stick pan	1
87		Grade the first impression (3)	2-3
96		Click next step	3
103		Click "temporarily not to buy" and grade (3)	4-3-0
108		Click the iPhone	1
114		Grade the first impression (4)	2-4
123		Click next step	3
130		Click "temporarily not to buy" and grade (4)	4-4-0
135		Click the booties	1
142		Grade the first impression (5)	2-5
153		View the product detail	5
169		Click next step	3
174		Buy immediately and grade (5)	4-5-1

Table 6 and Table 7 are from Subject 2.

Table 6-Browsing and Operating Information of Subject 2

Browsing Order	First Impression	Degree of Preference during Browsing Process	Whether or Not Will He Buy It Immediately.
Supor Non-Stick Pan	4	5	Yes
iPhone	5	4	No
Korean Panty	3	3	No

Table 7-The Record of Browsing Process from Subject 2

Video Length (Seconds)	Behavior Record	Behavior Classification
101	Visit the online store	0
113	Click the iPhone	1
125	Grade the first impression (5)	2-4
129	View the product detail	5
140	Staring at freebie information	6
168	Go to the bottom of the page	Not Classified
180	Click next step	3
187	Grade the preference (4) There is a hesitation before click "to buy"	4-5-1
194	click "to buy"	4-5-1
206	Click the non-stick pan	1
215	Grade the first impression (4)	2-5
219	View the product detail	5
222	Staring at the information: market price 199, now sale for 179	6
236	Move up before hit the bottom of the page	Not Classified
240	Click next step	3
243	Click "temporarily not to buy" and grade	4-4-0

Table 8 and Table 9 is from subject 3.

Browsing Order	First Impression	Degree of Preference during Browsing Process	Whether or Not Will He Buy It Immediately.
iPhone	2	3	No
Supor Non-Stick Pan	3	4	Yes

Table 8-Browsing and Operating Information of Subject 3

159	Staring at the information: Instruction for seal off/activate.	6
183	Fling to the bottom of the page	Not Classified
224	Click next step (Before this move subject 3 fail to visit "Other" page)	3
232	Click "temporarily not to buy" and grade (3)	4-3-0
250	Click the non-stick pan	1
259	Grade the first impression (3)	2-3
264	View the product detail	5
276	Staring at the information: on sale information	6
309	Move to the bottom of the page	Not Classified
317	Click next step	3
321	Buy immediately and grade (4)	4-4-1

Table 9-The Record of Browsing Process from Subject 3

Video Length (Seconds)	Behavior Record	Behavior Classification
97	Visit the online store	0
107	Click the iPhone	1
118	Grade the first impression (2)	2-2
121	View the product detail	5
133	Staring at the information: verify authenticity	6
138	Moving up from the "verify authenticity"	Not Classified
142	Moving down slowly	Not Classified
159	Staring at the information: Instruction for seal off/activate.	6
183	Fling to the bottom of the page	Not Classified
224	Click next step (Before this move subject 3 fail to visit "Other" page)	3
232	Click "temporarily not to buy" and grade (3)	4-3-0
250	Click the non-stick pan	1
259	Grade the first impression (3)	2-3
264	View the product detail	5
276	Staring at the information: on sale information	6
309	Move to the bottom of the page	Not Classified
317	Click next step	3
321	Buy immediately and grade (4)	4-4-1

Analysis and Results

We mentioned earlier that the beta wave appears in people in a state of mental stress or excitement. When the human brain is in a state of excitement, it will produce a large number of β waves. Therefore, this paper to the subjects in different states of the beta wave waveform to show the relevant research results.

Figure 5 is the first appearance of class 1 waveform from three subjects.

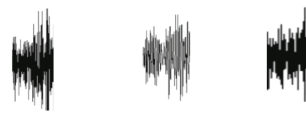
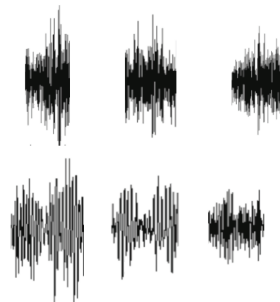


Figure 5-From Left to Right: Subject 1, Subject 2, Subject 3



Class 1 waveforms of each subject refer to Figure 6 and 7.

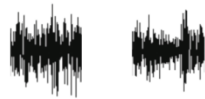


Figure 6-Three Class 1 Waveforms from Subject 1 and

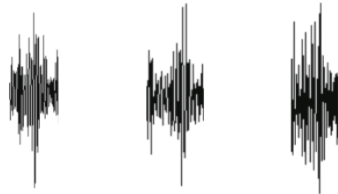


Figure 7-Two Class 1 Waveforms from Subject 3

Class 4-3-0 and class 4-4-0 waveforms of each subject refer to Figure 8 and Figure 9.

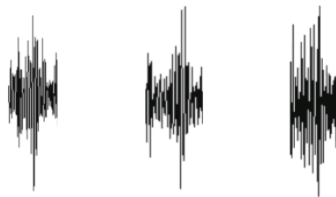


Figure 8-From Left to Right is Class 4-3-0 Waveforms of Subject 1, Subject 2 and Subject 3



Figure 9- From Left to Right is Class 4-4-0 Waveforms of Subject 1, Subject 2 and Subject 3



Class 4-5-1 waveforms of subject 1 and subject 2 refer to Figure 10.

Figure 10- Class 4-5-1 Waveforms of Subject 1 and Subject 2



Class 5 waveforms of three subjects refer to Figure 11, Figure 12 and Figure 13.

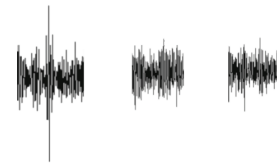


Figure 11- First Appearance of Class 5 Waveform from Subject 1



Figure 12- Three Class 5 Waveforms from Subject 2

Figure 13- Two Class 5 Waveforms from Subject 3

We have recorded the change of EEG for the whole purchasing process of subject 1 and subject 2, which can be referred to in Figure 14 and Figure 15.



Figure 14 The Whole Waveform from Subject 1 in Purchasing Booties



Figure 15 The Whole Waveform from Subject 2 in Purchasing iPhone

Combined with the above experimental results, we use the AIDA consumer behavior model to make the following analysis:

(1) Attention stage: the stage mainly for the three subjects in the repeated operation, such as clicking on the product link, into the purchase interface, etc. repeated in the behavior of different goods, only the first time Showing a large number of beta waves appear. And the subjects' 1 and the subjects 3, in the link of the β wave changes are the most significant;

(2) Interest stage: we found that all subjects have sliding slider or use the mouse wheel for page browsing behavior. Which 1 and 2, respectively, to take the final purchase behavior. We can clearly find that No. 1 and No. 2 at

the beginning of the commodity browsing showed a significant fluctuation in the beta wave.

(3) Desire stage: the business will take, including price concessions, including means to allow consumers to think that the goods are worth buying, the harvest is greater than its pay. We found that a different specific example is the non-stick pan price interface at the same time to attract subjects 2 and subjects 3, so that they stay in the interface behavior. The interface in the entire browsing interface in a prominent position, font size and color are more prominent;

(4) Action stage: subjects 1 and 2 have produced a purchase behavior. Which consumer No. 1 in the baby socks merchandise interface click to buy goods produced a large β wave changes, consumers on the 2nd of the purchase process in the phone also produced a more significant change in the β wave.

Summary and Discussion

According to the experimental results above, the following conclusions are drawn:

(1) When three subjects in the first time clicked on the product link and gave same scores to the non-purchased goods, we can see similar EEG signal to some extent, and this similarity is different from other psychological process. Although EEG signals are heavily influenced by individual differences, when customers performed the same behavior and were in a similar mental state, they were able to exhibit similar EEG patterns. This means that EEG analysis is a effective way and we can establish the relationship between user online shopping behavior and its psychological behavior according to their EEG signal. EEG signal can accurately record the psychological changes of consumers, which can bring online shopping behavior psychological and physiological explanation. This future research can provide a reliable reference.

(2) Each time three subjects opened the product web page, their β wave gradually decreased. The reason is that when a consumer gets exposed to something in the first time, the brain is in a state of excitement due to their curiosity. For businesses, this means that the first impression is crucial to attract consumers.

(3) When consumers browse the content of their interest, the brain is also in a β wave dominant excitement. Through our study found that the final choice for consumers to buy the goods, at this stage has produced a significant change in the β wave. Business focus can be placed on how to use clever marketing means, the consumer's shopping interests into shopping desire, to extend the first impression brought about by the high excitement, contributed to the transaction.

(4) After consumers purchase the goods, their EEG will also show a state of brain excitement. In this state, if the seller can take action to provide further attraction to consumers, they will greatly increase the probability of consumers' next buying.

(5) By studying the waveforms of Subject 1 and 2 when they purchased the goods, we found that the factors that contributed to the final purchase of consumers were multiple. The purchase finally came after a number of β waves. Thus, this result implies that the product description, interface experience and other factors play a multiple role in the excitement of the subjects.

Due to the limitation of the experiment time and some unresolved problems in the industry, there are some limitations in this paper:

(1) the number of samples need to be improved. There are only three subjects in our research. Our future research will focus on different people to produce the same behavior, the psychological characteristics of the differences, for our experiments to provide more accurate and more detailed conclusions;

(2) β wave is not only in the positive state of excitement. Fear will also result in a large number of β wave. In our experiment, we found that some behavior of the consumer reflects that some goods are unpleasant and this will sometimes promote the brain's excited state to produce β wave. Sometimes, It is difficult to distinguish between these two β waves. Thus, One of the future research can study how to distinguish consumers' affection and disgust.

(3) Considering that the EEG signal is a non-stationary random signal, there is a great difference between individuals. Thus, an accurate mathematical model of the user's psychological state and brain wave signal cannot be established to make a precise correspondence.

Through a small amount of individual experiments, the main contribution of this paper is to provide a kind of research ideas, to find the user behavior and their psychological state using EEG signal, which is very valuable. In the future, multi-level repeated experiments will be conducted. Combined with neurobiology and mathematical knowledge, we will establish a more comprehensive prediction model so as to further clarify the relationship between users' psychological state and their cyber behavior.

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Methodological Issues of Business Research: Challenges for Meeting Reliability and Validity

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Abstract

Every research is not trusted. The main aim of researcher is not only to write good paper, but to earn trust from the audience and sell the research so it is essential that the research fulfills the quality that a research should have that is reliability and validity in research tools. Hence this paper tries to discuss the concept of reliability and validity, how they can be increased and what the present situation is in declaring validity and reliability. The research has used both primary and secondary data. On the observation of researches done so far within two and half years, it is found that over that period very limited researchers declared validity and reliability issues.

