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Table of Contents

Message from the BISM Conference Chair

Welcome to the 2017 International Joint Conference held in Tokyo, Japan on 16-18 August 2017. This joint conference emphasizes interdisciplinary interaction and collaboration as well as aims to provide a platform for scholars and professionals to share their latest research results and industry experiences. Through this interdisciplinary joint conference, participants can build a global link, share viewpoints from different perspectives, and seek collaboration and research opportunities across fields. This year the International Joint Conference includes the International Conference on Education and Learning (ICEL), International Conference on Engineering, Science, and Applications (ICESA), International Conference on Hospitality, Tourism, and Sports Management (HTSM), and International Conference on Business, Internet, and Social Media (BISM). On behalf of the organizing committee, I express sincere welcome to you attending this wonderful event.

This year the total number of paper submissions is 416 from 45 countries, with an acceptance rate of approximately 75.72%, and around 85.08% of the accepted papers have been registered. Approximate 67.91% of registrants have completed the payment processes, which yields 182 papers to be presented in 37 parallel sessions and three poster sessions. There are near 200 delegates from 43 countries participating in this event. We welcome delegates from Bangladesh, Brazil, Canada, China, Ecuador, Ghana, Hong Kong, India, Indonesia, Iran, Iraq, Israel, Ivory Coast, Japan, Korea, Kuwait, Lesotho, Malaysia, Mexico, Mongolia, Mozambique, Netherlands, New Zealand, Nigeria, Pakistan, Poland, Palestine, Romania, Russia, Rwanda, Saudi Arabia, Singapore, South Africa, Spain, Sri Lanka, Swaziland, Taiwan, Thailand, Turkey, Tuvalu, Uganda, United Kingdom, and USA.

The BISM received 65 submissions with an acceptance rate of approximately 70.77%. 35 of the accepted papers have been registered and 27 were arranged into the session program. The success of organizing an international conference fully depends on the integrated effort of many volunteers. Therefore, I would like to thank all researchers who submitted their manuscripts and participate in the conference, and to all the reviewers for their great assistance and support. Thanks also go to the Conference Co-Chairs, Local Committee Chair, Program Chair, and International Committee Members for their full support and great enthusiasm to make such a large-scale international conference possible. I would also like to thank the secretaries and staff of the Organizing Committee and Local staff for their hard work and indispensable contributions to the conference.

Finally, I hope this conference will be a great success and be fruitful to all participants in both academic and social aspects. Wish all of you enjoy the conference and your stay in Tokyo.

Professor David Ang
Conference Chair of BISM 2017
August 16, 2017

On the Three Major Economic Reforms in China -- A Case Study of Great Leap Forward, Third Front Movement and Reform and Opening-up

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ABSTRACT

China has experienced three major economic reforms including the Great Leap Forward in the late 1950s, the Third Front Movement in the mid-1960s and the Reform and Opening-up which started in the late 1970s and is still underway. However, the self-sufficient Great Leap Forward and Third Front Movement were affected by wrong policies and political situations, so the former completely failed, while the latter produced limited benefits. By contrast, the Reform and Opening-up attained impressive achievements because of the introduction of tons of European and American production and management technologies, foreign capital investment and other economic factors as well as such non-economic factors as less fierce Cold War.

Keyword: great leap forward, three-line construction, reform and opening up, progress and surpass

1. Introduction

The Great Leap Forward and the Third Front Movement were launched under the socialism banner of Mao Zedong. The Reform and Opening-up was led by Deng Xiaoping. Although this reform still maintained socialism, the economic system shifted to capitalist liberal economy and introduced large numbers of foreign capitals and technologies, contributing to substantial economic growth. Today, China continues to spare no efforts in carrying out economic reform, revitalizing economy, improving national standard of living and building an economic power. The above-mentioned three policy-oriented large-scale economic reforms exert an immense impact on China's economic development in the future, so this paper is designed to gain some insights into the essence of the three reforms by referring to literature.

2. Literature References

Chang (2012) held that there were four reasons for launching the Great Leap Forward: 1) Breaking the imperialist blockade and the ideas of Progress and Surpass were the external reasons for the Great Leap Forward; 2) Getting rid of the Soviet Union model and eagerness to lift the country out of poverty and backwardness were the internal driving forces of forming the Great Leap Forward; 3) Prevalent left-wing ideology in the Communist Party of China and the society was the social basis of the Great Leap Forward; 4) Mao Zedong was the strong promoter of the Great Leap Forward.

According to Wang (2003), the CPC Central Committee held an enlarged meeting of Political Bureau of the CPC Central Committee in Beidaihe in August 1958. After overcoming the right-wing conservative thinking and breaking the conventions of agricultural technology, the agricultural production in 1969 developed by leaps and bounds, with the yield of agricultural produce rising by several times or dozens of times. The meeting estimated that China's agricultural and food problems had been basically resolved, and mandated that the future focus of governments at all levels shift from agriculture to industry. In the industrial construction, production capacity of steel was an important indicator and was the only indicator to be among the advanced countries, so centering on steel became the only policy of industrial production.

In the mid-1960s, under the post-World War II Cold War framework, China carried out the military-oriented Third Front Movement in fighting against the US-Soviet threats. Most of the relevant scholars had a positive evaluation of the Third Front Movement. For example, Chen (2012) and Chu (2013) thought the Third Front Movement was conducive to the construction or layout of the western construction. Tsao (2011) indicated that China had prepared for war, but the Third Front Movement forced the United States and the Soviet Union to abandon the launch of a war of aggression . Wang (2009) suggested that despite its remarkable achievements, the Third Front Movement was not entirely successful, because the country had invested large amounts of money but failed to fundamentally change the backwardness of the western regions.

Zhu and Tan (2005) pointed out that the average annual growth rate of China's GDP increased from 6.1% before the reform (1953-78) to 9.7% during the reform (1978-98). During this period, China properly allocated and utilized resources through a series of institutional reforms, hence encouraged the development of products and production factor markets, and promoted the growth of the non-state economic sectors, the improvements in domestic investment structure, the inflow of foreign capitals and the foreign trade expansion. As a result, China's economy saw a high-speed growth. Tian (2008) maintained that there were eight basic reasons for the success of the Reform and Opening-up: 1) Abandoning class struggle and shifting the focus of work to economic construction; 2) Not politicizing the economic problems; 3) Carrying out adaptive reforms and improvements of the political system and the legal system and not undertaking drastic reforms; 4) Improving the economic systems and environment; 5) Opening to the outside world; 6) Introducing various transitional institutional arrangements, and establishing a sound market system; 7) Giving full play to the enthusiasm of local governments; 8) Adopting institutional transformation models meeting Chinese culture and cultural heritage.

3. Questionnaire Results and Analysis

3.1 great leap forward

In the late 1950s when the Cold War was at its peak, the Great Leap Forward was in full swing. There is an array of reasons for the Great Leap Forward. Li (2000) investigated the reasons from three aspects: 1) The egalitarian utopia. Personality cult and traditions of superstition and authority among the Chinese leaders and people were also the social bases for the Great Leap Forward. 2) Dishonest social atmosphere. Beginning in June 1958, exaggeration prevailed across the country. 3) Population pressure caused by traditional birth ideas. The annual birth rates between 1949 and 1958 were greater than 30‰. During this period, China's population increased by 114 million, up by 21.1%. Meanwhile, the country's actual arable areas grew to 160.4 thousand mu from 146.8 thousand mu, an increase of 9.3%. China's arable areas were estimated to increase from 212.5 thousand mu to 226.0 thousand mu during this period, up by 6.4%. It is clear that the increase in arable areas was far greater than that in population. Population pressure, to some degree, led to the state leaders' hastiness in economic development issues, and then to the formation of the Great Leap Forward.

According to the summary of Hsieh (1995), the Great Leap Forward resulted in a direct economic loss of RMB 120 billion and complete national economic recession. Subsequently, it took five years to adjust the national economy in order to recover to the total output in of 1957. Plunge in agricultural produce caused the Great Leap Forward to divorce from the reality, and thus it was difficult to carry on with this campaign. For instance, in 1971, the actual grain output stood at 287 billion jin, down by over 26% from 390.1 billion jin in the 1968. Between 1969 and 1971, the annual increase in investment in basic construction exceeded RMB 10 billion, and reached RMB 38.4 billion in 1971, increasing by 11% year-on-year and by 1.8 times over 1968.

Blind industrial pursuit of output brought a wide range of negative effects. In order to ensure that the steel production reached the standards, the basic construction scale of the steel industry was expanded, so did the construction of steel-related industries such as coal, electricity and transportation. As a result, the industrial imbalance and the surge in the number of workers nationwide took place. Excessive burden was imposed on the national economy, especially the agricultural capacity, thereby exacerbating the imbalance between supply and demand of social goods. Misconceptions before implementation, exaggerations during implementation and political struggles after implementation increased and continued the economic deterioration.

3.2 three-line construction

China became hostile towards the Soviet Union due to the Great Leap Forward, and later maintained a more strained relationship with the United States owing to the Vietnam War. Threatened by the nuclear wars of the two major powers, Mao Zedong put forward the idea of the Third Front Movement. In this way, the Third Front Movement for the military purpose again misled the China's economy. Nevertheless, Hsieh (2001) believed that after more than ten years of development, major military

product research and production and test bases were set up in the third-front western regions. Therefore, the layout of the national defense industry was intensified. Also, to a large extent, the central government could effectively preserve its war potential and strength, hence enabling the country to stick to long-term wars and war preparedness. Besides, the morale of the army and people was bolstered, and the aggressors could not easily launch war of aggression against China.

During the 10 years of the Third Front Movement (1966-1975), a considerable national defense industry was established in the western inland of China. More than RMB 200 billion was invested, accounting for nearly 19% of the national infrastructure budget. In 1966, the Cultural Revolution was launched. Along with the decline of economic activities, the introduction of foreign technology was deemed as xenocentrism and crawlism and therefore was rejected. Subsequently, the introduction of foreign technology rapidly reduced. By the late 1970s, with the era when Deng Xiaoping acted as the top leader, the priority to the Third Front Movement gradually decreased, also signifying the official end of this program. Although the Third Front program attained long-term achievements in internal development, the Cultural Revolution also produced an adverse impact on the Third Front program.

Under the spatial-temporal conditions of imaginary foreign aggression (threats from the United States and the Soviet Union) and actual civil strife (the Cultural Revolution), for China becoming an enemy of the United States and the Soviet Union), lots of the state budgets went to its huge military budgets, which seriously impeded the economic development. In respect of the nationwide economic construction, the Third Front Movement was undoubtedly a failure. The Third Front Movement cost tons of manpower and resources, but achieved exceedingly limited effects due to the wrong guidelines and business models, so it was considered by some to be a wrong campaign in the wrong time and place. As is indicated by Barry Naughton, an expert in China with the University of California, San Diego, the root cause of the failure of this campaign was making too much and too hasty investment.

The focus of the Third Front Movement was on the military industry and heavy industry, stimulated the development of the military industry and heavy industry and also safeguarded national security, but the Third Front Movement made limited improvements in the people's livelihood and shortage of supplies. After the Reform and Opening-up, the state gradually reduced its support for the third-front regions and enterprises, so a slew of third-front enterprises gradually went to bankruptcy and were shut down. The economy in the third-front regions was sluggish and people's quality of life was profoundly affected. The relocation of third-front enterprises accelerated the development of the western regions. The Third Front Movement significantly promoted exchanges between the ethnic minority areas and the inland and the development of the ethnic minority areas. The materials and industrial facilities and infrastructure accumulated in the third-front period lay a foundation for the later development of the western regions.

3.3 reform and opening up

Different from the Great Leap Forward for political purpose and the Third Front Movement for military purpose, the policy of Reform and Opening-up was for the economic purpose. Aside from the difference in policy purposes, the Reform and Opening-up was different from the Great Leap Forward and the Third Front Movement in no rash advance, no surpassing and use of external force. Thanks to domestic political stability, foreign capital and technology, China's economic reform finally succeeded. Under the spatial-temporal conditions of no foreign aggression and no civil strife and easing international relationships, the Reform and Opening-up fulfilled the slogan of surpassing Britain and the United States raised in the Great Leap Forward.

Table 1 Comparison between the Great Leap Forward, the Third Front Movement and the Reform and Opening- up

Event Name	Starting Year/ Leading Figure	Purpose of Implementation	Area of Implementation	Effectiveness of Implementation
Great Leap Forward	In the late 1950s/Mao Zedong	Political purpose	National	Completely failed
Third Front Movement	In the mid-1960s/Mao Zedong	Military purpose	Western inland	Limited effects
Reform and Opening-up	In the late 1970s/Deng Xiaoping	Economic purpose	Began in a few coastal cities and then promoted across the country	Fruitful

Source: Compiled by this study

In the review of literature, Zhu and Tan (2005) and Tian (2008) also suggested that the factors of success of the Reform and Opening-up were appropriate allocation and utilization of resources, introduction of foreign capitals and exclusion of politics. In the case that Taiwan's economic conditions had not been improved, China gained sound results by only changing a planned economy to a liberal economy. Changes in the international environment and the improved Sino-US relations boosted the

willingness of all countries including the United States to invest in China. In other words, changes in the internal policies or systems and the external international environment became the causes of success.