Keywords: reliability, validity

Introduction

Background

Error is everywhere and in research, too and it can be minimized. To what extent research is trustworthy means to what extent research has maintained its reliability and validity in its instruments while collecting information? Hence when reading a research paper, one needs to look for evidence that the researcher has addressed the validity and reliability of the data collection tools sufficiently. The findings and generalizations reached without considering reliability and validity in the tools will have very little value in research. This concept is usually discussed in the methodology section of the paper. The first decision that the research is faced with is “how the concept shall be measured?” That is the *type of measure*. At a very broad level, the type of measure can be observational, self-report, interview, etc. These types ultimately take shape of a more specific form of observation of ongoing activity, observing videotaped events, self-report measures like questionnaires that can be open-ended or close-ended, Likert-type scales, interviews that are structured, semi-structured or unstructured and open-ended or close-ended. Needless to say, each type of measure has specific types of issues that need to be addressed to make the measurement meaningful, accurate, and efficient.

Another important feature is the population for which the measure is intended. From whom the information is sought, his/her seriousness, honesty etc do matters to increase the reliability in the test score.

A third important point is that the research must use appropriate tools because each tool is made for its own purpose. The tools used in gathering the opinions and measuring the attributes of one type of people may not be effective to measure another types of people and another purpose of the research.

What is to be measured? Whom the instruments are to be used? Are the crucial and tedious factors for developing a test? In behavioral science like management, many times abstract objects are to be measured, which are called constructs. And the tests so developed must be capable of measuring such constructs, which is latent. The relevant questions to raise are “how do we know that we are indeed measuring what we want to measure?” since the construct that we are measuring is abstract, in the same way as we measure physical phenomena, like buildings, roads, and rivers. Indeed this is not an easy job. When we repeatedly measures the furniture we receive same result, similarly the tests so constructed must also have the same quality, i.e. if repeatedly used it must give same result. This properly is known as reliability. And we are measuring the construct what we intend, and then it is called validity. For example we are measuring, satisfaction, happiness, emotion, anxiety, farness, intelligent, learning, etc these are very difficult to see with naked eye. Such properties are called psychometric properties.

Validity and reliability are the degree to make the measurement accurate and generate the truth. Validity and reliabilities are the values that lie in the every components of the research. Mostly this is inherited in the

methodologies of the research, for instance pilot study, instruments, data collection, processing, ethical issues, etc are to be considered for maintaining and enhancing validity and reliability in a research.

Level of Sources of Bias

Mostly bias appears in the observation level. Either the bias remains with research who seeks information or the participants and respondents. In this situation they can take opportunity by furnishing wrong information and make the research finding in their favor.

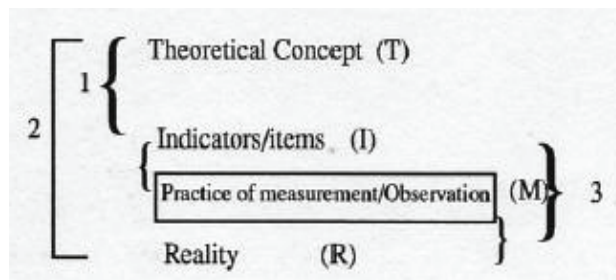


Figure 1: steps of research work relating main source of error.

Source: Robert Lafaille & Hans Ildeboer (1995)

In a research there are 4 steps which are critical for every researcher. The first level is T that is theoretical concept from where research originates. The second level is indicators that are to create by the research in order to test the situation. The third level is M means measurement when existence of different attributes is measured. The fourth is reality. In the M level (practice of observation and measurement level) the sources of errors appears as this level there are different sources of bias.

Review of Literature

Reliability: According to Crocker and Algina,[1] the test developer must identify where and how errors take place so it his responsibility to know the sources of measurement error that can miss lead the measurement process and whole research process. Errors can be detrimental to useful score, so tests developed must be tested for its reliability and validity. Pretesting or pilot testing an instrument is essential activity because it helps to know the weakness of the instruments and allows timely correction on the instruments, so that measurement error can be minimized. For a standardized test it requires continuous refinement after every uses of it. The timing interval from the first administration and second administration is very important for the test improvement. Neither long gap between the two administration nor short gap is desirable [11].

Stability. Steel tapes if repeatedly used to measure an object then it gives same results without doubt. This quality is stability. Stability of measurement often called test-retest reliability is known by administering a test at two different points of time to the same individuals. When correlation is calculated its co relational coefficients is the reliability of the test and if the correlation coefficient is high the test is said to be high reliability or stability. Ideally, the interval between two administrations should be short enough that values obtained from the second administration should not be affected by the memory of the subjects of the first administration and also should not be too long that the second administration will be useless because of the experiences increased in the subjects due to different incidents. This will lead to lose the validity of the tests.

Internal consistency. Internal consistency gives an estimate of the equivalence of sets of items from the same test (e.g., a set of questions aimed at assessing the quality of life or disease severity). The coefficient of internal consistency provides an estimate of the reliability of measurement and is based on the assumption that items measuring the same construct should correlate. Perhaps the most widely used method for estimating internal consistency reliability is Cronbach's alpha.[1, 2, 3, 4] Cronbach's alpha is a function of the average inter correlations of items and the number of items in the scale.

Interrater reliability. Interrater reliability (also called interobserver agreement) establishes the equivalence of ratings obtained with an instrument when used by different observers. This means different observer must understand same principles and underlying If a measurement process motto of the tests so that truth can be revealed easily. A reliable measurement will require consistency between different raters.

Test-retest Reliability:

Test-retest reliability is the degree to which scores are consistent over time. It indicates score variation that occurs from testing session to testing session as a result of errors of measurement. Problem of this type of reliability measurement is that variation can be occurred due to memory, maturation, and learning in the subjects whom tests are administered.

Equivalent-Forms or Alternate-Forms Reliability:Two parallel forms of test are designed to remove the hindrances that affect test retest reliability, however exact parallel form are difficult to form. Two tests that are identical in every way except for the actual items included. First set is administered and second set administered because there is no chance of recall effects. It can be administered after giving the subjects certain hour's rests, since there is no effect of first test because first set is independent to

the second set but theoretically assumed they are equal in default and measuring constructs. When scores of two sets are correlated, the obtained coefficient is called the coefficient of stability or coefficient of equivalence. The main problem of this type of tests is difficulty of constructing two forms that are essentially equivalent.

Both of the above require two administrations.

Split-Half Reliability

It requires only one administration. It is appropriate when the test is very long. After the tests are administered, the total items of the tests are divided into two sets all odd item numbers and even mummurs items. Since longer tests tend to be more reliable, and since split-half reliability represents the reliability of a test only half as long as the actual test, a correction formula must be applied to the coefficient. Spearman-Brown prophecy forms

Split-half reliability is a form of internal consistency reliability.

Internal Consistency Reliability: Determining how all items on the test relate to all other items. Kuder-Richardson- is an estimate of reliability that is essentially equivalent to the average of the split-half reliabilities computed for all possible halves.

Rationale Equivalence Reliability: Rationale equivalence reliability is not established through correlation but rather estimates internal consistency by determining how all items on a test relate to all other items and to the total test.

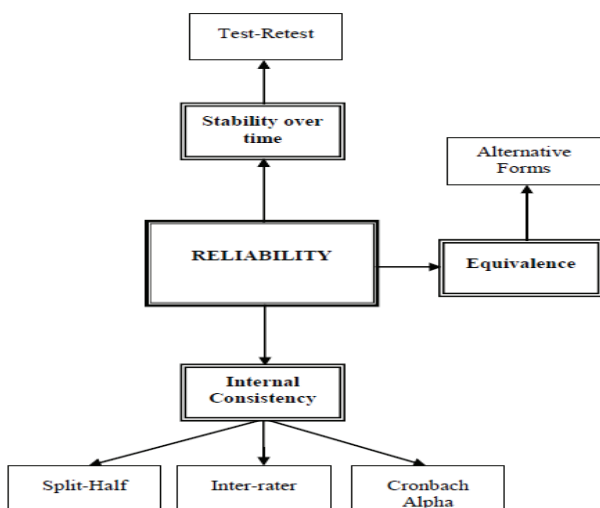


Figure 2: Reliability tests

Source: Ellen A. Drost : Validity and Reliability in Social Science Research, 2011

Validity. Validity is the extent that an instrument measures what it ought to measure. It is related to objectivity of the test, for instance, a test designed to test height should not measure weight. Regularly same results the tests might produce have no meaning if it is not measuring what it supposed to measure. It means reliability does not ensure validity but validity ensures to some extent reliability. The question of validity is answered on the basis of three points: the form of the test, the purpose of the test and the population for whom it is intended. We can divide the types of validity into logical and empirical.

Validity requires that an instrument is reliable, but an instrument can be reliable without being valid. A multiple-choice test intended to evaluate the counseling skills of trainers may yield reliable scores, but it may actually evaluate counseling knowledge, here the difference is in art and science. Unless counseling knowledge is empirically put into practice counseling skills cannot be gained.

Construct validity. It is the ability of the test to measure the construct (theorized psychological construct) *like emotion, intelligence, learning, anxiety, pain, etc.* This type of validity is a judgment based on the accumulation of evidence from numerous studies using a specific measuring instrument. Evaluation of construct validity requires examining the relationship of the measure being evaluated with variables known to be related or theoretically related to the construct measured by the instrument [1,7]. Many times psychologists assess/measure abstract attributes or constructs. The process of validating the interpreting about that construct as indicated by the test score is construct validation. This can be done experimentally, e.g., if we want to validate a measure of customer satisfaction. Some examples might clear it. We can have a hypothesis that satisfaction increases when customers are dealt with high respect. If we assume subjects are under the threat of an electric shock, then the threat of an electric shock should increase anxiety scores.

Content validity. This type of validity addresses how well the items developed to operationalize a

Construct provide an adequate and representative sample of all the items that might measure the construct of interest. When we want to find out if the entire content of the behavior/construct/area is represented in the test we compare the test task with the content of the behavior. This is a logical method, not an empirical one. Example, if we want to test knowledge on American Geography it is not fair to have most questions limited to the geography of New England.

Criterion-related validity. This type of validity provides evidence about how well scores on the new measure correlate with other measures of the same construct or very

similar underlying constructs that theoretically should be related. It is crucial that these criterion measures are valid themselves.

Internal and External Validity

Validity is the criteria for how effective the design is in employing methods of measurement that will capture the data to address the research questions. There are two types of validity: internal, and external. Internal validity in quantitative studies refers to the study's ability to determine cause and effect.

Internal validity is a confirmation of the correctness of the study design. Internal validity can be assured in both qualitative and quantitative studies with pilot testing of the proposed survey instrumentation to assure that the instrument is clear and unambiguous. Pilot testing of instruments is a procedure to enable the researcher to make modifications to an instrument based on results.

External validity is the extent to which the results of the study can reflect similar outcomes elsewhere, and can be generalized to other populations or situations. Regardless of whether a self-designed or validated instrument is used to collect data, or whether it is a qualitative or quantitative study, how validity will be assured must be stated. How the study is conducted and reported is illustrative of the validity and reliability and should align with the theoretical framework. Triangulation of the results enhances the validity of findings. Triangulation validates the methodology by an examination of the results from several perspectives.