In the early days of the Reform and Opening-up, Deng Xiaoping, General Secretary Hu Yaobang and Premier Zhao Ziyang were called the three drivers leading China's Reform and Opening-up. During the initial stage of the Reform and Opening-up, the introduction of foreign capital was basically tentative with the main sources of capital being foreign government loans. Foreign capital was introduced, tax exemption periods were offered and factories were jointly established. China learned and adopted foreign capital management models, generated a host of employment opportunities, sped up the development of foreign trade and enhanced international competitiveness. Deng Xiaoping and successors of his concepts as well as other reformists succeeded in laying the Reform and Opening-up as one of the cornerstones of China's policy. From 1978 onward, China has developed from a country where 200 million people lived under the poverty line and which was isolated into the second largest economy in the world with prosperous economy.

4. Conclusions

After 30 years of Reform and Opening-up, China's national strength has increased markedly and its international status and military strength have been significantly enhanced. In 2010, China's GDP surpassed that of Japan to become the world's second-largest economy after the United States. Its GDP in 2015 exceeded US$ 1 trillion (US$ 1,086.488 billion), equivalent to RMB 6,767.080 billion [14]. Regarding the scale of foreign trade, it is the world's largest trading country. Therefore, China has become an indispensable member of the international community.

As is shown in Table 1, the Great Leap Forward and the Third Front Movement among China's three major economic reforms could only be self-reliant and stretched since China had no access to European and American technology and financial assistance because of the Cold War. In 1976, Mao Zedong died and his successor, Deng Xiaoping, gave up the socialist economy and adopted the capitalist economy and then implemented the policy of Reform and Opening-up so that success was achieved. In the meantime, its relations with the Western countries were improved and then it could introduce the world's capital and technology, so the policy of Reform and Opening-up produced spectacular results.

In an authoritarian state, personal will is more able to guide and implement policies. The Great Leap Forward and the Third Front Movement were implemented in a tense international environment and in accordance with the personal will of Mao Zedong, and continued to be implemented even if they were wrong Although the Reform and Opening-up was also implemented under Deng Xiaoping's personal will, the less hostile international environment and other factors became the reasons for success. Hence, the final results of the Reform and Opening-up differed greatly from those of the above-mentioned two campaigns.

REFERENCES

Chang, K., 2012,On the Historical Causes of the Great Leap Forward, Theory Research (18), 142, 143

Wang, C.H., 2003,Populism and Mao Zedong: Reassessment of Mao Zedong's Great Leap Forward and the People's Commune, Prospect & Exploration 1 (7), 67

Chen, D.L., Three New Perspectives on Mao Zedong's Decision of the Third Front Movement, Studies on Mao Zedong and Deng Xiaoping Theories, 8, (2012) 80

Chu, M.C., 2013, Research into Mao Zedong's Third Front Movement in the Overall Arrangement, Recollections of Gu M, Central Party Literature Press

Tsao, Y.Y., 2011, Mao Zedong's Judgment of War Threats after the Founding of the People's Republic of China, Military History, 1, 64-67

Wang, H.C., 2009,Third Front Decision-making and the Western Development, Journal of Chifeng University (Edition of Chinese Philosophy and Social Sciences), 30(3), 24

Zhu, X.M., Tan, W.E., 2005 , Comment on Reform and Open Door Policy of China: Economic and Political Reform & The Adjusting and Challenge of Foreign Policy, East Asia Studies, 36(1), 7

Tian, K.C., Retrospection of 30 Years of Reform and Opening-up: From Bringing Order out of Chaos, Market Economy to Harmonious Society Construction, Contemporary Finance & Economics, 2008 (12), 6, 7

Li, R.J., The Social Basis for the Great Leap Forward, Journal of Sun Yat-sen University (Social Science Edition), 4(40), 2000, 42-46

Hsieh, C.T., 1995 , Study and Comment on the Great Leap Forward, Contemporary China History Studies, 2, 32

Complied by the Teaching and Research Office of Party History, Party Building and Political Work under the National Defence University of People's Liberation Army, Reference Data about the CPC History, 23, 131, 132

Hsieh, P., 2001, China's Four Western Developments, Research into Western Development and Government Behaviors, Shaanxi People's Publishing House, 17

Hashida, T, 1994 , China's Economic Opening-up and Introduction of Foreign Investment and Technology - Historical Background and Impact, Analects by the Graduate School of International Cultural Studies, Tohoku University, 2, 147

Lyu, D. L., 2008 , The Vietnam War and China's Third-Line Defence Planning before the Cultural Revolution, 1964-1966, Cold War Studies, 66-68

Historical GDP Data by National Bureau of Statistics of the People's Republic of China

The Effects Of Leadership Behaviors On Job Satisfaction In Health Care

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ABSTRACT

Organizations can achieve their goals and objectives through high level of job satisfaction. One of the factors that affect the job satisfaction of the employees is the leadership behaviors displayed by the managers. The health institution can be successful if the employees act in a willing manner towards their goals. Four types of leadership have been mentioned in the study. Supportive leadership, research leadership, achievement-oriented and participatory leadership. Supportive leadership can be explained as Person-oriented, compatible leader. Instrumental (Lead) leadership; It is the leader showing the way to their employees. Success-oriented leadership; It improves performance, removes the obstacles that occur, keeps perfection as the most important thing and must give employees confidence and must provide possibilities for the employees to work at high standards. Participatory Leadership is; It is the type of leadership that gives importance to its employees, can display a friendly environment, listens to and supports employees' ideas and suggestions, trusts and defends their employees , exhibits meticulousness on plans, provides a working place without debate and can influence and make all employees participate. The purpose of this research is to determine the dimensions of the leadership behaviors of managers (Chief Physician, Chief Physician, Chief Nurse, Chief Nurse, Patient Services Manager, Patient Services Manager) working in a private hospital in Istanbul and determine the effect of these behaviors on staff job satisfaction. The researcher's universe constitutes a total of 515 health professionals working in the hospital. The survey sample was composed of 220 people who were easily selected through sampling. Leadership behaviors scale and Minnesota job satisfaction scales were used. Leadership behaviors scale was developed by Karayel (1999) and is four dimensions; supporting leadership, instrumental leadership, achievement-oriented leadership and participatory leadership. The job satisfaction scale consists of 20 questions and is examined in 2 dimensions as internal and external Satisfaction. Descriptive statistics, Shapiro-Wilk W Test, Mann Whitnett U Test, Kruskal-Wallis H Test, Spearman Correlation Analysis were performed when the results were given.

When the socio-demographic characteristics of the participants were examined, it was found that 67,3% were female, 43,6% were between 26-35 years, 30% were associate and 30% masters and doctoral graduates and 33,9 have been working in this hospital for 5 or more years in this hhospital, % 58.1% are married, 26.2% are doctors, 46.6% are nurses and 42% think their income is inadequate. When you look at leadership styles; Supportive leadership scale scores' average is about (3.33 ± 0.63); The mean of instrumental leadership scale scores' average is (4.01 ± 0.71); Averages of achievement-oriented leadership scale scores's average is (3.94 ± 0.74); The participant leadership scale scores' average is (3.98 ± 0.77) (Min1-Max.5).

The participants' internal satisfaction scores' average is 3.82 ± 0.59; (3.64 ± 0.67) and the average of job satisfaction scale scores is (3.75 ± 0.61). According to this, it can be said that the job satisfaction is very high in the hospital. In the statistics on the difference between sociodemographic characteristics and leadership behaviors; it was observed that there was no difference between gender, age, marital status, and income perception and perception of leadership behaviors. there was a difference between the education status and the study year

in the institution (p <0,05). When the differences between job satisfaction and sociodemographic characteristics were examined, there were significant differences between job satisfaction and all characteristics except sex and working year.
As a result of the relationship analysis, there is a positive moderate relationship between employees' supportive leadership perceptions, instrumental leadership perceptions, perceptions of success oriented leadership, perceptions of participant leadership, internal satisfaction, external satisfaction and general job satisfaction (p <0.05). Accordingly, as the leadership level of the managers of the employees increases, the internal, external and general job satisfaction also increases.

KeyWord: Leadership, job satisfaction, heath management, health worker, leader

Organizational Commitment Of Nurses

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ABSTRACT

Organizational commitment enables the employees to have long term relationships with the organizations. The ones who have committed themselves to their organizations can show extra task behaviour beyond the necessary formal business, defend the organization's reputation outside the organization. Many models about commitment have been developed. However, three –dimensional model proposed by Meyer and Allen has taken more attention. According to this model, employees feel three different kinds of commitments as emotional, normative and continuity commitments.In order to measure the organizational commitments of the 280 nurses working in three private hospitals in Istanbul, and to determine whether organizational commitment differs according to socio-demographic features, this research has been done. In this study, an information form with open and closed questions and Allen and Mayer's Professional Commitment Scale have been used. The scale measures the three sizes of the organizational commitment. The reliability analysis of the scale used in the survey has been done. Frequency and percentage have been used in the distribution of business and demographic characteristics. Hypothesis is tested by one-way analysis of variance (ANOVA), from Post Hoc Multiple Comparision tests, Scheffe and Dunnett`s C is used. If the Socio-demographic characteristics of the employees surveyed are examined, 64% of them work in Surgical Disease units, 42,5% work during the day, % 17 are responsible nurses, % 57 have six or more than six years of Professional experience, % 38 are 35 or more than 35 years old, %60 are married, %31 of them have graduate degrees (four-year university).

The nurses' organizational commitment levels are: emotional commitment (3.32±1.43), normative commitment (3.00±1.42) and continuity commitment is found as (3,00±1.75). Organizational commitment doesn't show any significant difference according to the socio-demographic features. Married ones have more emotional commitments than the singles, those who keep vigil continuously and who have worked 6 or more than six years have more normative commitments and those who are high school graduates and who work in internal disease units have more continuity commitments. According to these results, it can be said that the three organizational commitment levels of the nurses working in private hospitals in Istanbul are over the average level and is a pleasing result in terms of the institutions. Each institution will want their employees to have high levels of organizational commitments.

Key Words: Commitment, human resources management, hospital, nurse, health management

Combine Qualia Elements of Service Experience and Information System Success Model for Studying Repurchase Intention of Online Shopping Platform

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ABSTRACT

In recent years, the rapid development of technology and information, continuous innovative development of Internet technology, it provides a full time, instant, across space information communication channels. The daily life of the people and Internet based applications has therefore become more and more closely linked, which may thus change way of life and consumption patterns. It has apparently become a part of most people's life and work, especially the applications of network service. The trend of vigorous development of electronic commerce has risen rapidly through the Internet for shopping by consumers. The impact has a significant influence on consumption pattern, it not only provide a comprehensive pathway in goods and services, and changes in the economic development and market structure.

Due to the rapid increase of online shopping platform providers, it has increased the strength of the market competition. However the cost and time required developing a new customer is five times more than that of keeping an old customer. Thus, how to keep an old customer and improve the repurchase behavior is a very important issue in business and management.

This study will explore online repurchase intention based on the point of view of comprehensive quality. The comprehensive quality including website quality (Information System Success Model) and the emphasized service experience of qualia elements, then coupled with the perception of value, satisfaction and critical research dimensions. The focus groups, expert opinion and literature research will be used as basis for questionnaire design. Through the questionnaire survey and structural equation model validation analysis, to explore the key factors that impact on online consumer repurchase intention. Research results would consider as a practical reference for online consumer service quality improvement and future improvement policy.

Keyword: E-commerce, Repurchase Intention, Qualia, Information System Success Model

Local Economic Growth: New Evidence from China

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ABSTRACT

Geographical and industrial concentrations prevail over many nations, especially for China. However, shift-share (SS) analysis, which is widely applied to explore the sources of local economic growth, fails to grasp this issue. The purpose of this paper is to generate a new identity by excluding the above biases. It is clear from China's regional economy during 1978-2008 that the usefulness of classic identity is open to question no matter from a dynamic calculation and structural vector autoregressive (SVAR) estimation.

Keywords: Concentration; Shift-share analysis; China; SVAR

1. Introduction

The most classic assumption in regional science is to omit the concentration question, for example, regional comparative advantage appraised by comparison of a region to its nation; however, any region or industry as a part of the nation naturally overlaps the nation. Thus, it must further be assumed that there is a diverse industrial or regional structure in this nation, namely, the "diversity" assumption.[1] To make matters worse, many critical contributions to regional science, for example, growth pole theory and agglomeration economies to promote the concept of regional or industrial clustering as an engine of economic growth and innovation (Glaser et al., 1992; Jaffe et al., 1993) must deteriorate sharply the effectiveness of the diversity assumption and shift-share (SS) analysis is no exception. In addition, many nations adopt strategies regarding regional and industrial concentrations to rapidly improve national competitiveness and this is especially noteworthy in the case of China on the grounds that the authorities use the urban-biased policies which pour the huge amounts of social resources into mega cities (Yang 1999; Jones et al., 2003; Fan and Sun, 2008; Li and Haynes, 2011) as well as industrial agglomeration economies, such as special economic zones (SEZs) (Wen, 2004).[2] Consequently, China's phenomenon

[1] Chiang (2009) referred this as "regional-economic bias".

[2] We want to stress that this new version is also important for developed countries, such as the U.S. due to the tremendous range in size of its states. In other words, the concentration question is more sensitive to the issue of size.

is fully reflected in the high degree of geographic and industrial concentrations. Judging from the above, the important of how to correct SS analysis to reasonably replying to different types of concentrations cannot be overemphasized.

From theoretical view, since SS analysis is a complex framework to decompose local growth into three or four parts, developing a simple and clear approach is essential to resolving all concentration problems. In our opinion, the concept of a set space is the best solution: according to both regional and industrial classifications, a nation can be divided into four separate parts based on the separation theorem. Compared to classic SS analysis, this new version possesses many desired properties, including being easy to understand and providing a full picture of the interregional trade interaction among various regions.

Furthermore, the empirical study to prove the validities of new identity is also necessary. Regional output data for China during the period from 1978-2008 are selected as our empirical study based on the fact that the concentration problem is concretely manifested in the economically dominant regions or industries in fast-growing China. Dynamic SS account (Barff and Knight, 1988) and a time-series econometric approach (Coulson, 1993), namely, structural vector autoregression (SVAR) are both proposed in this paper to corroborate this new version. First, the concentration issue may skew the results of SS analysis, namely, the over- or under-estimation (Dinc and Haynes, 2005). Next, this new identity can identify the emergence of industrial transformation in a timely manner. Finally, when we introduce this new version into SVAR, it is obvious that the source of local economic growth using classic identity is totally different from our new version. All these things make it clear that this new identity is apparently advantageous to regional science and policymaking, so the impact of concentration question on SS analysis deserves explicit emphasis.

The remainder of this paper is organized as follows. In Section 2, a review of the concentration debates in China as well as SS analysis is provided. In Section 3, a new identity is created to fully remove regional or industrial overlapping, which is caused by the concentrations over its nation and then additional economic meanings are also discussed here. In Section 4, the real output data of three regions in China are used to observe and compare new and old identities based on two computation approaches. In Section 5, a time-series econometrics, namely, SVAR is offered to search for the source of local economic growth under old and new versions. Finally, some conclusions are given in Section 6.

2. Review of Concentrations and Shift-share analysis

In this section, we will first present some studies regarding regional and

industrial concentration policies in China to support the significance of concentration question. Second, we briefly outline the development of SS analysis from theoretical and empirical viewpoints. Based on the above, we must draw attention to combining concentrations with SS analysis to fairly evaluate the source of local economic growth.

2.1 Concentration questions in China

China's development can easily see the shadow of regional theories, such as growth pole theory (Perroux, 1950) and agglomeration economies (Hoover, 1937). The former suggests that a target region using massive public resources can eventually generate spillover effects into other regions and hence this strategy can promote economic growth efficiently. "Urban-biased" policy (Yang, 1999) is a typical case to directly aggravate the concentration issue in China (Zhao, 1999). However, the merits of growth-pole policy have provoked a great deal of controversy. Brun et al. (2002) showed that coastal region can sustain development of inland region in China. Chen and Partridge (2013) mentioned that medium-sized central cities have positive spillovers on surrounding regions in China, while Ke and Feser (2010) found little evidence in growth spillovers to support growth pole theory. Kanbur and Zhang (1999) and Yang (2002) both further indicated that urban concentration is the main reason for China's inequality. Besides, the latter, namely, the concept of agglomeration economies emphasizes that industrial agglomeration spurs competitiveness through positive externalities, such like localization and urbanization economies. Lu and Tao (2009) found that industrial agglomeration in China is steadily increasing. Moreover, globalization seems to further strengthen up the pressure of industrial agglomeration based on the law of comparative advantage (Ge, 2009; Li and Wei, 2010). As mentioned above, these arguments lead to coexistence of growth and concentration in China. It is therefore sufficient evidence to show that any theory must consider the concentration question in order to respond to modern China's economic development.

2.2 Development of SS analysis

SS analysis can be dated back to the work of Dunn (1960), who decomposed the change in the regional variable into three separate effects, namely, the national growth effect (NE), the industrial mix effect (IM) and the regional competitive effect (CE) through the application of two reference norms: the nation and the industry. However, this work attracted a large amount of criticisms (for example, Richardson, 1978), so many studies in the 1970s and early 1980s are devoted to correcting the classic formulation. For example, the Esteban-Marquillas model is to reduce high correlation between IM and CE on the basis of homotheticity (Esteban-Marquillas, 1972).

Subsequently, many economists have striven to advance the applicability of SS analysis since the late 1980s (Dinc and Haynes, 2005). Barff and Knight (1988) developed an empirically dynamic SS method to trace the evolution of all three effects. Coulson (1993) divided CE into two new effects: the regional effect (RE) and local specialized effect (SE) by use of a region as a new norm, to clearly separate the effects of the regional economy and local specialization on this industry. Markusen et al. (1991) added and subtracted the growth rate of the output in order to inert international trade into a new extension, which is referred to as international SS analysis. Due to the lack of theoretical content, Chiang (2012a) proposed an alternative version of international SS analysis based on the law of comparative advantage. Furthermore, Dinc and Haynes (1999) integrated SS analysis with data envelopment analysis (DEA) and the input-output (IO) model to compute the sources of regional inefficiency. Graham and Spence (1998) and Essletzbichler and Kadokawa (2010) both analyzed regional productivities in British and Japanese manufacturing using SS analysis. Gaschet (2002) used SS analysis to discuss the issue of suburbanization. Wadely and Smith (2003) re-examined the relationship between IM and CE. Mulligan and Molin (2004) designed a two-category SS model to estimate population and employment growth in the suburbs. Ezcurra et al. (2005) and Gallo and Kamarianakis (2011) computed the variances from SS identity to investigate the evolution of regional disparities in the EU. Mayor et al. (2007) combined the dynamic SS computation with ARIMA modeling to improve the forecasting ability of regional employment. Fotopoulos (2007) analyzed firm life-cycle dynamics under the SS framework. Chiang (2012b) broke metropolitan unemployment down into cyclical unemployment, sectoral shifts, geographical mismatches and frictional unemployment based on the SS structure to evaluate the relative importance of different unemployment sources. Fritsch and Noseleit (2013) used regression analysis based on SS analysis to evaluate direct and indirect employment effects of new business change. Finally, Nazara and Hewings (2004), Marquez *et al.* (2009) and Espa *et al.* (2014) revised SS formation using a sequence of spatial neighborhood effects.

As can be seen from the above, although a large number of studies have made efforts to improve classic SS analysis, there has been little discussion of the possible concentration questions. In past studies, the concentration issue is oddly concerned in Combes (2000) in relation to the local diversity index, in Krugman (1991) and Kim (1995) for the regional specialization index and in Shepherd and Dixon (2002) for the relationship between regional and national unemployment. Among these studies, the first study focuses on solving the industrial concentration question, while the others have attempted to remove the regional concentration. The only work related to SS analysis is found in Dinc and Haynes (2005), who mentioned that, when the reference

area is the nation, aggregating the regions or industries into a nation leads to misleading results of SS analysis, namely, under- or over-estimation. To overcome the possible mathematical complexity, the concept of a set is proposed here to divide a nation into four segments in order to ensure the nature of the independence, regardless of the spatial or industrial angle. This will be discussed in detail in a later section.

3. A New Identity

In this section, we will outline all aspects of deriving a new version from the concept of a set. In addition, the correctness of this new identity will be later proved and discussed according to the concept of comparative advantage.

3.1 Traditional SS analysis and the concentration problems

SS analysis, using the method followed by Coulson (1993) in the context of output may be described as follows:

$$\begin{aligned}\frac{\Delta y_{ij}}{y_{ij}} &= \frac{\Delta y}{y}+\left(\frac{\Delta y_j}{y_j}-\frac{\Delta y}{y}\right)+\left(\frac{\Delta y_i}{y_i}-\frac{\Delta y}{y}\right)+\left(\frac{\Delta y_{ij}}{y_{ij}}-\frac{\Delta y_i}{y_i}-\frac{\Delta y_j}{y_j}+\frac{\Delta y}{y}\right), \\ &= NE+IM+RE+SE\end{aligned} \qquad (1)$$

where y_{ij}, y_i, y_j *and* y represent the output level of industry j in region i, the regional output level, the industrial output level and national output with m regions and n industries, respectively. It is clear that (1) is a mathematical identity derived by decomposing the change in industrial output in a region into four portions: NE, IM, RE and SE, which is used to evaluate the growth of local specialization from location quotient (LQ) as follows:

$$\frac{\Delta LQ_{ij}}{LQ_{ij}} \approx \Delta \ln LQ_{ij} = \Delta \ln \left(\frac{\frac{y_{ij}}{y_i}}{\frac{y_j}{y}}\right) = \frac{\Delta y_{ij}}{y_{ij}}-\frac{\Delta y_i}{y_i}-\frac{\Delta y_j}{y_j}+\frac{\Delta y}{y} = SE, \qquad (2)$$

Although the fact that SS analysis decomposes the change in local output into national, industrial, regional and local specialization effects seems very reasonable, many serious overlapping conditions caused to concentrations may lead to wrong outcomes of these four effects. For example, taking the national economy as an aggregation of regional or industrial elements clearly expresses overlapping questions

in (3). By analogy, industrial and regional output variables can be obtained by aggregating industrial output in all regions in (4) and the sum of regional output in all industries in (5).

$$y = \sum_{i=1}^{m} y_i = \sum_{j=1}^{n} y_j = \sum_{i=1}^{m} \sum_{j=1}^{n} y_{ij} \quad , \tag{3}$$

$$y_j = \sum_{i=1}^{m} y_{ij} \quad , \tag{4}$$

$$y_i = \sum_{j=1}^{n} y_{ij} \quad , \tag{5}$$

In other words, all overlapping possibilities can be ignored based on four restrictions: $\frac{y_{ij}}{y_i} = \frac{y_{ij}}{y_j} = \frac{y_i}{y} = \frac{y_j}{y} \approx 0$, where $\frac{y_{ij}}{y_i} = \frac{y_j}{y} \approx 0$ implies that the shares of industry j in region i and its nation both must be very small; at the same time, regional distributions in this nation and industry j are both much more diversified for $\frac{y_i}{y} = \frac{y_{ij}}{y_j} \approx 0$. However, these conditions surely tell us that “diversity” assumption is completely conflict with the industrial and spatial concentrations of economic or innovative development, for example, agglomeration economies and growth pole theory as the critical conceptions in the field of regional economics. It follows from what has been said that diversity hypothesis is unsatisfactory for related clustering or concentration arguments.

3.2 The concept of a set

As can be seen from the above, industrial and spatial concentrations each make the overlapping issue more complex. The concept of a set is proposed in order to resolve all questions simultaneously. The combination of all types of overlapping opportunities as shown in (3), (4) and (5) can be expressed by using a diagram as shown in Figure 1 for the output of nth industry in mth region. This provides a convenient way of setting up a truly separated environment to exclude all possible overlapping channels.

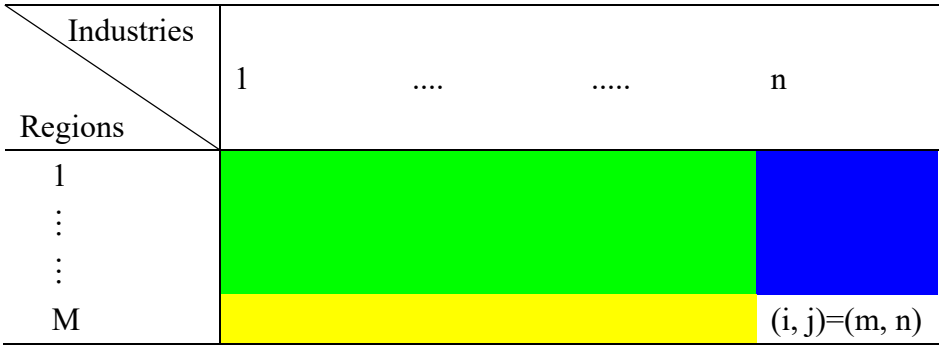


Figure 1: Industries and regions in a nation

Figure 1 has many critical implications. First, to obtain the new macroeconomic variable, we must first deduct specific regional and industrial factors with the exception of y_{ij}, namely, the union of two sets (industrial and regional dimensions). In other words, the new national variable ($y' = y - y_j - y_i + y_{ij}$) as the green zone is totally different from original national factor (y) and this variable is defined by the output of other industries in other regions. Secondly, the new industrial (regional) variable, namely, $y_j' = y_j - y_{ij}$ ($y_i' = y_i - y_{ij}$) as the yellow and blue zones, respectively, corresponds to industry j in other regions and other industries in region i, respectively. Thirdly, as far as industry j in region i is concerned, it remains the same as the white zone. Finally, most important of all is that this new version is indispensable to the case of a dominant region or industry on the grounds that industrial and regional concentrations occupy larger areas of national economy. In summary, the sum of the four zones, which is equal to the nation meets the requirement of the separation theorem, so we can prove that the four variables must be independent of each other.