When a future performance score is correlated with current test score then it is said predictive validity. For instances people of every occupations like administrators, managers, engineers were found successful whose classroom learning were interactive. It means today's classroom performance is related to future performance so this measure have predictive validity. This is an empirical check on the value of the test – a criterion-oriented or predictive validation. Similarly many of the today attributes can be predictive for future success. Unlike this If the attributes of today ensures the success of today, not the future, then is called concurrent validity. In both the cases the test scores are correlated with the performances to determine validity. Regular interaction in the class is scored with currently held examination performance then is called concurrent validity and if it is correlated with future success of the student then it is predictive validity. And if certain range of score is related with certain range of success then it is called criterion related validity. Logically, predictive and concurrent validation are the same, the term concurrent validation is used to indicate that no time elapsed between measures of tests and performance. This means validity

is the extent to which is the test represents the theoretical constructs. It is the correlation between the scores on tests obtained to assess similar constructs. Convergent validity is the correlations should be for tests of similar constructs. Divergent validity means low correlation for tests of unrelated constructs.

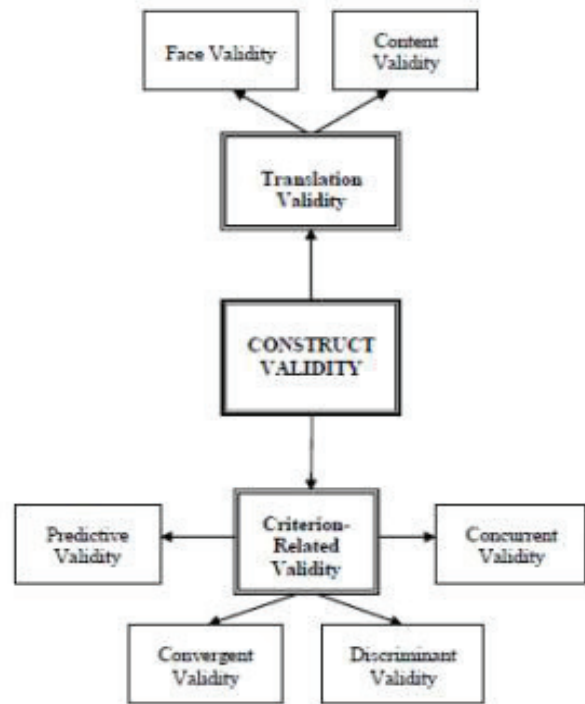


Figure 3: validity tests

Source: Ellen A. Drost : Validity and Reliability in Social Science Research, 2011

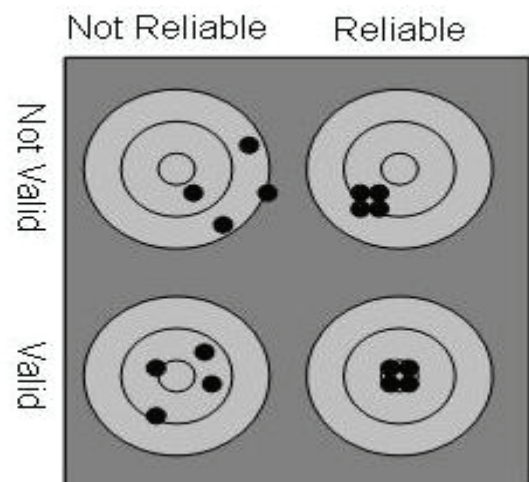


Figure 4: relation between reliability and validity

Table 1: Threats to validity

Source: <https://explorable.com/construct-validity>

Hypothesis Guessing	This threat is when the subject guesses the intent of the test and consciously, or subconsciously, alters their behavior.
Evaluation Apprehension	This particular threat is based upon the tendency of humans to act differently when under pressure.
Researcher Expectancies and Bias	Researchers are also human and may give cues that influence the behavior of the subject. Humans give cues through body language, and subconsciously smiling when the subject gives a correct answer, or frowning at an undesirable response, all have an effect.
Poor Construct Definition	Defining a construct in too broad or too narrow terms can invalidate the entire experiment. For example job satisfaction is not overall happiness.
Construct Confounding	This threat to construct validity occurs when other constructs mask the effects of the measured construct. For example, self-esteem is affected by self-confidence and self-worth. The effect of these constructs needs to be incorporated into the research.
Interaction of Different Treatments	This particular threat is where more than one treatment influences the final outcome.
Unreliable Scores	The test measures their language ability rather than intelligence.
Mono-Operation Bias	This threat involves the independent variable, and is a situation where a single manipulation is used to influence a construct.
Mono-Method Bias	This threat to construct validity involves the dependent variable, and occurs when only a single method of measurement is used.

The Factors Threats to Reliability

Ercan and Yazici [14] have remarked a list of factors that affect reliability of the tests scores. Some of them are: the length of the scale and the expression of the items in the scale. The expression is found insufficiently described. There can be misunderstanding of the respondents, and biasness in the scales. Biasness can cause from directing the items, loaded items, the items that cause prestige biasness, the items that cause restlessness. Other factors are homogeneity of the group, the duration of the scale, objectivity in Scoring, the conditions in making a measurement, the explanation of the scale, the characteristics of the items of the scale.

Reliability and Validity in Qualitative Research.

There are separate suggestions for researchers to maintain reliability and validity in qualitative research. Methods used are more subjective than in quantitative research and do not include statistical analysis and empirical calculation. In 1993, Brink has given some suggestion to maintain validity and reliability in qualitative research [15]. In place of validity and reliability qualitative researchers use terms such as credibility, trustworthiness, truth, value, applicability, consistency and conformability. They suggest the followings guidelines to follow:

- Making sure that informants are very clear on the nature of the research.
- Building a trust-relationship with the subjects and staying in that setting for a long period of time.
- Interviewing the same informant on several occasions and making observations more than once and over time.
- Comparing the results obtained with other evidence.
- confirming findings and analysis with informant
- keeping accurate and detailed field notes to note the variations in responses over the course of time
- Showing field notes to a second outside researcher. Another researcher is often much quicker to see where or how a fieldworker is being misled or coerced.

Item-response theory

In recent years, Rasch models and item-response theory (IRT) or latent-trait models have provided an alternative framework for understanding measurement and alternative strategies for judging the quality of a measuring instrument. This is going to be discussed in next presentation.

Statement of the Problem

Most often research articles are found not declared reliability and validity. Mostly in methodology part the researchers are found stating research design, sources of information, and sampling and tools used in analyzing data, but ignoring to write reliability and validity. Each of these are connected with reliability and validity, however researchers do not state how these were maintained and how their findings can be trusted. Mostly researches are not in a position to fully give their time and efforts to justify that their researches meet the stated design and steps to meet the reliability.

Research Questions

This research paper tries to find the answer to the questions: how reliability and validity are being declared in the researches currently.

Methods

This paper uses observation and analysis of last three years 444 published conference proceedings, and journals of reputed universities where author visited to know whether they have stated reliability and validity status of their researches in any way mentioned in review of literature.

Results and Discussion

In order to know the strength of the research, one has to judge whether the instruments, used in the research has high reliability and validity. Has the researcher tested it from the pilot test before going to final test?

Table 2: The Researches that have addressed reliability and validity in the conference held in different places

Papers received and published proceeding and journals		Stated clearly*	
Indian institute of Technology (IIT International Conference proceedings) Roorki, India[2015]	138	7	5%

Institute of management studies, IMS (books from selected article of International Conference Ghaziabad)[2015]	28	1	4%
ITAM proceedings [korean Data Based Society][2015-17]	65	8	12%
Nepalese Academy of Management (Proceeding of international conference) [2015-17]	99	4	4%
Birala Institute of Technology BIT proceedings[2015]	114	5	4%
Total articles	444	25	6%

*Validity and reliability stated clearly.

Source: Field Observation

Mostly used reliability coefficient is cronback alpha.

Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. Cronbach's alpha will generally increase as the inter-correlations among test items increase, and is thus known as an internal consistency estimate of reliability of test scores. The coefficient of alpha is interpreted as: Excellent when it is 0.9 or greater ($\alpha \geq 0.9$), good for ($0.9 > \alpha \geq 0.8$), acceptable for ($0.8 > \alpha \geq 0.7$), Questionable for ($0.7 > \alpha \geq 0.6$) and poor and unacceptable for less than .06. [5,6].

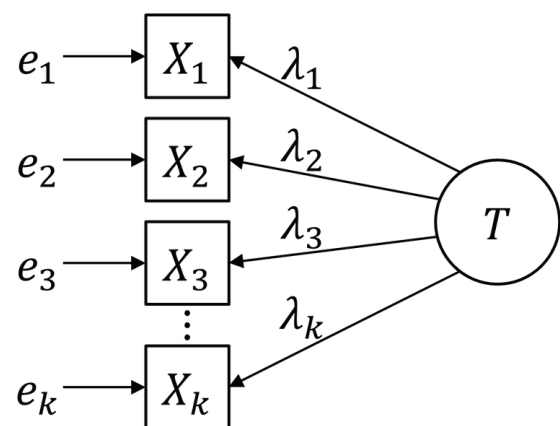


Figure 5 : Figure showing inter-correlation

In the figure 5, T is theoretical constructs, $X_1, X_2, \dots$ are dependent observable variables, composed of T and $e_1, e_2, \dots$ error variables.

Assuming loading of all factors is equal. Factors loaded to all dependent variables are equal. Dependent variables are made from errors and factors.

Table 3: Modes of research design in the institutions

	Qualitative %	Quantitative %
IMS	61	39
IIT	31	69
ITAM	30	70
Nepalese academy of management	60	40
BIT	32	68

Source: Ojha.S.K. 2016 [13]

Discussion: The Table 3 displays that number of qualitative research and quantitative researches are significant in numbers. Both the researches are popular. However, more conducting researches have no meaning unless they do not prove that they are trustworthy. Since the research is exploring (qualitative research) something new and describing testing (quantitative) them, then it is most important that the process of exploring and testing be done by more reliable and valid instruments and declared them.

To save time and costs, there need particular attention to increase reliability and validity, as these are lacking or not sufficiently being addressed.

Conclusion

In management research, unless measuring instruments are not made valid and reliable, the decisions made based on such research will be misleading. Hence it is essential to control them.

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Perceived Role of Parents in Children's Learning Process of Nepalese Institutional Secondary School of Kathmandu District

Dr. Yasudham Tripathi

Abstract

School alone cannot make the teaching and learning system of the schools better. So how the parents help the teaching and learning process is the main issue this article has raised, the purpose of this study is to explore the parental roles as perceived by major actors of the schools. The study is exploratory by nature and has dealt parental involvement in school teaching learning process and identification of the main areas of the parental participation and expected outcomes.

Introduction

Regarding school teaching learning process and its effects on learning, Bista has identified that there exists positive correlation between the parental involvement and children's test scores and class attendance [1]. The scholar has remarked that the parental participation in school education may help leverage communication, collaboration, support, sharing expectations and interests to each other and understanding the stand-points of each member directly or indirectly involved in the mission of education.

A social activist and the member of Parents' Association Nepal shared that the changed scenario of the country has made it mandatory for institutional schools to maintain adequate school-community relationship through the proper and timely interactions with the parents and involving them in school management. These practices might have supported the management in these schools significantly in improving their process of communicating information on student's progress to parents and taking general feedback from them during the discussions. Management, parents and students for making effective teaching learning process in schools and started to explore about its inquiry approaches. For this purpose, an academic study entitled, Parental Participation in Children's Learning Process of Nepalese institutional secondary school of Kathmandu district was coined up.

Research Questions

I used a set of two research questions. They are as follows:

1. How is the school management ready to invite parental involvement in Nepalese Institutional Secondary Schools (NISS) to improve the school teaching learning process?

2. How do the school management and beneficiary perceive the main areas of parental participation for enriching current school teaching learning process and what are their expected outcomes?

Literature Review

The literature available so far in regard to parental involvement and home environment where parents play dominant role is reviewed here.

Home and school environment are the leading factors of parental participation in school teaching learning process. Bronfenbrenner (as cited in Devi, 2003) has stated that there is need of application of system theories that consist of interactions between the developing person and the environment[2]. The author has further emphasized that the human development is the result of three major factors --

1. The person and what he/she brings to a particular situation or stage of development. This includes the results of experience as well as of motivation.
2. The environment or what is available to the individual in a particular situation or stage of life. This includes the significant context of life such as family, school and neighborhood or community.
3. The interaction between the person and the environment .

The scholar has used two broad terms: home and school that interacts each other to make the participation in teaching learning process. This interaction takes place in certain social and physical setting or environment which refers to the school or home. The developing person is viewed as growing and active individual. The interaction between the developing person and the environment is viewed as a

two directional or reciprocal relationship. In other words, there exists a process of mutual accommodation to which both person and environment make contributions. The above discussions include a number of factors related to school teaching learning process. Among these factors, home and school environment may be the vital aspects which cannot be ignored during the study of parental participation in school teaching learning process and programs. Taking these aspects into consideration, I reviewed the literature related to school environment as described in the sub section:

Stern has mentioned the following four principles about the involving of parents[3] --

1. School is about the whole of life, and teachers need to draw on the outside world, including the world of pupils' families.
2. The curriculum should be applicable to the rest of pupils' lives. The curriculum is not for the benefit of the subjects taught, it is for the benefit of the pupils- it should help them understand, grow, take hold of the world, become more 'real'.
3. Parents know more than teachers about their children, and are likely to have taught them more, too.
4. Parents are not cheap substitutes for teachers: teachers are, at best, quite expensive substitutes for parents (p. 3).

In addition, the scholar has suggested with a variety of other ways to make participation of parents in school programs. The schools should not have limitations on conducting informal discussions with parents about school programs, students' progress and other activities.

Bista has conducted a research study on parental involvement in education in the Nepalese context. In this study, the scholar attempted to show the relevance of parental involvement as the primary stakeholders of education.

The scholar has critically examined the present status of the acceptance of parental participation in the Nepalese context. In this regard, the scholar has claimed that the parental involvement has not yet been taken as an important dimension in the Nepalese education system. Further, the scholar has suggested that the parents may support in education in a great deal through a number of ways that include – (i) as supporters, (ii). as teachers, and (iii) as advisors through mutual collaborations with the teachers, school management, and students in praising the children's success, rewarding the performance, doing home assignments, showing interests in day-to-day school events, as well as acting as the sources of information required for better learning.

Methods

Research Approach and Design

The present research study has been primarily based on qualitative approach. a series of in-depth interviews were conducted major actors of education system.

Selection of the study schools

The entire study was conducted in Kathmandu district-based five institutional secondary schools having students 300 to 500. The key informants and the name of schools are given in Table 1.

Table 1: The Distribution of the Key Informants of the Study[1].

Schools	Number of Study Schools				SMC (C&M)
	Principals	Teachers	Students	Parents	
Academy School	1	2	3	3	2
New Horizon School	1	2	3	3	2
Kuleshwor School	1	2	3	3	2
Gyanakunj School	1	2	3	3	2
Dhauлагiri School	1	2	3	3	2
Total	5	10	15	15	10

Results

What is your opinion on involving parents in school teaching learning process?"

Table 2: Opinions derived from the depth interview(main point only).

Interviewee/participants	Opinions generated from interview
Perception of the Head teachers	a) Parents should be positive to their children's learning pace at home rather than in school. b) They should encourage their children's learning process. Parents are the responsible persons for education of their children. However, they generally do not visit the school for making inquiry of the progress of their children unless they are invited. Their support to their children at home will be better to improve the teaching learning process.
Perception of the SMC *(SCHOOL MANAGEMENT COMMITTEE) Chairpersons and Members	c) Parents should be participated in the discussion of children's learning each month.
Perception of the Teachers	d) parents should be involved in doing and supervision of their children's homework and planning and management of teaching learning process
Perception of the Parents	e) Parents should be involved in sharing the learning difficulties identification, planning for remedial education activities, correcting student's misbehavior and making a good learning environment at home.

Source: Field work

*SMC forms Parent Teacher Association (PTA)[4, 5]. For the purpose of taking parental support to the school and children, Education Act has provisioned. The Parents' Teachers Association is a school composed of parents and teachers. The two groups meet for the purpose of assessing teachers and finding ways of improving life and performance areas, cultural, academic, social and ethical. Joining parents to the schools actively means explaining the roles of the school to the community, and developing harmonious relationship. Parents give their points of view to the teachers concerning academic improvement and moral standards. They help

head teachers and their staff maintains effective discipline among their students.

Discussion

Different actors of school system perceived the role of parents in differing ways for the development teaching and learning process of the schools in general and for the betterment of their children in specific. However, every actor have stated the importance role of parents in their own ways to get support from the parents. Teachers will educate and work with children at school, but parents need to help; to expand upon the learning that is occurring in school and help your children prosper and succeed both academically and socially. It would be ideal if teachers and school administrators facilitated and encourage parent involvement.

Although PTA helps schools in various ways, they have limitations such as, some parents think this unnecessary so are reluctant to attend meetings. They fear because school might propose them for rising funds for school development. For some schools are far away and they have to send whole day, which hampers their daily earning. The

distance to travel might be the factor to stop parents from attending meetings. Parents may be unaware about the benefits of their children's teaching and learning from their regular school visit. Some parents executives may not be sufficiently educated to give sound academic advice to the school personnel.

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Understanding of Internal Control and its practice in Nepalese NGOs

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Abstract

Internal control system is a dynamic process that need to be constantly adjusted by organization to achieve its goal. This study provides common understanding of the internal controls in Nepalese NGOs. Nowadays, internal control understanding is generally accepted at Nepalese NGOs and the standards related to internal control and its basic application practice are formulated as per organizational need. The effectiveness of financial accountability as a system depends mostly on the existence of a proper balance between NGOs internal control supporting mechanisms and effective implementation of internal control system. In practice, There are difficulties in the application of the system of internal control in Nepalese NGO even there is basic internal control practices standard to have been followed by NGOs in Nepal. The find of study shows that internal control should be properly defined and effectively implemented by NGOs management in order to ensure the objectives, to operate ethically, smoothly and in an efficient, effective and economic manner.

Keywords: NGOs management, internal control, internal control system

Introduction

Internal control system is the process by support of which an organization governs its activities for effective and efficient operation, reliability of financial accountability and encourage adherence to prescribed policies and compliance [1]. Internal control system is needed for accountability and transparency of NGOs. The literature shows that accountability of NGO is necessary to be transparent on financial information, because it is determined by the rights to information public, communities and donor [2]. The transparent financial information plays a key role in maintaining standards, improving accuracy by providing detailed financial reports in timely manner, contributing to financial stability and sound financial accountability [3]. Hence, the internal control systems are linked to accountability through short term functional accountability and strategic accountability and the organizational information should be communicated for accountability purpose as NGOs have accountability in both top-up i.e. donors, governments and bottom-up i.e. civil society, grassroots members.

The internal control is a process that guides an organization towards achieving its objectives of financial accountability. Internal control system includes operational efficiency and effectiveness, reliability of financial reporting, and compliance with relevant laws and regulations [4].

Research Problem

Nonprofit organizations of Nepal have challenge to improve financial accountability and internal control system to effective performance in order to survive and grow. Nepalese NGOs have different backgrounds on the basis of their location, age and donor associations. These NGOs are working both in urban and rural areas; local and national have been supported by donors. Their level of financial accountability and practice of internal control is certain to be diverse due to these background characteristics. The study has also intended to identify the gaps within the Nepalese NGOs' systems with internal control and financial accountability.

Objectives

The main objective of this research work is to examine the internal control system practices of NGOs working in Nepal

Literature Review

Internal control is a management tool that provides adequate and reasonable assurance for the efficient, effective and economic utilization of institutional resources in compliance with the objectives of the institution; regulatory compliance of actions and transactions; regular, timely and reliable generation of information on activities, protection of institutional assets, prevention of corruption and irregularity. Financial accountability is considered as essential matters by the public and donors nowadays to measure trustworthiness of NGOs and carefully ensures fiscal controls because financial problems has always been the most likely place in nonprofit organizations –NGOs[5]

The financial accountability relies on effective internal control system, internal audit, managerial accountability and external audit. To ensure financial accountability of NGOs, there should have provision of up-to-date, accurate and relevant information relating to operating and finances of organizations [6].

There are five internal control components namely; control environment, risk assessment, information and communication, control activities and monitoring in order to conclude that internal control is effective within organization. COSO model has been adopted as the generally accepted framework for internal control as it has been developed as a model for evaluating internal controls. This study has adopted COSO model to know practice of internal control of Nepalese NGOs [7].

There are 4 keys to great internal control practices which help NGOs' management to minimize risk.

1. Separation of duties: The management of organization has to divide responsibilities between different people so that one individual doesn't control all aspects of a transaction.
2. Authorization and approvals: It is very important that only a person with delegated authority approves or authorizes transactions.
3. Security of assets: The organization should ensure safety of equipment, cash, inventory, and resources. Hence, periodical count and compare with amounts need to be check for control.
4. Review and reconciliation: The organization has to regularly examine transaction records against

official records to verify accuracy, appropriateness, and proper compliance.

Method

The researcher applied the sequential explanatory mixed method to achieve the objective, to understand internal control system and financial accountability practices in Nepalese NGOs. In the first quantitative phase of the study, the researcher selected survey design to accomplish the research. Quantitative data were collected using questionnaires, the quantitative like descriptive analysis, correlations' test, ANOVA were used in the quantitative phase by using SPSS version 22. In the second stage, the qualitative phase to explore more in depth results. This study carried out an in-depth interview with key informants of the study and conducted focus group discussion with focus on its philosophical premise of the internal control and financial accountability phenomenon in the Nepalese NGOs. The qualitative data were collected by depth interviews which were conducted with informants from different NGOs stakeholders and three focus group discussions were conducted with homogenous and heterogeneous groups.