3.3 This new version and economic meanings

As soon as the adjusted nation, industry and region, which are added to the local industry, are all determined independently, we can inquire into this new identity through shift-share analysis as follows:

$$\frac{\Delta y_{ij}}{y_{ij}} = \frac{\Delta y'}{y'} + \left(\frac{\Delta y_j'}{y_j'} - \frac{\Delta y'}{y'}\right) + \left(\frac{\Delta y_i'}{y_i'} - \frac{\Delta y'}{y'}\right) + \left(\frac{\Delta y_{ij}}{y_{ij}} - \frac{\Delta y_i'}{y_i'} - \frac{\Delta y_j'}{y_j'} + \frac{\Delta y'}{y'}\right)$$
$$= RNE + RIM + RRE + RSE \quad (6)$$

For convenience of analysis, this new identity in (6) is separated into four new effects: the revised national effect (RNE), the revised industrial mix (RIM), the revised regional effect (RRE) and the revised specialized effect (RSE) based on four new variables.

First, a positive RNE (growth from the green area) suggests that the growth of the output of other industries in other regions can affect local industrial output externally. Additionally, by the use of RNE as a basis of comparison, we can in turn obtain the industrial and regional growth. Next, RIM (growth from the blue area versus the green area) reveals that, as far as other regions (rather than the nation) are concerned, a higher industrial growth in other regions can generate a spillover to this industry in this region. Furthermore, a positive RRE (growth from the yellow area versus the green area) indicates that a higher regional growth excluding this industry can strengthen the growth of this industry in this region. Finally, a positive RSE (growth in the ratio of the blue area versus the green area to the white area versus the yellow area) really comes from a higher level of industrial specialization in this region compared to other regions. To sum up, while RNE, RIM and RRE can generate the three types of externality to local industrial growth, RSE provides industrial comparative advantage at local level to encourage the development of local industry.

Moreover, we can give an example to display the importance of this new version: a high-growth economically dominant area with a high-growth industry which plays a critical role in its nation. This case will generate four outcomes for this industry in this region: RNE<NE, RIM<IM, RRE<RE and a far higher RSE than SE due to the same magnitude of Δy_{ij}. This result tells us that the change in local competitiveness of this industry can be truly reflected in RSE, while an original SE is the wrong index.

Furthermore, the biggest discrepancy between this new version and the classic identity is the emphasis on the interregional interaction. Our new version focuses on a specified region (industry) versus other regions (industries); on the contrary, the classic identity only compares the same references: industry and nation with “fixed” NE and IM. In other words, as long as we discuss the sources of the change or growth in a different region (or industry), all revised effects will sequentially be different due to different “other regions (industries)”. All of these amount to saying that these changing effects of RNE, RIM and RRE can fully show the process of interregional-trade interactions through this new version.

4. Data of Local Growth in China

A great deal of efforts has so far been put in a theoretical analysis of our new version. What seems to be lacking, however, is an empirical application using actual

data. Loveridge and Selting (1998) mentioned that any new version of SS analysis must satisfy the requirements of having both a theoretical basis and data computability. Practicality can convince more economists and practitioners of the importance of this new extension, so China's data are applied to present our new version.

China's economy is well-known to have fast-growing economy associated with significant regional disparities (Li and Haynes, 2011), so China's regional data is the best choice to examine our new version. Although there is more information on real gross regional products (GRPs) for 31 provinces on the grounds that larger regions cannot be considered in terms of provincial heterogeneity, we still choose to use the data of only three regions due to manifesting the difference between new and old identities as well as the sake of analytical consistency that most past studies used three regions (Brun, et al., 2002; Wu, 2004; Groenewold et al., 2007).

Three regions are defined based on Figure 2: there are 12 provinces in the East: Liaoning, Beijing, Tianjin, Hebei, Shandong, Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong, Guangxi and Hainan. There are 9 provinces in the Central: Heilongjiang, Jilin, Inner Mongolia, Shanxi, Hunan, Anhui, Hubei, Henan and Jiangxi. There are 10 provinces in the West: Xinjiang, Tibet, Gansu, Qinghai, Chongqing, Sichuan, Ningxia, Shanxi, Guizhou and Yunnan. The source of the data is the *China Compendium of Statistics* (1949-2008) issued by the National Bureau of Statistics (NBS) and all data are measured in billions of RMB. However, we only select annual GRP data from 1978 to 2008 because of serious concern with poor quality of the data before 1978 as well as a new policy, namely, an open door approach by Deng Xiao-Ping to start a new phase for modern China since 1978. Finally, the real GRP data are further divided into three industrial sectors, namely, the primary, secondary and tertiary sectors, which are adequate for the purposes of empirical study.

To compete with other developed countries, China's government has implemented a growth pole policy, where a higher proportion of government investment has been allocated to the East region at the expense of regional inequality (Jones et al, 2003; Ke and Feser, 2010). This phenomenon is well illustrated in Figure 3, where the East region is an economically dominant area in China. A similar situation has occurred in its industrial structure as can be seen from Figure 4 based on the notion of agglomeration economies. From Table 1, the East region actually accounts for more than 65% of the gross domestic product (GDP), while the secondary industry with speedy development is the most important sector accounting for 73% of the GDP on average. Moreover, during 1978-2008 period, the East, Central and West regions had grown 27.66 times, 37.50 times and 20.68 times, respectively. At the same time, the primary, secondary and tertiary industries have expanded 3.94 times, 35.32 times and 36.07 times, respectively. In summary, these

examples show the different rates of growth in spatial and industrial clusters in China's economy.

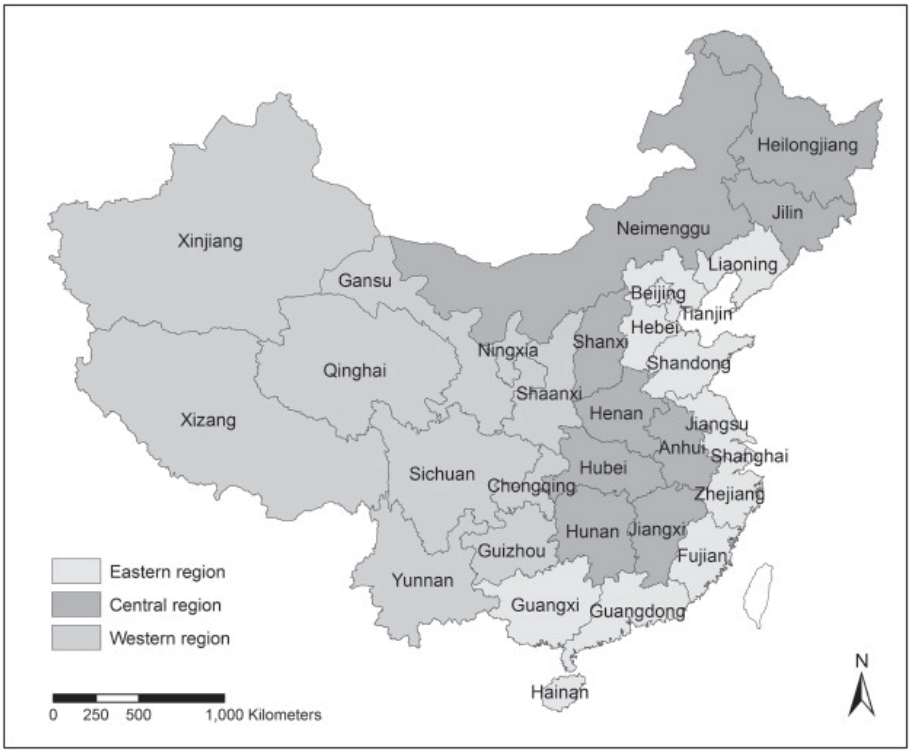
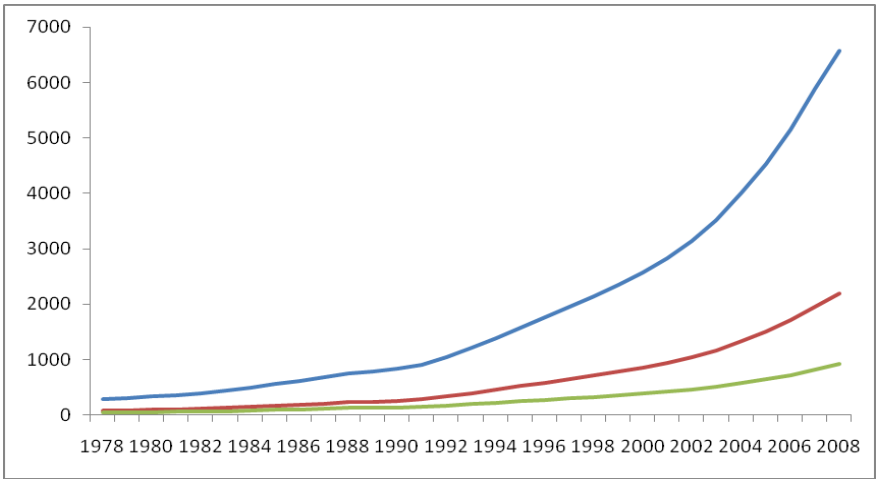
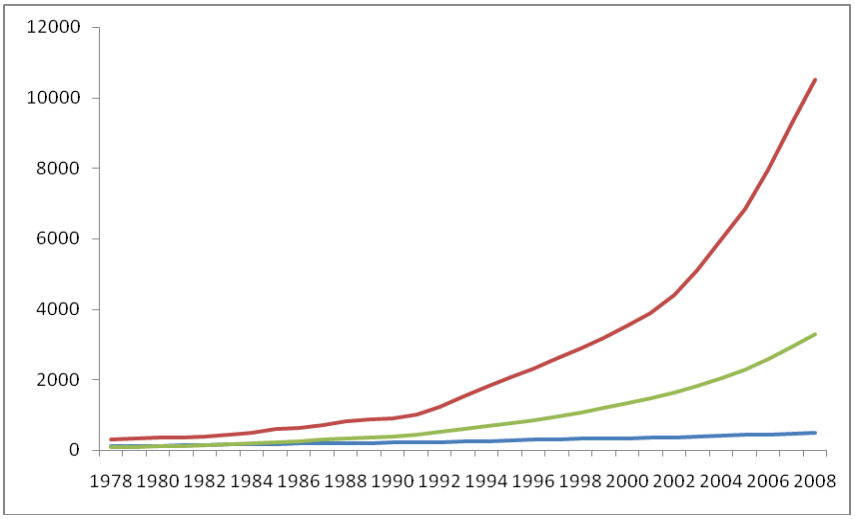


Figure 2: Thirty-one provinces and three regions in China



Note: From top to bottom, the three lines represent the East, Central and West regions, respectively.

Figure 3: Regional distribution of real GDP



Note: From top to bottom, the three lines represent secondary, tertiary and primary industries.

Figure 4: Industrial distribution of real GDPs

Table 1: Regional and industrial distributions in China from 1978-2008

Unit: billions RMB

	East	Central	West	Total	Growth
Primary	298.95	120.40	80.67	500.02 (3.49%)	3.94
Secondary	6885.00	2891.37	725.08	10501.45 (73.49%)	35.32
Tertiary	2208.77	683.10	396.54	3288.41 (23.01%)	36.07
Total	9392.72 (65.73%)	3694.86 (25.86%)	1202.29 (8.41%)	14289.87	
Growth	27.66	37.50	20.68		

Note: Growth is computed by comparing 1978 and 2008.

5. Time-series econometric method

SS analysis is actually an indentity to decompose local industry into four parts; however, which component is more important to economic growth must further apply econometric estimation. How to introcuce SS decomposition into time-series econometric approach is therefore a valuable subject of debate and our answer is structural vector autoregressive (SVAR) method.

5.1 Strategy of our model setup

In fact, SVAR is a VAR model combined with the contemporary restrictions, which must rely on adequate economic arguments. In this paper, the contemporary

restrictions are set up by SS analysis, where the hierarchy of economic system is orderly from nation, industry and region to local industry, so nation is external to industry or region; moreover, nation, industry and region are all external to local industry. In other words, nation is a uncontrolled factor for industry, region and local industry and nation, industry and region all can affect local industry externally. It should be concluded, from what has been said above: national shock only affect nation itself; industry or region is affected by itself and national shock; local industry is affect by all three external factors and itself. Judging from the above, our contemporary restrictions are summarized as follows with the notion of growth rate as $g = \frac{\Delta y}{y}$ in (7) and (8).

$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ w_{21} & 1 & 0 & 0 \\ w_{31} & 0 & 1 & 0 \\ w_{41} & w_{42} & w_{43} & 1 \end{bmatrix} \begin{bmatrix} g \\ g_j \\ g_i \\ g_{ij} \end{bmatrix}_t = B(L) * \begin{bmatrix} g \\ g_j \\ g_i \\ g_{ij} \end{bmatrix}_{t-1} + \begin{bmatrix} e_1 \\ e_2 \\ e_3 \\ e_4 \end{bmatrix}_t \tag{7}$$

$$W * g_t = B(L) * g_{t-1} + e_t \tag{8}$$

Where W matrix is a contemporaneous restriction; e represents structural error terms and L is lag operator. In turn, these restrictions make SVAR estimation feasible due to necessarily satisfying the identity conditions. Similarly, when we apply new version to evaluate the source of local economy, SVAR can again be exercised by only replacing nation, industry and region with revised version of these variables as (6). Finally, under the SVAR estimation, since the variance decompositions (VDs) are generally used to evaluate the relative contribution of different sources, VDs are proposed to compare the reasons of local growth with old and new identities.

5.2 Estimation results

For analystical convenience, we compare the differnces in the sources of local growth with new and old indentities by three industries, which are reported in Tables 2, 3 and 4. By comparison of new and old versions, it is easily found that there are only two cases of nine situations to show similar outcomes. In other words, there are very different results using original and our revised decompositions.

Next, when we are ready to starting to analyze every industry, it is very useful to quote from economic base analysis: export is the most important source of economic growth and this is because export sector can bring wealth back to this region. However, service sector only supports and follows export sector. Thus, it is suggested

that the growth of secondary, namely, macfacturing industry should come from itself, while development of teriary or service industry should rely on other sectors, especially export industry.

As the primary industry is concerned as Table 2, it is found that using original SS analysis, industrial effect is the most important cause in East and Central regions and local specilaization effect is the critical factor in only West region. However, for our new identity, local specialization effect is undoubtedly the most important reason in all three regions. This conclusion seems to be reasonable on the grounds that this industry belongs to nature-resource basis, so local environment, that is to say, local comparative advantage is always the first priority.

Table 2: Variance decompositions of the primary industry in three regions

	Classic				New			
East								
period	Shock1	Shock2	Shock3	Shock4	Shock1	Shock2	Shock3	Shock4
1	2.07	**53.09**	1.13	43.72	0.14	0.00	30.97	**68.89**
2	2.76	**55.30**	3.57	38.36	5.06	5.66	23.01	**66.26**
3	2.66	**55.01**	5.37	36.96	9.13	12.39	20.01	**58.47**
4	2.88	**54.42**	6.23	36.47	7.92	25.22	17.06	**49.81**
5	3.09	**54.09**	6.54	36.28	6.37	46.58	12.06	**34.99**
Central								
1	0.13	**72.14**	0.03	27.70	4.78	0.61	0.14	**94.47**
2	2.51	**70.51**	0.04	26.94	10.44	9.95	1.38	**78.24**
3	3.51	**69.73**	0.06	26.71	14.96	11.10	2.77	**71.17**
4	3.63	**69.65**	0.08	26.64	16.01	10.94	3.15	**69.91**
5	3.64	**69.65**	0.09	26.63	15.98	11.02	3.16	**69.83**
West								
1	0.60	35.52	8.09	**55.79**	0.01	11.69	7.32	**80.98**
2	0.81	36.95	8.68	**53.55**	7.52	13.59	5.73	**73.16**
3	0.89	36.74	9.05	**53.32**	11.97	12.30	5.20	**70.52**
4	0.93	36.72	9.10	**53.25**	12.69	12.54	5.24	**69.53**
5	0.95	36.70	9.11	**53.24**	12.62	12.84	5.30	**69.23**

What is more, the secondary industry as the core of China's economy deserves to be noted in Table 3. Under traditional SS analysis, national effect is the main reason for this industry. At the same time, their explained abilities in three regions are orderly East, Central and West regions. Coincidentially, this result fully corresponds to the degree of industrial and regional concentrations. On the contrary, revised industrial

effect can at most explain development of this industry in East and Central regions, while local specialization effect is the most important factor for this industry in West region. In our opinion, using new identity reveals that the secondary industry itself is the essntial factor no matter from other regions or its own region. The reason for the secondary industry is that this industry as a major export sector is affected by itself, rather than other industries.

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Table 3: Variance decompositions of the secondary industry in three regions

	Classic				New			
East								
period	Shock1	Shock2	Shock3	Shock4	Shock1	Shock2	Shock3	Shock4
1	**74.35**	14.23	0.33	11.09	0.18	**93.66**	0.00	6.16
2	**70.15**	15.76	2.93	11.16	0.19	**84.99**	9.03	5.79
3	**64.32**	19.25	4.81	11.62	0.33	**79.18**	15.23	5.26
4	**63.46**	19.64	5.39	11.51	0.41	**76.41**	18.13	5.05
5	**63.41**	19.60	5.43	11.55	0.45	**75.03**	19.57	4.95
Central								
1	**44.89**	26.47	14.22	14.42	0.01	**92.77**	0.27	6.95
2	**47.28**	24.59	14.29	13.84	0.13	**78.37**	15.68	5.81
3	**44.86**	27.51	14.57	13.06	0.14	**75.52**	18.99	5.35
4	**43.58**	28.95	14.77	12.71	0.14	**75.29**	19.28	5.29
5	**43.11**	29.45	14.88	12.57	0.14	**75.28**	19.29	5.29
West								
1	**52.24**	8.76	10.71	28.29	0.20	0.00	45.22	**54.58**
2	**41.26**	19.07	12.30	27.36	0.19	25.53	32.81	**41.46**
3	**37.32**	22.20	15.12	25.36	0.19	27.79	30.03	**41.99**
4	**36.69**	22.40	16.07	24.84	0.19	26.13	28.63	**45.05**
5	**36.66**	22.32	16.28	24.73	0.19	25.69	28.06	**46.05**

Finally, for service industry, its development usually depends on other industries, especially export-based industry. In fact, the impact of other industries hides behind revised national effect (RNE) due to other sectors in other regions and revised regional effect (RRE) based on other industries in this region. From Table 4, it is clear that estimation results using our new identity is more reasonable than one using old identity on the grounds that RNE is the top reason for East and Central region while RRE is the number-one cause to West region. That is to say, our estimation results of this new version are consistent with our reference

All these things make it clear that estimation results using our new version are

totally different from old identity; at the same time, the main source of local growth, which is deteced by our revised version is apparently more sensible for the nature of industry and economic base theory. We may, therefor, reasonably conclude that our new version is much more beneficial for discussing local growth than the original SS analysis.

Table 4: Variance decompositions of the third industry in three regions

	classic				New			
East								
period	Shock1	Shock2	Shock3	Shock4	Shock1	Shock2	Shock3	Shock4
1	**55.75**	8.34	11.38	24.52	**53.74**	0.92	3.85	41.49
2	**51.30**	15.76	10.70	22.24	**51.00**	7.40	12.16	29.44
3	**49.21**	19.00	10.31	21.48	**46.16**	9.33	18.15	26.37
4	**48.28**	20.16	10.38	21.18	**44.21**	9.88	20.21	25.70
5	**47.80**	20.55	10.61	21.04	**43.56**	10.05	20.83	25.56
Central								
1	23.34	18.95	14.93	**42.78**	**64.66**	13.14	0.00	22.21
2	17.62	25.58	24.15	**32.64**	**60.71**	15.18	4.07	20.04
3	15.47	25.74	27.00	**31.79**	**59.94**	15.45	4.76	19.85
4	15.03	25.74	27.38	**31.85**	**59.76**	15.52	4.89	19.83
5	14.98	25.76	27.37	**31.88**	**59.72**	15.53	4.91	19.83
West								
1	33.97	21.11	4.22	40.69	4.34	0.24	**78.34**	17.08
2	29.76	31.31	3.65	35.29	8.54	12.17	**69.08**	10.21
3	28.09	34.73	3.92	33.26	11.04	15.47	**66.19**	7.29
4	27.48	35.76	4.47	32.29	13.61	15.40	**65.18**	5.87
5	27.25	35.99	4.92	31.84	16.92	14.34	**63.66**	5.08

6. Conclusion

As for the neglect of industrial and regional concentration questions in traditional regional science, SS analysis is no exception. Moreover, there is sufficient evidence from regional science in favor of spatial and industrial concentrations to make the ignorance of the overlapping questions more and more preposterous. The purpose of this paper is to generate a new identity through the removal of these possible concentration questions to reply to these doubts. Fortunately, the concept of a set is used to divide the national economy into four independent parts to solve the questions of regional and industrial concentrations. This new identity can provide more

information for over- or underestimation as well as interregional interactions. All these statements are fully supported by the well-known example of China with seriously regional and industrial concentrations. Moreover, the ability to identify structural change can be efficiently advanced by our new version and this is critical for setting for a new development strategy in today's globalization era. Finally, SVAR is proposed to evaluate the source of local growth. It is clear that the estimation results are totally different, compared old identity with our new version; moreover, the source of local growth at industrial level is very well explained by use of this new identity. To sum up, there is considerable evidence to prove the importance of removing industrial and regional concentrations to correctly evaluate the source of economic growth.

References

Barff, R. A. and P. L. Knight, 1988. Dynamic shift-share analysis. *Growth and Change* 15: 423-425.

Brun, J. F., J. L. Combes and M. F. Renard, 2002. Are there spillover effects between coastal and noncoastal regions in China? *China Economic Review* 13: 161-169.

Chen, A. and M. D. Partridge, 2013. When are cities engines of growth? Spread and backwash effects across the Chinese urban hierarchy. *Regional Studies* 47: 1313-1331.

Chiang, S. 2009. Location quotient and trade. *Annals of Regional Science* 41: 199-214.

Chiang, S., 2012a. Shift-share analysis and international trade. *Annals of Regional Science* 49: 571-588.

Chiang, S., 2012b. The sources of metropolitan unemployment fluctuations in the Greater Taipei metropolitan area. *Papers in Regional Science* 91: 775-793.

Combes, P., 2000. Economic structure and local growth: France, 1984-1993. *Journal of Urban Economics* 47: 329-355.

Coulson, N. E., 1993. The sources of sectoral fluctuations in metropolitan areas. *Journal of Urban Economics* 33: 76-94.

Dinc, M. and K. E. Haynes, 1999. Sources of regional inefficiency: an integrated shift-share, data envelopment analysis and input-out approach. *Annals of Regional Science* 33: 469-489.

Dinc, M. and K. E. Haynes, 2005. Productivity, international trade and reference area interactions in shift-share analysis: some operational notes. *Growth and Change* 36: 374-394.

Dunn, E. S., 1960. A statistical and analytical technique for regional analysis. *Papers and Proceedings of the Regional Science Association* 6: 98-112.

Espa, G., D. Filipponi, D. Giulian and D. Piaxentino, 2014. Decomposing regional business change at plant level in Italy: A novel spatial shift-share approach. *Papers in Regional Science* 93: S113-S135.

Essletzbichler, J. and K. Kadokawa, 2010. The evolution of regional labour productivities in Japanese manufacturing, 1968-2004. *Regional Studies* 44: 1189-1205.

Esteban-Marquillas, J. M., 1972. A reinterpretation of shift-share analysis. *Regional and Urban Economics* 2: 249-255.

Ezcurra, R., C., Gil, P. Pascual and M. Rapun, 2005. Regional inequality in the European Union: Does industrial mix matter? *Regional Studies* 39: 679-697.

Fan, C. and M. Sun, 2008. Regional Inequality in China, 1978-2006. *Eurasian Geography and Economics* 48: 1-20.

Fotopoulos, G., 2007. Integrating firm dynamics into the shift-share framework. *Growth and Change* 38: 140-152.

Fritsch, M. and F. Noseleit, 2013. Indirect employment effects of new business formation across regions: The role of local market conditions. *Papers in Regional Science* 92: 361-382.

Gallo, J. L., Y. Kamarianakis, 2011. The evolution of regional productivity disparities in the European Union from 1975 to 2002: A combination of shift-share and spatial econometrics. *Regional Studies* 45: 123-139.

Gaschet, F., 2002. The new intra-urban dynamics: Suburbanisation and the functional specialisation in French cities. *Papers in Regional Science* 91: 63-81.

Ge, Y., 2009. Globalization and industry agglomeration in China. *World Development* 37: 550-559.

Glaeser E, H. Kallal, J. Scheinkman and A. Schleifer, 1992. Growth in cities. *Journal of Political Economy* 100: 1126-1152.

Graham, D. J. and N. Spence, 1998. A productivity growth interpretation of the labour demand shift-share model. *Regional Studies* 32: 515-525.

Groenewold, N., G. Lee and A. Chen, 2007. Regional output spillovers in China: Estimates from a VAR model. *Papers in Regional Science* 86: 101-122.

Hoover, E. M., 1937. *Location theory and shoe and leather industries.* Cambridge: Harvard University Press.

Jaffe, A.B., M. Trajtenberg, R. Henderson, 1993. Geographic localization of knowledge spillovers as evidence by patent citations. *Quarterly Journal of Economics* 108: 577–598.

Jones, D. C., L. Cheng and A. L. Owen, 2003. Growth and regional inequality in China during the reform era. *China Economic Review* 14: 186-200.

Kanbur R. and X. Zhang, 1999. Which regional inequality? The evolution of rural-urban and inland-coastal inequality in China from 1983 to 1995. *Journal of Comparative Economics* 27: 686-701.