The respondents of study are those people who have knowledge regarding the NGOs operation, practical work doing in financial management and key persons of organization management and board who are responsible in internal control and financial accountability and sustainability within organizations. The respondents of this research included the Admin/ Finance Heads, Manager, Officers, Executive directors and Board members of sample NGOs.

The study integrates quantitative and qualitative merged analysis by connecting the findings from both methods and has presented the research conclusions.

Results and Discussions

Quantitative Presentation and Analysis

This presentation and analysis has illustrated the result of the data produced from the field survey. Questionnaires were initially distributed to NGOs finance representatives, 116 respondents sent their response, which means 83% respondent's responses were received.

Table 1: The responsible person/body for NGOs internal control system

Responsible person for internal control system	Frequency	Percent
The Board of Directors or the Supervisory Board	56	48.3
Executive Senior Management Team	101	87.1
Internal Auditor	42	36.2
External Auditor	35	30.2
Organizational staff member	47	40.5
Finance Manager/ Officer	90	77.6

Source: Field Survey 2014/2015

Table 1 consists of the opinions of the NGOs' finance representatives about internal control system responsibility of NGOs. The highest number of respondents i.e. 87.1% stated that Senior Management Team in NGOs has the responsibility to internal control management responsibility within organization. The respondents also believe they themselves as finance managers/officers have responsibility to maintain internal control system within the organization. There are significant number of the respondents 48.3%, 36.2%, 30.2% and 40.5% who have the opinion that the board of director, internal auditor, external auditor and organizational staff member are responsible of internal control respectively.

Table 2: Organization implement an internal control system based principles

Internal control system based principles	Based on suitability of organization	Based on clearly defined responsibilities and Authority	As a tools of control	Based on practice & knowledge
Mean	3.43	3.85	3.67	3.82
Std. Deviation	1.171	1.149	0.943	0.914

Source: Field Survey 2014/2015

The table 3 shows organizational implement of an internal control system based principles that indicated respondents of the NGOs surveyed has disclosed that they are following internal control system based principles based on clearly defined responsibilities and Authority. The Nepalese NGOs seem concerned about their internal control system based principles, as per data range from survey which is within 3.00-4.00 rank. However, there still seems to be a room for improvement.

Table 3: Nepalese NGO has formulated policy main focused

Organizational policy have focused on	Frequency in number	Percentage
Affordable.	21	18.1
Focused on internal control system	82	70.7
Meets legal requirements	81	69.8
Comprehensive (covers all likely)	37	31.9
Is realistic and can be implemented	38	32.8

Source: Field Survey 2014/2015

Generally data shows that 70.7 percentage of the NGOs believe that they have focused on internal control and 69.8 percentage believe in their policy is focused to meet legal requirement, 32.8 percentage of respondents have responded that their policy is also realistic and implemented in organization effectively. 31.9 percentage NGO respondents have opinion that their organizational policy is comprehensive which covers all likely situations. 18.1 percentage respondents believe that their organization have also considered their policy formulations as affordable.

Table 4: Mean and standard deviation of organizational decisions based of NGOs

Decision Based of NGOs	Mean ($\bar{X}$)	Standard Deviation
Consulting with board members	4.1	0.946
By consensus with Management team	4.06	0.985
On the basis of rules and guidelines	4.46	0.871
On the basis of practice	3.46	1.149
Case by case basis	2.89	1.394

Source: Field Survey 2014/2015

The overall NGOs general organizational practices of organizational decision making and all practices within NGOs were found positive. The mean values of each individual variable are computed and compared to the acceptable level i.e. greater than three '3'. Average of level of organizational decision which is followed on the basis of rules and guidelines is slightly higher than 4. The consulting with board of member is also found slightly higher than 4 as well. However, the by consensus with Management team level was found only near to four in the mentioned scale of measure. But, the mean values of case by case decision of NGOs are found less than 3, which mean there is less decision on the same basis. The above analysis of five decision making based in NGOs management, the data reveal that Nepalese NGOs has less practice of case by case basis decision making and more focus on rules and guidelines for the decision making.

Table 5: “t” test of application of organizational decision preference on the basis of number of NGOs working in Nepal

Organizational decision preference		F	Sig.	t	df	Sig. (2-tailed)
Consulting with board members	Equal variances assumed	0.354	0.553	0.692	114	0.49
	Equal variances not assumed			0.703	113.984	0.483
By consensus with Management team	Equal variances assumed	0.018	0.892	0.912	114	0.364
	Equal variances not assumed			0.92	113.34	0.36
On the basis of rules and guidelines	Equal variances assumed	2.718	0.102	0.928	114	0.356
	Equal variances not assumed			0.956	110.565	0.341
On the basis of practice	Equal variances assumed	5.558	0.02	3.652	114	0
	Equal variances not assumed			3.759	110.996	0
Case by case basis	Equal variances assumed	0.315	0.575	2.737	114	0.007
	Equal variances not assumed			2.719	107.306	0.008

Source: Field Survey 2014/2015

In above table 5 has revealed the difference in responses of the NGOs in regards to application of decision making preference based on their organization working in Nepal. Regarding consulting with board members, there is no significant difference between local and national NGOs (the “t” value 0.703 and P value 0.483 greater than 0.05). Similarly, there are no significant difference in other variable/aspect of decision making which are by consensus with Management team (the “t” value 0.920 and P value 0.360 greater than 0.05) and on the basis of rules and guidelines (the “t” value 0.956 and P value 0.341 greater than 0.05).

P value. 0.00 less than .05) and case by case basis (the “t” value 2.719 and P value. 0.008 less than 0.05). On other hand, there is significant difference in the application of decision making preference with based on their organization working in Nepal in the basis of practice NGOs (the “t” value 3.652 and

Thus, there is less preference as well as significant level of different on case by case and practice based decision making preference based on the basis of NGOs the number of working in Nepal.

In above table 6. the ANOVA test F value of NGOs 4.252 along with $p = 0.003$ level, as $p < 0.05$ on NGO policy and practice formulation based focusing on internal control system which indicates there is significant difference that NGO policy and practice formulation based and more the NGOs working that NGOs are more focus on internal control system.

The “p” value (.482) is greater than 0.05 on Meets legal requirements so there is no significant difference of NGO policy and practice formulation.

The “p” value is greater than 0.05 on Comprehensive, policy is realistic and can be implemented and affordable, the value are 0.298, 0.269 and 0.413 respective, As a matter of fact the data analysis finds out that there are no significant difference that NGO policy and practice formulation based and more the NGOs working in Nepal.

Table 6: Nepalese NGO policy and practice based and number of NGOs number of working in Nepal

NGO policies Focus		Sum of Squares	Df	Mean Square	F	Sig.
Focused on internal control system	Between Groups	3.093	4	0.773	4.252	0.003
	Within Groups	20.003	110	0.182		
	Total	23.096	114			
Meets legal requirements	Between Groups	0.734	4	0.184	0.874	0.482
	Within Groups	23.3	111	0.21		
	Total	24.034	115			
Comprehensive	Between Groups	1.093	4	0.273	1.24	0.298
	Within Groups	24.459	111	0.22		
	Total	25.552	115			
Is realistic and can be implemented	Between Groups	1.171	4	0.293	1.314	0.269
	Within Groups	24.717	111	0.223		
	Total	25.888	115			
Affordable	Between Groups	0.595	4	0.149	0.995	0.413
	Within Groups	16.603	111	0.15		
	Total	17.198	115			

Table 7: Organization implements an internal control system principle

Internal control Implements	Based on suitability of organization	Based on clearly defined responsibilities and Authority	As a tools of control	Based on practice & knowledge
not at all	8.7	5.2	1.7	3.5
somewhat small	10.4	7.8	9.6	2.6
neither small nor large	28.7	19.1	27	23.5
somewhat large	38	32.2	43.5	49.6
very large	19.1	35.7	18.3	20.9
Total	100	100	100	100

Above table 7 shows that 35.7% Nepalese NGOs has internal control system principle based on very largely on clearly defined responsibilities and authority. There are somewhat large internal control principle are based on suitability of organization (38%), consider as control tool (43.5%) and practice and knowledge (49.6%).

According to table8, the respondents agreed somewhat largely that their organization follow standard element of internal control, such as they agreed 37.4% respondents believe they follow control environment, 55.7% respondents believe they follow Information and

Communications, 46.4% respondents believe they follow Control Activities

Internal control framework consists of five integrated component. Table 9 show descriptive statistical of different variables/ indicate of internal control status considering internal control framework with five integrated component for the Nepalese NGOs. The mean values of each component are greater than 3.00, which indicate that Nepalese NGOs follows standard components of internal control system.

Table 8: NGOs integrated component of internal control framework					
Respondents opinion in range regarding their organization follow	Control Environment	Information and Communication	Control Activities	Monitoring	Risk Assessment
not at all	2.4	1.8	2.4	1.7	5.2
somewhat small	10.4	3.5	6.1	2.6	17.4
neither small nor large	32.2	19.1	28.7	27.8	31.3
somewhat large	37.4	55.7	46.1	38.3	33.9
very large	16.5	20	16.5	29.6	12.2
Total	100	100	100	100	100

Table 9: The standard elements of internal control system followed by NGOs					
Standard elements of internal control system	Control Environment	Information and Communications	Control Activities	Monitoring	Risk Assessment
Mean	3.51	3.88	3.66	3.9	3.28
Std. Deviation	1.054	0.86	0.972	0.977	1.128

Qualitative Analysis and Interpretation

The researcher has asked questions on the organizational implementation practices of internal control system while conducting in depth interview and during the focus group discussion with key informants to identify the prevailing practice of internal control system for financial accountability.

The study present qualitative analysis and interpretation of the results of the key informant interviews in order to fulfill the triangulation approach adopted for the study. The study explores the experience and expertise of the key participants through questionnaires and unstructured interviews in order to understand the practice of internal control system. The findings from the key informant interviews are presented in descriptive and narrative form.

The person responsible for internal control and its practice basic principles

When the researcher asked to the local NGO representatives about the internal control responsibility within the NGOs, the research participant of local NGO stated that *“our board, senior management team are respective finance head of organization are responsible for the internal control. The NGO managers need to know that even the best system will only provide reasonable assurance that financial reporting errors, fraud and*

operating inefficiencies will be identified and controlled” (Field Note, 25 February 2015)

Most of the national NGOs respondents indicated during the FGD that *“Our organization are operating under well constituted boards, qualified and experienced management, they are responsible for our organizational internal control”* (Field Note, 15 March 2015)

In support of such ideas that presented above from NGOs representative, the researcher has collected further opinion with SWC representative, which are as follows:

SWC Representative also agreed in similar line and stated that *“the NGO's board of directors, management, and senior staff are responsible for the internal control system; they need to establish proper internal control system for their organization. It seems most of NGOS management and board member are aware of the responsibilities, but because of various challenges of NGOs operations, such as lack of resources, lack clear information and communication within team, lack of common ground and clear message from top management are some example. Hence internal control system is still the area where most of NGOs needs to work on it. The NGOs have to also assign the responsibility and authority to responsible personnel with appropriate resources to carry out duties.”* (Field Note, 2 March 2015)

The researcher has interpreted the basic Organizational Internal control Practice. There were the participants of local and national NGOs, key informants from

government bodies have exhibited a clear understanding of internal control system. The analysis of the key informant interviews on NGOs management practice has been presented below in descriptive form.