Ke S. and E. Feser, 2010. Count on the growth pole strategy for regional economic growth? Spread-backwash effects in greater Central China. *Regional Studies* 44: 1131-1147.

Kim, S., 1995. Expansion of markets and the geographic distribution of economic activities: The trends in U.S. regional manufacturing structure, 1860-1987. *Quarterly Journal of Economics* 110: 881-908.

Krugman, P., 1991. *Geography and trade*. Cambridge: MIT Press.

Li, H. and K. E. Haynes, 2011. Economic structure and regional disparity in China: beyond the Kuznets transition. *International Regional Science Review* 34: 157-190.

Li, Y. and Y. H. D. Wei, 2010. The spatial-temporal hierarchy of regional inequality of China. *Applied Geography* 30: 303-316.

Loveridge, S. and A. C. Selting, 1998. A review and comparison of shift-share identities. *International Regional Science Review* 21: 27-58.

Lu, J. and Z. Tao, 2009. Trends and determinants of China's industrial agglomeration. *Journal of Urban Economics* 65: 167-180.

Markusen, A., H. Noponen and K. Driessen, 1991. International trade, productivity and U.S. regional job growth: a shift-share interpretation. *International Regional Science Review* 14: 15-39.

Marquez, M. A., J. Ramajo and G. J. D. Hewings, 2009. Incorporating sectoral structure into shift-share analysis. *Growth and Change* 40: 594-618.

Mayor, M., Lopez, A. J. and R. Perez, 2007. Forecasting regional employment with shift-share and ARIMA modelling. *Regional Studies* 41: 543-555.

Mulligan, G. F. and A. Molin, 2004. Estimating population change with a two-category shift-share model. *Annals of Regional Science* 38: 113-130.

Nazara, S. and G. J. D. Hewings, 2004. Spatial structure and taxonomy of decomposition in shift-share analysis. *Growth and Change* 35: 476-490.

Perroux, F., 1950. Economic space: theory and application. *Quarterly Journal of Economics* 64: 89-104.

Richardson, H. W., 1978. The state of regional economics: a survey article. *International Regional Science Review* 3: 1-48.

Rostow, W. W., 1960. *The stages of economic growth: A non-communist manifesto.* Cambridge: Cambridge University Press.

Shepherd, D. and R. Dixon, 2002. The relationship between regional and national unemployment. *Regional Studies* 36: 469-480.

Wadely, D. and P. Smith, 2003. Straightening up shift-share analysis. *Annals of Regional Science* 37: 259-261.

Wei, Y.H.D. and S. Kim, 2002. Widening inter-county inequality in Jiangsu Province, China, 1950–95. *Journal of Development Studies* 38: 142–164.

Wen, M., 2004. Relocation and agglomeration of Chinese industry. *Journal of Development Economics* 73: 329–347.

Wu, Y., 2004. *China's economic growth: A miracle with Chinese characteristics*. London: Routledge Curzon.

Yang, D. T., 1999. Urban-biased policies and rising income inequality in China. *American Economic Review* 89: 306-310.

Yang, D. T., 2002. What has caused regional inequality in China? *China Economic Review* 13: 331-334.

Zhao, Y. 1999. Leaving the countryside: Rural-to-urban migration decisions in China. *American Economic Review* 89: 281-86.

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The patterns of patent transaction markets

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Abstract--**This investigation reveals several distinctive features of patent transaction markets. Through transaction network analysis, patent transaction markets have identified that mature markets are informative environment. First, market players exhibit difference market power in transactional opportunity and capability. Second, the flow chain of technological transaction is revealed whereby market players are able to strategize their technological assets. Consequently, these finding and results not only depicted the IPR strategy of leading technology players but also demonstrates the social structure of their competitive advantage. Thus, this study provides insights into patent transaction networks, and also addresses management implications for firms interested in acquiring market competition.**

I. INTRODUCTION

Several studies have contributed to patent transaction investigation: the behaviors of market players and their effect on transaction markets and technology innovation [1-8], patent value assessment and patent monetization, intellectual property legislation and market governance [9-13], and decisions on the types of technology transactions. However, there are lots of important factors which have been insufficiently discussed. For example, the relationship between transaction clusters, and the position of market players. Additionally, most previous studies focus on market player's definition[7] or the activity of capital markets[8] rather than their collective behaviors and interaction of patent transaction markets. Thus, exactly what and how market players affect patent transactions should furtherly investigation.

Although current literature provides valuable insight into a patent transaction market, the above questions remain unanswered. In particular, while these multilateral interactivity-related questions are best understood as network-related, few explicit social network analyses of these questions have been performed. Uzzi and Spiro [14] investigate a how the creativity of a network artists was affected in terms of the financial and artistic performance of the musicals they produced. Moon, Barnett and Lim [15] examine the current structure of an international music trade flow network, revealing an imbalanced network structure. Nam and Barnett [16] explore how the structure of globalization of technology via intellectual property networks has changed longitudinally, becoming decentralized over time. McNerney, Fath and Silverberg [17] study the hierarchical structure of inter-industry relationships using networks of money flows between industries in international economies.

In light of the limitations outlined above, study examines a patent transactions market by using network analysis to explore the features of market players that is distinctive in construction from other markets. This study aims to make the following contributions to the literature on intellectual property transaction networks: First, this study is the first to employ a multilateral and multi-perspective to examine a patent transaction market. The findings identify a distinctive feature of patent transaction players and the ecology of their collaboration. Second, this study presents a systematic approach rarely adopted in the literature to study a network of patent transactions involving various complex processes. Third, the findings regarding the relationships between market players and transaction flows conclude that the mechanism to simultaneously achieve an efficient market and technological development. Finally, this study addresses policy implications for firms and authorities interested in acquiring market competition or governance.

II. Theoretical background

A valid patent not only can contribute to practicing entities but can also accommodate financing assets and technological development. In terms of patent collateralization and value assessment, Fischer and Ringler [9] point out the lenders of technology-related characteristics use patents to collateralize high-quality technology that can be redeployed to ventures in similar technology fields. However, patent-related characteristics like scope, which are related to patent value and are particularly important for non-practicing entities (NPEs), do not matter. Furthermore, the relationship between the patent forward citations and the patent family size can have an effect on patent valuation and collateralization [10].

The determinant of what types of technology transactions in a market is another central issue. Jeong, Lee and Kim [11] indicate that firms in technology markets tend to prefer licensing their patents when uncertainty is low, whereas firms in other markets tend to sell their patents when uncertainty is high. Therefore, the uncertainty of a given technological environment is a critical factor which affects firms licensing or selling their patents. However, a network of technological development can relieve environmental uncertainty for technology mobility. Jensen, Palangkaraya and Webster [12] point out trust in a technology partnership can affect the decision to enter the market for immature technology; parties with high levels of trust are more likely to conclude transactions compared with those with low levels of trust. Meanwhile, patents can effectively substitute for a lack of trust, and that trust is more important in upstream stages. Thus, the formation of a technology sector might influence technology mobility. Furthermore, research conducted by

Mowery and Ziedonis [13] indicates that technology flows through market transactions are more geographically localized than those operating through nonmarket spillovers.

Activities on intellectual property transaction markets not only involve technology or knowledge trading but also focus on multilateral behaviors which interact as a network. Several studies concerning this market structure have provided valuable insights[18]. Moon, Barnett and Lim [15] examine the current structure of international music trade flow networks, revealing an imbalanced network which demonstrates a core-periphery network structure. Their findings showed that the international music trade network remained relatively stable. A country's economic development and culture are influential factors which contribute to determine the global structure of international music flows. Nam and Barnett [16] explored how the structure of globalization of technology via intellectual property networks has changed longitudinally, and compares the structures of global trademarks and patents. The result empirically confirmed that both the trademark and patent networks have become decentralized over time. McNerney, Fath and Silverberg [17] demonstrated the hierarchical community structure of inter-industry relationships using networks of money flows between industries in international economies.

Therefore, several specific network issues in patent transaction markets are revealed. First, what kinds of market activate is occurred? Second, how these market players interact?

III. Data and methodology

In addition to providing strategic background information regarding sector-specific factors in domestic and global science-technology linkages and knowledge flows [19], patent citation network analysis demonstrates technological transactions regarding industry-specific development. This study thus utilizes the key term TFT-LCD related technology in patent searching records in the United States Patent and Trademark Office (USPTO) database. This procedure yielded a base sample of 34,930 FPD patent documents from 2002 to 2012. This study then compiled the patent samples to obtain 13,509 patent assignment records from 2002 to 2012. "Corporate Tree Data" was then merged with patent traders for their branch and subsidiary companies. Finally, patent transaction data as then employed to empirically examine network relationships.

From status signal theory[20], The firms tend to transact with those firms with greater transacted partners. The high status in the market transaction networks becomes the best signal for the firm to choose as the transaction partners. Therefore, network centrality is the simplest and most intuitive, which measures the centrality of an individual in terms of the number of nodes with a particular node connects. Knoke and Kuklinski [21] argue that while direct networks, degree centrality can distinguish between the in-degree(C_{in}) and the out-degree(C_{out}) of each node to measure its in-degree and out-degree centrality respectively. The use of these two indicators corresponding to the investigation of the network characteristics of international technology diffusion as inward and outward technological linkages of a country represents international technology acquisitions and exportations, respectively. Betweenness (C_B) is another important centrality index, which measures the extent to which a particular node lies between the various other nodes in the set of nodes [22]. This betweenness centrality is another global measurement that elaborates the ability of a given node to control interactions between pairs of other nodes in the network. Marsden and Lin [23] suggest that betweenness of a node measures the extent to which can play the role of a broker or gatekeeper with a potential for control over others. Betweenness centrality is an appropriate indicator measuring the extent which nodes broker indirect connections between all other nodes in a network. However, increasing redundant connections in a network decreases the efficacy of the brokerage advantage of nodes; increasing non-redundant connections would improve. Applying this indicator to the network of international technology diffusion, a particular country with high betweenness centrality represents more opportunities to broker the flows of diffusion among other countries since most technology diffusion will pass through this country, and thus it should possess competitive advantages in terms of brokerage opportunities.

Burt[24] proposed structural holes theory that the position with more structural holes in a network tends to be more competitive. Structural holes are opportunities to potential connections between players. Access to structural holes indicates a firm's opportunities to potential connections. When a player knows everyone is connected with one another, player has no opportunities to make connections. When a player know a lot of firms disconnected from one another, then a player have opportunities to make connections between people otherwise disconnected, connections in terms of coordination between the disconnected people, and connections in terms of ideas or resources derived from exposure to contacts who differ in opinion or the way they behave. Burt [25] empirical studied the supply chain managers in a large company and asked these managers to list the ideas to solve the problems on supply chains management; the result indicates that the managers with less structural constraints tend to create better ideas on the problem solving. Thus, the market players with more structural holes or less structural constraints tend to produce more market powers. Therefore, structural holes can regard as measuring the extent to which firms' network give their vision advantage in detecting and developing opportunities, the extent to which the network puts their at risk of productive accident. Furthermore, the positions with more structural holes tend to link to more nonredundant social circles, and can access more secondary contacts through more nonredundant primary contacts[24]. Thus, the firms with less network constraints (SH_{con}) tend to create better market powers in transactions. Furthermore, hierarchy (SH_{hie}) reveals status in network groups; hierarchy values demonstrate the strength extent of structural constraint on a player. Therefore, firms with high network constraint and high hierarchy suggest that they are major players in their core groups. On the other hands, firms with low constraint and low hierarchy imply firms locate in loss network groups.

IV. Results and Discussion

A. The analysis of core market players

This study thus investigates 22 major market players have cover most of market transaction. Therefor this work

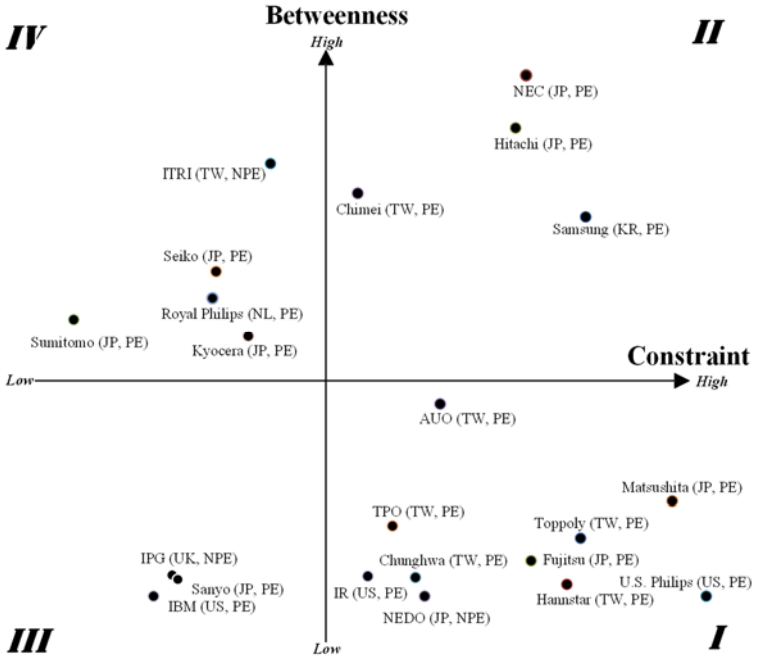
analyzed their ego-network respectively, which has express as Table 1. Furthermore, along the betweenness and constraint change, the market players can further divided into four groups, which has shown as figure 1.

Table 1. Ego-network analysis of patent transaction market: 2002~2012.

Core firms/organizations			Centrality			Structure Holes	
	Code	Name	In-degree(C_{in})	Out-degree(C_{out})	Betweenness(C_{be})	Constrain(SH_{con})	Hierarchy(SH_{hie})
Type 1	T152	Toppoly	77	2	209	0.964	0.650
	H11	Hannstar Display	71	64	43	0.942	0.989
	A215	AUO [5]	293	64	690	0.737	0.524
	N59	NEDO [1]	10	0	0	0.712	0.134
	T168	TPO Displays	128	65	253	0.660	0.302
	U5	U.S. Philips	0	77	0	1.167	0.673
	M39	Matsushita	3	125	341	1.112	0.692
	F90	Fujitsu	1	438	128	0.884	0.787
	C80	Chunghwa Picture	67	94	68	0.697	0.714
	I88	IR[8]	4	6	72	0.620	0.214
Type 2	S15	Samsung	136	10	1,367	0.972	0.999
	C62	Chimei	172	73	1,452	0.604	0.651
	N44	NEC [2]	6	419	1,875	0.876	0.934
	H54	Hitachi	30	91	1,685	0.859	0.896
Type3	S26	Sanyo	1	78	61	0.313	0.401
	I105	IPG [6]	7	12	76	0.304	0.408
	I82	IBM [7]	0	392	0	0.274	0.721
Type 4	K75	Kyocera co.	11	8	935	0.427	0.287
	I44	ITRI [3]	489	537	1,557	0.463	0.633
	S74	Seiko	29	56	1,171	0.375	0.378
	K55	*Royal Philips* [4]	62	175	1,075	0.369	0.667
	S266	Sumitomo	7	19	997	0.145	0.204
Maximum			489	537	1,875	1.167	0.999
Minimum			0	0	0	0.145	0.134
Mean (M)			72.909	127.500	638.864	0.658	0.584
Std. Dev (S.D.)			117.178	150.472	635.535	0.280	0.259

1. NEDO: New energy and industrial technology development Organization, Japan
2. NEC: Nippon Electric Company, Limited
3. ITRI: Industrial Technology Research Institute, Taiwan
4. Royal Philips: Koninklijke Philips electronics`
5. AUO: AU Optronics
6. IPG: IPG Healthcare 501 Ltd, IPG Electronics 502 Ltd, IPG Electronics 503 Ltd, IPG Electronics 504 Ltd
7. IBM: International Business Machines Corporation
8. IR: International Rectifier

Figure. 1 Four patterns of patent transaction market



With betweenness centrality and network constraint analysis, this study finds the patent transaction network divide four cell and further discussion below:

B. **The typologies of market players.**

Brokerage opportunity of market players implies firms are able to control transaction; high betweenness demonstrates market player is rich brokerage opportunity. On the other hands, structural autonomy of market players represents firms is able to contact variety transaction groups; low network constraint depicts that market player is high structure autonomy[25]. Through the network brokerage and structural autonomy viewpoint, this work investigates mature market and their market players. Several results were found; market players of patent transaction demonstrate four typologies that are discussing below.

First, the type 1 players, firms transact their patent for acquiring production technology or strategizing their business transform rather than patent monetization mobility. Therefore, transaction partners are relative closed with their technological development. These distinctive figures of market players can regard as "*technological capacity keepers*"; they endow with managing their technological capability.

Second, the type 2, market players tend to directly manage their capability expansion or business transform. Thus, technological complementarity or compatibility of transaction partners is prime concerned. Through patent transaction to connect their affiliated partners, firms are directly to control technology mobility and achieve their manufacture integration. Therefore, the feature of "*business resource allocators"* is revealed in patent transaction markets.

Third, the market players of type 3 are strategically disposing their non-performing assets via patent monetization to enhance market liquidity. Patent transactions for these firms are regarded as residual vale disposition; to liquidate their assets are priority than to manage their technological mobility. Thus, market players in this cell act as *"technological assets disposers.*"

Fourth, the type 4, market players with high market autotomy and rich transaction opportunity suggest they are able to being aggressive dealers. Therefore, these players are multiple roles: intermediary, broker, and gatekeeper in transaction market. Meanwhile, they access critical position in markets; not only can effectively diffuse technology to other clusters but also can acquire technology form different clusters. Thus, this type of market player can regard as "*technological assets coordinators*."

Form patent transaction flow perspective, this market player analysis not only can disclose the transaction chain but also can reveal the essence of patent transaction. Type 1 and type 2 are upstream market players. Type 3 and type 4 are downstream players. Specifically, most of upstream players are industry-specific manufacturer; they transact their patent to manage technological capacity or to strategize technology transformation. Thus, the essence of upstream transaction is technological mobility and the transaction range of upstream players is focused on an industry. On the other hands, type 3 and type 4 are downstream players. Constraint by their transaction partners, downstream player are able to transact others whom are out of an industry. Thus, the transaction range of downstream player is wildly open. Meanwhile, their essence of patent transaction approaches assets mobility.

V. Conclusion and remarks

The central purpose of this study is to explore the players of patent transaction markets. The result of this work not only reveals the collective behaviors of transaction players but also recognize the changes of transaction markets. Therefore, furtherly investigating the activities of major players in mature market are required. Transactional opportunity and capability shape market power of players; this study utilizes betweenness centrality and network constraint to investigate market players respectively. Thus, the typologies of patent transaction markets are characterized. The findings and implications of this study are summarized below.

First, form global market perspective, patent transaction markets are highly structured markets, where minority players representing the majority of patent transactions. Core firms develop as a social closure cluster to trade their technology, whereas peripheral firms are seldom trade each other. The activities of core market players are able to exhibit general feature of patent transaction markets; thus, this investigation discovers patent transaction markets are consisted of four type players: technological capacity keepers, business resource allocators, technological assets disposers, and technological assets coordinators.

Second, the chain of technological transaction is revealed. The upstream market players are technological capacity keepers and business resource allocators. The downstream market players are technological assets disposers and technological assets coordinators. Most of upstream players is focused on an industry and transact their patent to manage technological capacity or to strategize technology transformation; thus, the essence of upstream transaction is technological mobility. On the other hands, downstream player are able to transact others whom are out of an industry and their essence of patent transaction approaches assets mobility.

Third, the implications of patent transaction markets suggest that firms are able to refer their technological life cycle stage to access different market players. During the early period of technological development, firms can access technologies capacity keepers or business resource allocators for accelerating their technology growth. During the late period of technological mature, firms can access technological assets disposers or technological assets coordinators to acquire residual value of technological assets. Thus, firms are able to prioritize their transaction strategies. Meanwhile, to identify market players not only can prevent technological market failure but also can effectively manage technology assets.

References

[1] Hytönen, H., T. Jarimo, A. Salo *et al.*, "Markets for standardized technologies: Patent licensing with

principle of proportionality," *Technovation,* vol. 32, no. 9, pp. 523-535, 2012.

[2] Arora, A., A. Fosfuri, and A. Gambardella, "Markets for technology and their implications for corporate strategy," *Industrial and corporate change,* vol. 10, no. 2, pp. 419-451, 2001.

[3] Gupta, A. K., K. G. Smith, and C. E. Shalley, "The interplay between exploration and exploitation," *Academy of Management Journal,* vol. 49, no. 4, pp. 693-706, 2006.

[4] Pénin, J., "Strategic uses of patents in markets for technology: A story of fabless firms, brokers and trolls," *Journal of Economic Behavior & Organization,* vol. 84, no. 2, pp. 633-641, 2012.

[5] Larson, K., "An inside view to non-practicing entities business models: A case study," *International Journal of Intellectual Property Management,* vol. 6, no. 4, pp. 294-315, 2013.

[6] Hemphill, T. A., "Patent assertion entities: do they impede innovation and technology commercialisation?," *Technology Analysis and Strategic Management,* vol. 26, no. 7, pp. 717-731, 2014.

[7] Shrestha, S. K., "Trolls or market-makers? An empirical analysis of nonpracticing entities," *Columbia Law Review,* vol. 110, no. 1, 2010.

[8] Surdeanu, M., and S. Jeruss, "Identifying patent monetization entities." pp. 131-139.

[9] Fischer, T., and P. Ringler, "What patents are used as collateral?-An empirical analysis of patent reassignment data," *Journal of Business Venturing,* vol. 29, no. 5, pp. 633-650, 2014.

[10] Fischer, T., and J. Leidinger, "Testing patent value indicators on directly observed patent value - An empirical analysis of Ocean Tomo patent auctions," *Research Policy,* vol. 43, no. 3, pp. 519-529, 2014.

[11] Jeong, S., S. Lee, and Y. Kim, "Licensing versus selling in transactions for exploiting patented technological knowledge assets in the markets for technology," *Journal of Technology Transfer,* vol. 38, no. 3, pp. 251-272, 2013.

[12] Jensen, P. H., A. Palangkaraya, and E. Webster, "Trust and the market for technology," *Research Policy,* vol. 44, no. 2, pp. 340-356, 2015.

[13] Mowery, D. C., and A. A. Ziedonis, "Markets versus spillovers in outflows of university research," *Research Policy,* vol. 44, no. 1, pp. 50-66, 2014.

[14] Uzzi, B., and J. Spiro, "Collaboration and Creativity: The Small World Problem," *American Journal of Sociology,* vol. 111, no. 2, pp. 447--504, 2005.

[15] Moon, S.-I., G. A. Barnett, and Y. S. Lim, "The structure of international music flows using network analysis," *New Media & Society,* vol. 12, no. 3, pp. 379-399, 2010.

[16] Nam, Y., and G. A. Barnett, "Globalization of technology: Network analysis of global patents and trademarks," *Technological Forecasting and Social Change,* vol. 78, no. 8, pp. 1471-1485, 2011.

[17] McNerney, J., B. D. Fath, and G. Silverberg, "Network structure of inter-industry flows," *Physica A: Statistical Mechanics and its Applications,* vol. 392, no. 24, pp. 6427-6441, 2013.

[18] Huang, H.-C., H.-Y. Shih, and T.-H. Ke, "Structure of a patent transaction network," *Scientometrics*, pp. 1-21, 2017.

[19] Tijssen, R. J. W., "Global and domestic utilization of industrial relevant science: patent citation analysis of science-technology interactions and knowledge flows," *Research Policy,* vol. 30, no. 1, pp. 35-54, 2001.

[20] Podolny, J. M., "A Status-Based Model of Market Competition," *American Journal of Sociology* vol. 98, no. 4, pp. 829-872, 1993.

[21] Knoke, D., and J. H. Kuklinski, *Network Analysis*, Beverly Hills: Sage Publications, 1982.

[22] Scott, J. P., *Social Network Analysis: A Handbook*: SAGE Publications, 2000.

[23] Marsden, P., and N. Lin, *Social Structure and Network Analysis*, Beverly Hills, CA: Sage, 1982.

[24] Burt, R. S., *Structural holes: The structure of competition.*, Cambridge, MA: Harvard University Press, 1992.

[25] Burt, R. S., "Structural Holes and Good Ideas," *American Journal of Sociology,* vol. 110, no. 2, pp. 349-399, 2004.

Information System Application: Exploring Consumer's Purchase Intention for Convenience Store

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ABSTRACT

This paper investigates critical determinants for influence of the behavior of purchase intention by information system. Based on purchase intention of survey for convenience store, the concept of research will implement an information system, and the system integrates a facial expression recognition algorithm. Technology acceptance model (TAM) and SERVQUAL models are applied to explain possibility of the system. In prior researches show that TAM and service quality positively affect consumer satisfaction, and then consumer satisfaction positively affects purchase intention. The purpose of the system not only is able to find out purchase intention of consumers but also is capable of replacing traditional questionnaire. We can utilize this information system to save more time about questionnaire and to acquire more efficiency. Three domains of applied science are integrated to this system, including management information system, computer science and marketing.

Keyword: Technology Acceptance Model, Service Quality, Facial Expression Recognition, Satisfaction, Purchase Intention

1. Introduction

In the circulation industry, the highly competitive field of the convenience store has changed significantly. In order to acquire customers, they should have some competitive conditions, including product kind and good service quality, supplier competition, and product price. Customer satisfaction and purchase intention are important the measures of performance for convenience store. Antecedents of customer satisfaction usually use the service quality and the technology acceptance. The customer satisfaction is the response the consumer's test and appraisal of the product (Jones and Suh, 2000) and it will impact to consumer's purchase intention of product (McCorkle and Reardon, 2015).In order to improve purchase intention and increase their revenues and margins, convenience store invests more resources in providing good service quality and high customer satisfaction. Convenience store

should understand how actually the customer satisfaction affects product adoption through purchase and willingness to pay for products.