During the focus group discussion the most of local NGO finance representative said that *“Our organizations have also given the responsibilities of internal control system to senior staff members but the authority and responsibilities does not flow as demonstrated by the organization structure”* (Field Note, 22 February 2015).

The analysis revealed that the management of the organization is responsible to establish internal controls to keep their organization toward its financial goals. However, the senior staff member are also responsible to ensure internal control, hence the authority need to give to fulfill the responsibilities for effective internal control system.

Nepalese NGOs key policy focus and implement an internal control system based principles

The in depth interview with both national and local NGOs denotes that the Nepalese NGOs have written policies like financial policy, human resource management policy, administrative policy and other relevant policies. According to them, they also believe that their organizational policy focused on internal control system and meets legal requirements. However, local NGO in depth interview participants remarked *“organization policy should be known to all for better operation but still there is not of sensitization to make all staff aware and knowledgeable on it. Our organization is formulating the policies considering organization affordable and easily implementation”* (Field Note, 25 February 2015)

The NGO Federation of Nepal representative stated that *“Good policies express a fair and sensible way of dealing with organizational issues, hence once NGOs form the policies, it will become organizational practice, and it binds on everyone in the organization. It helps organization to set of principles and guidelines for a key area of activities within an organization. The NGOs policies express how your organization goes about its work and how it conducts itself”* (Field Note, 1 March 2015).

Both the local and national NGOs participants in this study shared similar views towards important of written policies. They accepted and indicated that the organizational policies and procedures are very important for internal control and financial accountability. In order to maintain financial accountability, it is important to raise the level of policies awareness of the staff members of the NGO

and stakeholder. The control activities are the policies and procedures that assist in ensuring that management directives are successfully implemented.

The Organizational Decision of Nepalese NGOs

Below is the key informants view in regard to the organizational decision making practice in Nepalese NGOs:

As per local NGOs financial representative – *“our organization follow rules and guidelines and consult with board as well but in some exceptional case, the organizational follow case by case basis based on common practice”* (Field Note, 25 February 2015)

The national NGOs have also similar and different on views, the respondents revealed that *“as our organization has long working history and strong on organizational norms and value, our organization follow organization rules and regulation to make organizational decision the board and management are consulted during the decision making process”* (Field Note, 27 February 2015)

The researcher has double checked about the decision making process of Nepalese NGOs with the government about their impression in this regard. Ministry of Social Welfare are Women and Child Farewell representative emphasized that *“An NGO that is accountable to multiple stakeholders not only ensures that organizational decisions are effective in meeting the needs of organization effectiveness and better operation, but also forces decision to be made in a more equitable and fairer manner to all related stakeholders. The NGOs should be monitor and evaluate consider this aspect by governing body hence there could be gaps in this aspect.”* (Field Note, 23 February 2015).

The above qualitative analysis has revealed that in local and national NGOs. The organization who has been working for long period is strongly proper to follow rule and regulation, consult and takes consensus while taking organizational decision making. Hence, we can conclude that the status of organization and working period of organizations has linkage in organizational decision making.

NGOs implementation practice of internal control system principle and follow the standard elements

There are several views have been presented and transcribed by research participants as follows:

A local NGO finance representatives commented *“Our NGO is following internal control system as per donor and audit requirements, which is helping us to detect errors and give chance to verify the process of each*

organizational activity to achieve goals” (Field Note, 8 March 2015).

National NGO finance research participants shared that *“there are different internal controls system has been placed within our organization, which include policies, procedure manuals, separation of duties, authority delegations, passwords protection, account reconciliations, arithmetical accuracy checks, physical verification of asset/cash, restricted physical access, budgets, implementation plans etc”* (Field Note, 29 March 2015).

National NGO board representatives further ensures and stated that *“our NGOs have developed internal control system focus on three elements, first on is safeguarding of assets from inappropriate use, loss or fraud and ensuring that liabilities are identified and managed, second is to ensure the quality of both internal (management) and external reporting and third is to compliance with laws and regulations and also with the organization’s internal policies”* (Field Note, 29 March, 2015).

Regarding five essential elements of the internal control system COSO component during FGD with local and national NGOs they have stated that *“the Nepalese NGOs integrated component of internal control framework for their organizational effective internal control but we are not sure on what extend the internal control framework and procedures are reviewed and updated and there are huge possibility of improvements in each element of internal control.”* (Field Note, 15 March 2015).

Most of the research participants are agreed that their NGOs try to follow all internal control components in various levels but their key focus is to improve on implementation of all elements.

The most of local NGO chairperson revealed that *“we try to follow all internal control components knowing or unknowingly but still we have still missing or not effective use of all components of within a given structure. For example, in small NGOs like us system wise control, the segregation of duties is not fully possible, but we still believe that our involvement of management in supervision, verification and review of records and processes, to ensure controls function effectively”* (Field Note, 8 March 2015).

During FGD, most of national NGO board representatives agreed to this statement and observed: *“The practice of organization and management control in project management superiority influence of the internal control and financial accountability”* (Field Note, 15 March 2015).

In addition, the board representatives NGOs further added that *“We believe that our internal control system is effective and help us to reduce fraudulent activities”* (Field Note, 15 March 2015).

Based on the above interpretation, it shows that Nepalese NGOs are in line with internal control system for financial accountability, it supports practice of ICS status in not very poor

Conclusion

The empirical study reveals that internal control system (ICS) is the primary accountability and governance tool for the organizations, it supports Non-Governmental Organization to establish and provide accountability to its stakeholders, donors and safeguard organizational assets.

Nepalese NGOs are using five internal control components knowingly or unknowingly following COSO model in order to have effective internal control system, most of internal control components practices within the NGOs are in somewhat large level in context of Nepal. Both the analysis findings have shown that Nepalese NGOs are following internal control system and covering all internal control components as per donor and audit requirements. The study also clarify that some Nepalese NGOs may not have fully implemented internal control system in line with COSO, they are following as per their organizational need. The study reveals that all the key players of Nepalese NGOs, like NGOs board of director, NGOs finance representative, SWC, NGO Federation of Nepal and Ministry all are aware about Internal control structure

NGOs general organizational practices of organizational decision making are done based on consulting with board members, by consensus with Management team, following the basis of rules and guidelines, on the basis of practice, and case by case basis. All practices within NGOs are found positive there is no significant difference in decision making based on status of NGOs and number of working years in Nepal.

The management is responsible for developing the detailed policies, procedures, and practices to fit their organization’s operations and to ensure that they are built into and an integral part of operations and updated timely for the effective internal control system within the organization. Nepalese NGOs believe that internal control system is management and board responsibility. The management including the governing board is responsible for the effective internal control and accountability.

To sum up, internal control system and its practices in no longer new concepts but still need improvement for effective implementation of internal control for financial accountability.

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Modeling and Statistical Analysis of Big Data for Cosmetics Marketing

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Abstract

Demands of cosmetics are affected not only by the well-known elements such as brand, price, and customer's consumption capacity, but also by some latent factors, for example, weather and air environment. Due to complexity and dynamic changes of the above factors, their influences can hardly be estimated in an accurate way by the traditional approaches such as survey and questionnaires.

Through modeling and statistical analysis of big data, this article studied the impacts of weather condition and air quality on customer flow and sales of the cosmetics distributors in China, and found several hidden influencing factors. It provided a big-data based method for the analysis of unconventional factors on cosmetics marketing in the changing weather condition and air environment.

Keywords Cosmetics Marketing, Big Data, Mathematical Modeling, Statistical Analysis

Introduction

In the past, most of the Chinese women were using cosmetics with merely some simple functions, since the average income of Chinese people was rather low then. Nonetheless, in the recent years, some high-end brands of cosmetics are increasingly popular among Chinese women. The country of China is the second biggest economic entity after the United States of America in the year of 2017. The flourish of economy and the increase of population enable China to become an enormous market of high-end cosmetics.

In this article, we use the data provided by a shop of a certain brand that is owned by the company of ROHTO in Japan in order to prove the reliability of our research. ROHTO entered the market of China in 2010 and got lots of data in the process of communicating and trading with their customers. The shop that we collected data in

detail is located in the city of Shanghai. We manage to bridge the gap between the marketing data collected by the company and weather factors in Shanghai that will influence the customer flows. As a result, some marketing strategies may be developed and applied so as to raise the familiarity and recognition of the brand among Chinese customers.

According to the definition shown in Wikipedia, big data is a term to describe data sets that are so large or complex that traditional data processing procedures are inadequate or even unable to deal with them. In 2008, big data was mentioned in *Nature*[1], and the terminology of 'Big Data' was popular all over the world since then [2].

Figure 1 shows that there are four words used by researchers to define the characteristics of big data. The four words are known as Volume, Variety, Velocity and Veracity. The data sets have been extracted from authentic

events but still with some unreliable parts. The volume and the variety of the data forces researchers to use some elaborate procedures to cope with them. The velocity of the generation of the data sets requires researchers to provide the result of data analysis within 3 seconds. Otherwise, the results are obsolete and useless. Data Mining (DM) and mathematics modeling are modern methods of analyzing huge amounts of data, which have already been equipped in many specific aspects such as Traditional Chinese Medicine (TCM) and epidemiology [3][4].

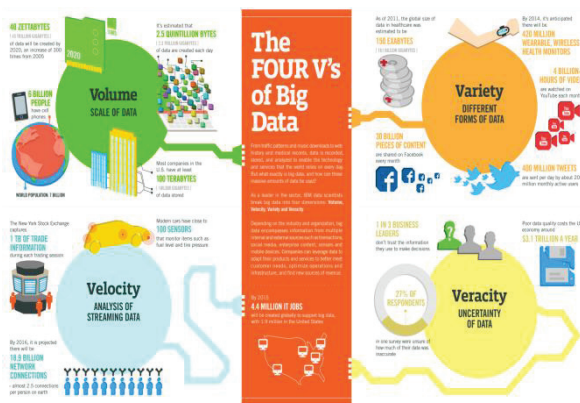


Figure 1 – The Four V's of Big Data

In the traditional concepts of businessmen, there are several fundamental components of a successful marketing strategy.

At first, the shops shall be carefully located in prosperous downtown areas so as to attract as many customers as possible. Second, the salespersons need to be carefully elected and trained to ensure their service quality. Finally, companies shall learn to collect and analyze data to predict the requirements of the customers in the near future.

It is rather easy for us to find out that most of the cosmetics shops in China are located in modern shopping malls all around huge cities such as Beijing and Shanghai, some of which also have fancy decorations with plenty of promotion activities. Nevertheless, some companies unconcernedly ignore the importance of statistics analysis and some hidden rules beneath the data are completely obscured. The article aims to find the ubiquitous connections between the weather condition and air quality in a certain place and the data of customer flows to provide a plausible way cosmetics marketing.

Impacts of Weather Condition and Air Quality

Characteristics of China's Cosmetics Customers

Chinese women seem to have an unstoppable passion of buying and using skin-care cosmetics to make them

increasingly elegant. The potential of their demand of cosmetics can hardly be estimated since they may earn much more money than expected in the following decades and even the most exquisite and expensive brands may be affordable for most of them at that time.

Usually, over seventy percent of the cosmetics are sold to customers who have already used cosmetics of this brand for a long period of time. In other words, customers are loyal to those brands that they have been trusting for years. This phenomenon contributes to the fact that the key for companies to get advantages in the competition is to reserve their frequent customers and develop new customers. As many regular customers may stop using cosmetics in a certain brand when they cannot find products that are capable of satisfying their requirements, companies shall find the potential of the cosmetics market in an efficient and accurate way.

Besides, customers of cosmetics are facing different kinds of skin problems in different seasons of a full year. For example, some people may be allergic to dust or pollen in spring. As a result, there may probably be itchy red bumps on their faces that are caused by allergy. Lipsticks, lotions and hand creams usually occupy a higher percentage of the total business volume of a cosmetics company in winter since the air moisture is statistically lower than that in summer. A lot of customers find their skin too dry to stay in a healthy condition and they want to buy some make-ups to compensate the negative effects caused by weather condition.

Influencing Variables of Weather Condition and Air Quality

The condition of people's skin is controlled by several factors, some of which can hardly be controlled. The quality of people's skin deteriorates when people are getting older or exposed towards the sun directly[5]. Besides, weather condition and mental condition may also contribute to the difference of skin quality.

AQI(Air Quality Index) is an index used to measure the condition of air in China. The range of the index is from 0 to 500. The higher the AQI is, the worse the air condition will be. The AQI can be checked and copied from some national statistics websites of China. Ultrafine particles with a diameter of $2.5\mu\text{m}$ or less are called $\text{PM}_{2.5}$, which may penetrate into people's lungs and cause diseases such as chronic bronchitis or lung cancer. $\text{PM}_{2.5}$ is one of the most important components that are used to calculate the index of AQI.

In 2017, researchers in Bahrain found out that rapid urbanization and industrialization negatively impacted the air quality there [6]. As researchers have proved some severe hazards of $\text{PM}_{2.5}$ over people's respiratory

systems [7][8], the potential relationship between $PM_{2.5}$ and customers' demands of cosmetics remains unknown.

Since $PM_{2.5}$ is an important component in calculating the AQI and we did not find any accurate records of the level of $PM_{2.5}$ from 2011/01/01 to 2011/06/30 in Shanghai, we use AQI index to represent the air condition so as to simplify the problem.

Theoretically, the average air humidity will affect the moisture of customers' skin. Nevertheless, the relationship between humidity and the total sales volume of cosmetics has not been carefully examined.

In conclusion, we are attempting to depict the profile of the hidden relationship of cosmetics market and weather variables including but not limited to those that have been mentioned above.

Modeling and Statistical Analysis of Weather Condition and Air Quality

The Relationship Between Humidity and Customer Flow

In statistics, the Pearson correlation coefficient is used to measure the linear correlation of two vectors[9]. The value is between +1 and -1, as +1 means complete positive linear correlation, -1 means complete negative linear correlation and 0 means no linear correlation. Habitually, we use the alphabet 'R' to denote the Pearson correlation coefficient. The absolute value of the correlation coefficient is used to measure the level of linear correlation. The phenomenon that the correlation coefficient is lower than 0.1 and higher than -0.1 indicates that there is nearly no linear correlation between two variable vectors. In this article, we use the data of the number of customers buying different kinds of cosmetics and the weather nearly everyday in the first half of the year of 2011.

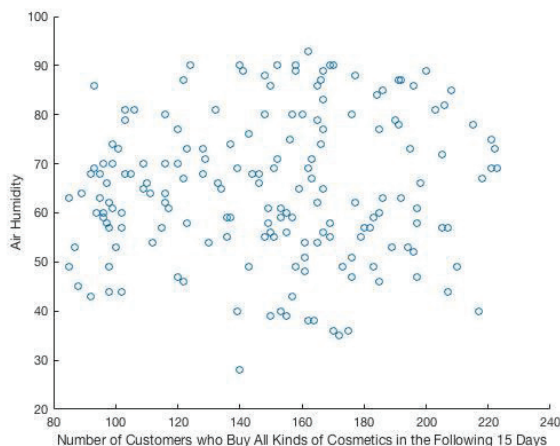


Figure 2- Air Humidity and Customer Numbers I

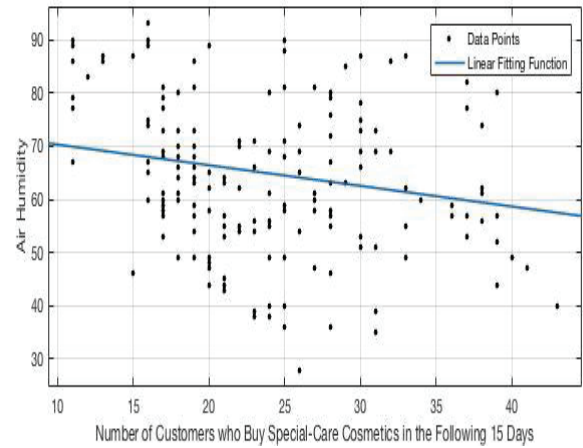


Figure 3-Air Humidity and Customer numbers II

Figure 2 and Figure 3 both show the relationship between air humidity and cosmetics market in the first half of 2011, but they have a crucial difference, as the X-axis variable in Figure 2 is the number of customers who buy all kinds of cosmetics in the following 15 days, and the X-axis variable in Figure 3 is the number of customers who buy special-care cosmetics that are designed to cope with skin dehydrate in the following 15 days.

After some statistics calculation, the Pearson correlation coefficient of the data shown in Figure 2 is $R=0.0752$, the absolute value of the correlation coefficient is lower than 0.1, which indicates that there is nearly no linear connection between the two variables.

In Figure 3, the numbers of customers who buy special-care cosmetics are weakly connected with the air humidity at that time. The Pearson correlation coefficient is $R=-0.2011$, which shows a weak negative correlation between the two variables. If we use a one-degree polynomial (i.e. linear function) to fit the data spots, the equation of the line is shown in Equation 1.

$$f(x) = -0.3882x + 74.18 \quad (1)$$

This phenomenon may tell us that customers are likely to buy more special-care cosmetics to cope with dry weather, which proves the assumption mentioned above that dryer weather might contribute to the increase of the sales volume of special-care cosmetics. However, the connection between air humidity and the sales volume of all kinds of cosmetics remains unknown.

The Relationship Between AQI and Customer Flow

At first, we downloaded the AQI reports from relative websites, and we want to find connections between AQI and customer numbers.

We tried to use the data of AQI and the number of customers directly and we created a plot with unprocessed data. Nonetheless, the data was almost chaotic and we could not find any connection between the two vectors of data. The unprocessed data is shown in Figure 4.

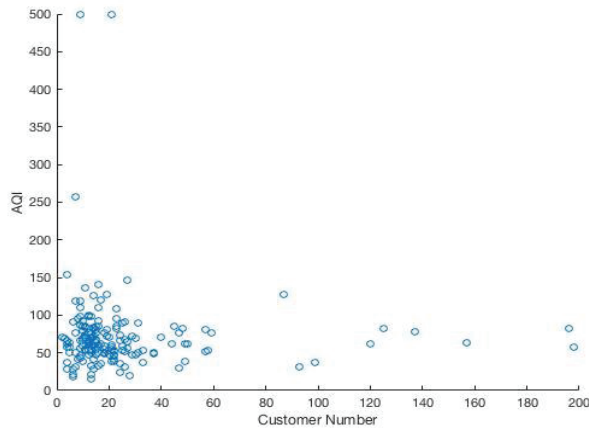


Figure 4-The Unprocessed Data of AQI and the Number of Customers

The data shown in Figure 4 has a correlation coefficient $R=-0.0441$, which shows that there is nearly no linear correlation between the AQI and customer number.

When we were examining the data once again, we found that the number of customers who entered the shop between 2011/4/16 and 2011/4/22 was extremely high. After checking the promotion plan of the cosmetics company in our research, we found that this company held a promotion activity at exactly the same time, which lasted for an entire week. Besides, The AQI index was extremely high in a short period of time and even reached 500 from 2011/5/2 to 2011/5/3. Those abnormal data points that can be noticed clearly in Figure 5 may induce the phenomenon that the results drawn from Figure 4 is not convincing.

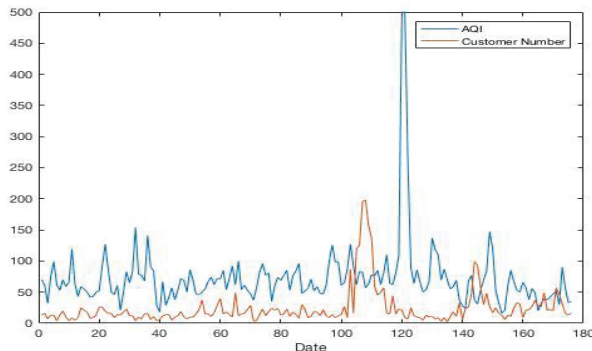


Figure 5-Some Abnormal Data Sets of AQI and Customer Number

It is straightforward to see from the plot that both the highest peaks of customer number and AQI in Figure 5 shall be considered to be abnormal data that are not reliable in calculating the Pearson correlation coefficient. Besides, there might be a delay between the deterioration of air quality and customers' demands of buying and using cosmetics.

In order to show the correlation between air quality and the number of customers and guarantee the accuracy of our research, some data points are removed from the plot shown in Figure 4. There are still 150 data points that are used and shown in Figure 6. In Figure 6, we use the numbers of customers 15 days later as the X-axis variable.

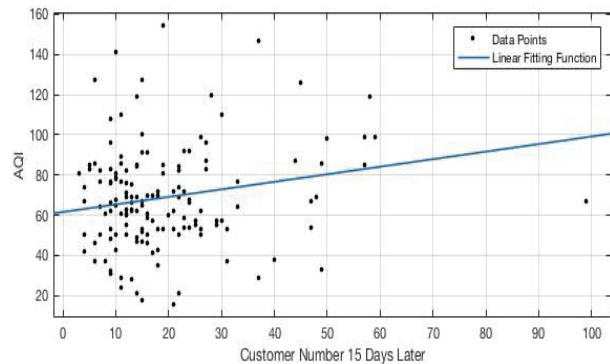


Figure 6-The Plot of AQI and Customer Number 15 Days Later

After the calculation of Pearson correlation coefficient, we find that the correlation coefficient between AQI and the number of customers is $R=0.2190$, which indicates that AQI and the number of customers have a positive correlation, though the correlation is rather weak. The linear fitting function in Figure 6 is shown in Equation 2.

$$f(x) = 0.3754x + 61.59 \quad (2)$$

The result shows that there are more people coming to the cosmetics shop a few days after the deterioration of air quality. Some of the abnormal data points need to be removed so as to find an appropriate approach towards the core of this issue.

Hidden Influencing Factors through Big Data Analysis

Dimension Reduction Process

Dimension Reduction Process is a process of reducing the dimension of the data sets so as to simplify the issue to be researched. The unprocessed data may compose of over 20 factors that are linearly independent. The process

of dimension reduction may refine the data sets and find some intrinsic characteristics in huge amount of big data. The process of factor analysis through dimension reduction can be separated into four steps.

The first step is to collect unprocessed data sets and normalize them via Z-score Normalization (i.e. to set the average of the statistics as 0 and set the variance as 1) in order to eliminate the difference of the order of magnitude between different data sets.

The second step is to judge whether the data sets are suitable enough to be processed through the process of dimension reduction. In this step, we use the Kaiser-Meyer-Olkin in Measure of Sampling Adequacy and Bartlett's Test of Sphericity. Habitually, the data sets are suitable for dimension reduction when the KMO Measure is bigger than 0.75 and the significance level (usually abbreviated as Sig.) of Bartlett's Test of Sphericity is lower than 0.005.

The third step is to construct the factors and rotate them to explain them in an appropriate way.

The forth and the final step is to calculate the score of the factor variables and ultimately get the factors from the original data sets.

The process of dimension reduction has been used in a variety of aspects such as medical science, as researchers use fast dimension reduction to analyze cancer molecular classification[10]. Some pieces of statistics software such as SPSS (Statistical Product and Service Solutions) already have several built-in functions of reducing the dimension of data sets, which may significantly raise the efficiency of big data analysis. We use SPSS to cope with the data sets that are related to weather condition and cosmetics market.

Rotated Component Matrix

In this article, we use 18 linearly independent sets of data to represent the weather condition in Shanghai between 2011/1/1 and 2011/6/30. The 18 variables are shown in Table 1. All the temperatures mentioned in this article are recorded by degrees centigrade.

Table 1-Declaration of variables

Name	Type	Unit
Max Temperature	Number	Degree (Centigrade)
Mean Temperature	Number	Degree (Centigrade)
Min Temperature	Number	Degree (Centigrade)
Max Dew Point	Number	Degree (Centigrade)
Mean Dew Point	Number	Degree (Centigrade)
Min Dew Point	Number	Degree (Centigrade)
Max Humidity	Number	Relative Humidity
Mean Humidity	Number	Relative Humidity
Min Humidity	Number	Relative Humidity
Max Air Pressure	Number	hPa
Mean Air Pressure	Number	hPa
Min Air Pressure	Number	hPa
Max Visibility	Number	Kilometer
Mean Visibility	Number	Kilometer
Min Visibility	Number	Kilometer
Max Wind Speed	Number	km/h
Average Wind Speed	Number	km/h
AQI	Number	-

At first, we need to normalize the variables that are shown above in the software of SPSS. The results of the KMO Measure and Bartlett's Test are shown in Table 2.

Table 2-KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.769
Bartlett's Test of Sphericity	Approx. Chi-Square	7107.766
	df	153
	Sig.	.000

The results of the tests show that the variables used in this case are suitable for dimension reduction, as the KMO Measure of the data sets is 0.769 and the significance level of Bartlett's test is smaller than 0.001.

We may use the scree plot of the factors that are generated by our data sets as shown in Table 1 to choose appropriate factors. The bigger the eigenvalues shown in the scree plot are, the higher the importance of the factors will be. In this case, we omit the factors with eigenvalues that are smaller than 1 to reduce the total dimension of the data sets from 18 to 4. In other words, 4 linearly independent factors are enough to describe the unity of the entire data sets.

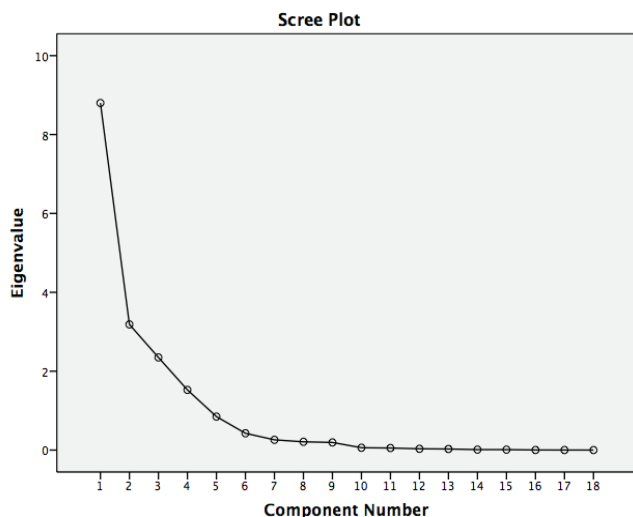


Figure 7-The Scree Plot of the Variables

In Table 3, we rotate the component matrix by Varimax method with Kaiser Normalization and omit the coefficients that are smaller than 0.300 to emphasize the characteristics of all the four factors. The factors are denoted f_1 , f_2 , f_3 and f_4 from the left of the table to the right hand side.

Table 3-Rotated component matrix

Rotated Component Matrix ^a				
	Component			
	1	2	3	4
Zscore(MaxTemp)	.962			
Zscore(MeanTemp)	.985			
Zscore(MinTemp)	.977			
Zscore(MaxDewPoint)	.955			
Zscore(MeanDewPoint)	.943	.310		
Zscore(MinDewPoint)	.878	.406		
Zscore(MaxHumidity)		.877		
Zscore(MeanHumidity)		.950		
Zscore(MinHumidity)		.899		
Zscore(MaxPressure)	-.972			
Zscore(MeanPressure)	-.967			
Zscore(MinPressure)	-.955			
Zscore(MaxVisibility)		.367	.835	
Zscore(MeanVisibility)			.972	
Zscore(MinVisibility)			.897	
Zscore(MaxWindSpeed)				.899
Zscore(MeanWindSpeed)				.882
Zscore(AQI)		-.417		-.334

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

The Rotated component matrix indicates that f_1 is mainly related to temperature and air pressure, f_2 is mainly related to humidity and weakly related to dew point, max visibility and AQI, f_3 is mainly related to Visibility and f_4 is mainly related to wind speed and weakly related to AQI.

Multiple Linear Regression

By using the four factors generated above, we may use multiple linear regressions to find some intrinsic connections between weather and cosmetics market. The scores of the factors are used to find linear connections between a dependent variable and the factors via linear regression. In SPSS, the scores can be calculated and saved as variables automatically by executing its built-in programs.

The numbers of the customers who enter the shop in the following 15 days between 2011/1/1 and 2011/6/30 are served as dependent variables. In order to prevent inaccuracy, we adjusted customer numbers of the shop from 2011/4/16 and 2011/4/22 to minimize the effects caused by a promotion activity of the cosmetics company as mentioned above.

At first, we use all the four factors to construct a multiple linear regression in SPSS and check the significance level of our procedure. The results are shown in Table 4.

Table 4-The Coefficients I

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	282.045	6.795		41.511
	REGR factor score 1 for analysis 1	48.412	6.814	.471	7.105
	REGR factor score 2 for analysis 1	11.671	6.814	.114	1.713
	REGR factor score 3 for analysis 1	-11.766	6.814	-.114	1.727
	REGR factor score 4 for analysis 1	3.657	6.814	.036	.537

a. Dependent Variable: CustomerNumber

The significance level (abbr. Sig.) on the right hand side of Table 4 represents the reliability of using this factor to generate a linear regression over the dependent variable. When the significance level of a certain factor is over 0.020, we shall remove this factor and use the rest of the factors to finish the process of regression.

The significance levels of f_2 , f_3 and f_4 in our case are 0.089, 0.086 and 0.592, so we are going to remove all those factors and execute the program of linear regression once again. The results are shown in Table 5.

Table 5-The Coefficients II

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	282.045	6.857		41.134
	REGR factor score 1 for analysis 1	48.412	6.876	.471	7.040

a. Dependent Variable: CustomerNumber

We may construct a regression model with the equation as shown in Equation 3 to find the hidden linear connection between weather and customer numbers.

$$y = 48.412f_1 + 282.045 \quad (3)$$

The significance level is smaller than 0.001 in this case, which indicates that the result is significant and reliable.

By the same procedure, we found out that the number of the customers who buy cosmetics from the shop in the following 15 days is linearly related to the factor f_3 , which can be shown in Table 6.

Table 6-The Coefficients III

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	149.477	2.739		.000
	REGR factor score 3 for analysis 1	-6.504	2.747	-.177	.019

a. Dependent Variable: PurchaseNumber

In this case, the linear connection is shown in Equation 4.

$$y = -6.504f_3 + 149.477 \quad (4)$$

The significance level of the third factor in this case is 0.019, which is rather high but still tolerable. It is possible for us to use other data sets such as the numbers of customers who buy a specific kind of cosmetics as the dependent variable and find multiple linear connections between weather and cosmetics market through the same method.

Summary and Discussion

In conclusion, linear fitting and factor analysis are both effective methods of analyzing data sets and seeking for hidden correlations between variables. By drawing linear fitting lines and calculating Pearson correlation coefficients, we found that air humidity and the customer numbers of buying special-care cosmetics have a weak negative linear correlation in the first half of the year of 2011, as customers were more likely to buy special-care cosmetics when they found the weather was too dry. Besides, daily AQI index shall positively affect the number of customers who enter the shop 15 days later. The cosmetics shop may increase the storage and intensify their promotion activities when the index of AQI is rising rapidly or the air humidity has been remaining in a low position for a long period of time. Besides, even strong correlations between variables may be undermined by some abnormal values in the data sets. In this situation, the abnormal values may be changed or omitted during statistics analysis so as to strengthen the correlation.

The data sets in Table 1 may describe a mathematics model used to predict the tendency of cosmetics market. As we may see in the beginning, the dimension of the

model is high and we need to find a proper method to simplify it. Dimension Reduction Process is a well-known procedure discovered for analyzing data with multiple dimensions. We may use the idea of factor analysis to simplify the model mentioned in Table 1. After the method of Multiple Linear Regression, we may generate and examine the connection between marketing data collected by companies and factors that have been refined from daily weather reports. We are glad to see that this process of dimension reduction remains effective when the dimensions of variables in the data sets are higher than we have researched in this article. The prediction of the tendency of cosmetics market via statistical analysis of big data may improve the working efficiency of cosmetics manufacturers and distributors. With some necessary adjustments, the idea of lowering the dimensions of variables can be adapted into other specific aspects such as economics and medical science.

Acknowledgments

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