In the previous, there has little research related to customers' satisfaction and purchase intention for the convenience store by facial expression recognition system. Human-computer interaction is able to apply facial expression recognition by automatic facial expression analysis. Facial expression recognition process is capable of dividing into extraction of features and classification using pattern recognition theory. Prior researches propose some methods about pattern recognition theory, which have linear discriminant analysis (Fukunaga, 1990), principal component analysis (Calder and Burton, 2001), optical flow (Tai and Huang, 2009), fisher weight maps (Shinohara and Otsu, 2004), nonparametric discriminant analysis (Raducanu and Vitria, 2008), and local binary pattern (Timo et al., 2002).

This study is a concept that we will apply an information system of the facial expression recognition, and the system is used to investigate customers' satisfaction and purchase intention in the convenience store. The information system gets the facial expression image of customers by the camera of monitor, and then this facial expression of image is recognized. Our facial expression recognition algorithm (Tai and Huang, 2012) is utilized to this information system of recognition. Based on SURF, we can get all feature vectors by facial expression image from web cam. Each feature vector normalizes to unit length, and each unit length can build the probability density function (PDF) descriptor. Our method selects the PDF descriptor by the Kullback Leibler Divergence (Cover and Joy, 2006). We use an equation to measure and collect suitable PDF descriptors, and then the weighted majority voting (Nick and Manfred, 1989; Bauer and Kohavi, 1999) classifier counts their scores of match of the respective localization regions.

In addition, this system is explained through TAM (Davis, 1989) and SERVQUAL (Parasuraman et al., 1988) models. Some papers have indicated TAM and SERVQUAL positively affect of consumer satisfaction and then consumer satisfaction is positively affects of purchase intention. Thus, the purpose of this system not only should know consumer satisfaction but also is able to understand their purchase intention. We also hope that this information system can replace the traditional questionnaire.

This paper is structured as follows. The paper introduces in Section 1. Our facial expression recognition method describes in Section 2. Section 3 indicates the concept of the system. Section 4 shows conclusions.

2. Review for our algorithm

2.1 Speeded-Up Robust Feature (SURF)

Based on SURF algorithm, the keypoint detector and descriptor are described from the image. The detector is found in the keypoint, and the descriptor is able to describe their features of the keypoint. Next, feature vectors are established for the keypoint.

2.2 Normalization of feature vector

Descriptor of SURF is changeless about brightness, scale, and rotation. The keypoint descriptor indicates a region around gradient magnitude, orientation and location of each keypoint. Regular subregions of 4×4 are from the window of descriptor. Each descriptor of keypoint (i.e. feature vector) is normalized to unit length, and then PDF descriptor (4×4×4 bins) is generated. Normalization action can reduce the influence of illumination change.

2.3 Extraction of feature

The feature extraction includes three stages that are PDF descriptor calculation, recognition point discovery and PDF descriptor extraction.

2.3.1 Calculation of probability density function (PDF) descriptor

According to the matching methods of the keypoint, the facial recognition has a nice performance. When estimating two similar images, we can select their independence features. Statistics determines random variables for the independence of the set, which are equality to the joint distribution of variables and generating threshold of small PDF. Kullback Leibler Divergence is utilized to compare these distributions. Similar features of two images are calculated. Section 2.2 describes to create PDF descriptor from feature vector. Two PDF descriptors are computed by two similar images, respectively. To count the distance of two PDF descriptors applies Kullback Leibler Divergence. The formula is as follows:

$$w(z_{1,}z_2)=\frac{1}{n}\sum_{i=1}^{n}z_1(x_i)\log(\frac{z_1(x_i)}{z_2(x_i)}) \quad (1)$$

where the number of all bins is n and the ith bin is defined as x_i.

Then, the minimum distance is able to compute through two PDF descriptors by equation (1). There determine two nearest PDF descriptors for two similar images, respectively.

2.3.2 Recognition point discovery

This algorithm selects some suitable features form the PDF descriptors, because these suitable features can improve the discriminate efficiency. To utilize the class separability, among the classes of the recognition can be computed. A class

separability of calculation is able to apply the PDF descriptors. From class A, recognition points of each descriptor z_i are defined as equation (2).

$$T(z_i)=\frac{[\sum_{B=1}^{C-1}(N_B\sum_{j=1}^{N_B}w(z_i,D_j))]/(C-1)}{(N_A\sum_{j=1}^{N_A}w(z_i,D_j))},A\neq B \quad (2)$$

where the number of classes is C and N_B is samples of class B.

The numerator illustrates the minimum PDF descriptor of non-class A (e.g., happy), and the numerator illustrates the minimum PDF descriptor of class A (e.g., angry…etc.).

2.3.2 Extraction of probability density function descriptor

Each training image is distinguished to the 4×4 uniform grids. Based on recognition points, the training image of each class extracts four largest PDF descriptors of each grid, and then these PDF descriptors are applied to the recognition patterns of test image. We get a result that different PDF descriptors are responded to different class.

2.4 Classification

The 4×4 uniform subblocks for each image is able to define each expression class. Both recognition performance and feature vector, four largest PDF descriptors can provide nice performance. These PDF descriptors are applied to each subblock of differentiation of facial expression, and then equation (3) is defined as below:

$$R=f(i,j),\quad i,j=0,\cdots,3,\quad f\in\{Angry,Fear,Disgust,Sad,Happy,Surprise\} \quad (3)$$

In the central section, the face of each person expresses most of the important message. Gaussian mask is used to determine their weight, which provides higher weight for important information. Otherwise, Gaussian mask provides lower weight for unimportant information. Thus, Gaussian mask (G) of the central part of grids is afforded heavier weight and that is defined in Fig. 1.

G=

1	2	2	1
2	4	4	2
2	4	4	2
1	2	2	1

Fig. 1 Gaussian mask

Each image of facial expression can separate to 16 subblock of test image and the different score is assigned to each subblock. Finally, the highest score is calculated by 16 subblock, and then the facial expression of image is recognized.

In prior papers show that theory of weighted majority voting is used to face recognition. The goal of weighted majority voting discovers the biggest four feature in every subblock from train and test image. These features are person-specific, so point detector selects different positions of features of each image. According to test image and train image, this step focused on matching the same feature for each subblock, and then the each unique expression of each subblock can be acquired. At the same time, it indicates the lower score that is not important information such as hair and background. Thus, major classification utilizes the method of weighted majority voting.

Finally, weighted majority voting classifier T is defined as equation (4). The outcome includes accumulative matching scores of each subblock that it is a significant data. Total score of each facial expression can be computed for all subblocks by this equation, and then we can obtain a highest score of facial expression in each image. This highest score is responded to the recognition of facial expression and this facial expression is our final result.

$$T = \sum_{i=0}^{3} \sum_{j=0}^{3} (R(i,j) \times G(i,j)) \tag{4}$$

where the weight of Gaussian mask is G, T is a weighted sum .

3. Conception of system

3.1 Technology acceptance model (TAM)

A study proposes a famous model that it is named technology acceptance model (TAM) and it involves the technology acceptance (Davis, 1989). In information technology, the model can explain and predict consumer's behavior (Legris et al., 2003), which illustrates why users reject or accept information technology (Davis et al.,

1989). How to apply of other variables affect about attitude, belief, and intention, the model also offers a basic concept.

A success of information system has some factors, including the system usage and the system acceptance. This model is applied to technology acceptance procedure about different situations, usage parts and cultures. TAM explains users' accepting and using information technology. When consumers are introduced a new technology, some factors affect their decision, including perceived usefulness and perceived ease of use. The degree to which a person trusts that using an information system can improve their job performance is defined perceived usefulness. The degree to which a person trusts that using an information system do not effort is defined perceived ease of use. Based on TAM, users' attitude, intentions, perceived ease of use and perceived usefulness are affected directly or indirectly. Fig. 2 shows the original TAM.

To predict the acceptance of a new information system, TAM can do it. According to a simple measurement of brief interaction with the system, the future behavior of users can be explained and predicted by this model. Thus, a study shows that perceived usefulness and perceived ease of use the information system are positive influence on satisfaction (Semina and Muris, 2013).

3.2 Service quality

Service quality is the result of excellent service delivery. When customers obtain service exceeding their expectations, and then service quality is happened (Parasuraman et al., 1988). Service quality is a condition of customer's satisfaction (Oliver, 1993). To achieve customer's satisfaction and purchase intention, service quality is created and this is a method about business processes of management. If service is less than expectation and perceived quality is also less than satisfaction, the consumer cannot obtain their satisfaction and purchase intention.

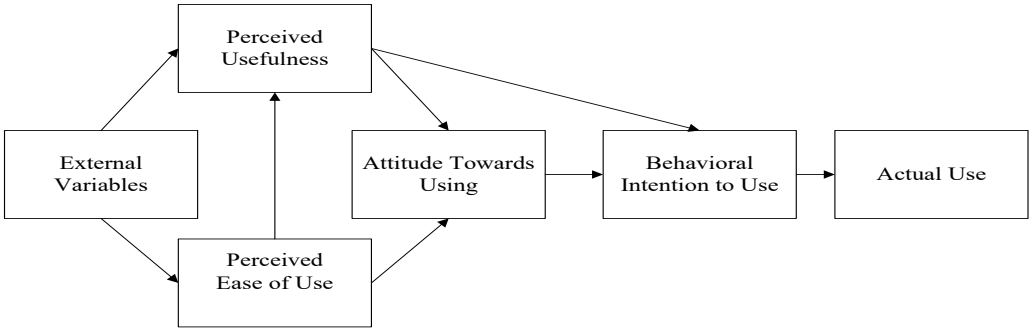

Fig. 2 Original TAM

From market participants, perceptions of service quality of consumers have achieved extensive interest. In prior study shows that SERVQUAL is an important framework of service quality which focuses on estimating the scale of quality in the service sections (Parasuraman et al., 1988). SERVQUAL model is also used to estimate service quality, including 5 elements (“reliability”, “assurance”, “responsibility”, “tangibility” and “empathy”) and twenty-two questions. As we know, SERVQUAL has been a very popular method to estimate quality of service, but it has also been criticized for its applications and disadvantages (Cronin and Taylor, 1992). Some researchers show that SERVQUAL can expand to 10 elements (“reliability”, “credibility”, “access”, “courtesy”, “competence”, “tangibles”, “communication”, “responsiveness”, “security” and “understanding the customer”). Between customer’s expectations and experience, these ten dimensions are able to measure their relationship.

Marketing scholars have started in the assessment of service quality that can improve the customer satisfaction. Based on successful business and competition of company in the market, improving the service quality is a basic requirement. Keeping the consumer and main factor of future economic operation, improving the service quality is also a basic method. Companies request a good product’s quality and services, which is one of important strategy. In order to improve the service quality, companies apply a critical condition of success that it is service quality model. To acquire highly the satisfaction of customers, service quality must be enhanced (Nachiappan et al., 2016).

3.3 Satisfaction

Customer’s assessment of service or products with according to their requirements and expectations is defined customer satisfaction (Oliver, 1980). Satisfaction is generally thought an extensive of area that includes both satisfaction and dissatisfaction. If the product corresponds to customer’s expectations, the consumer is satisfied. If it exceeds expectations, the consumer is more satisfied. But if the product cannot meet his expectations, the consumer is dissatisfied. For different degrees of satisfaction with different scopes of influence, it is an important thought (Best, 2009). In marketing, consumer satisfaction is an important concept, which emphasizes transmitting satisfaction to consumers and acquiring relative profits. So, satisfaction is a critical point to satisfying different requirements of consumers.

A forward looking pointer of business success is customer satisfaction that can estimate how a consumer will reply to the company. Sales and market share is backward pointer of success for measurements of market performance (Byrne, 1993).

The research shows that customer loyalty and purchase intention is from customer satisfaction (Pont and McQuilken, 2005). Theoretically, satisfaction is a consequence of purchase and using the result from customer's comparison of products and price of the purchase. Practically, satisfaction is like an attitude that we can compute the sum of the satisfactions with different degrees of attribute for the product or service (Churchill &Suprenant, 1982). The relation of TAM, service quality, satisfaction and purchase intention are illustrated in Fig. 3.

4. Structure of System

In previous study, TAM shows that perceived usefulness and perceived ease of use are positively affect satisfaction (Semina and Muris, 2013). According to attitude and cognition of satisfaction, service quality can achieve a suitable distinction. So service quality and satisfaction have positive influence of relationship (Zeithaml et al., 1993). A study finds that purchase intention is determined on service quality and consumer satisfaction (Zeithaml, V.A., Berry, L.L., Parasuraman, 1996). On the other word, customers' satisfaction leads to customer loyalty and purchase intention (Pont and McQuilken, 2005). So purchase intention and satisfaction have positive influence of relationship (Hu, 2011).

According to the above mentioned, this study will use facial expression recognition algorithm to develop an automatic recognition system of consumers' purchase intention. Happy, angry, fear, disgust, surprise and sadness are recognized of facial expressions. Our requirement is a happily facial expression, which shows consumers' satisfaction and purchase intention. The system will recognize second time for the image if the happy expression is not recognized. This action is a double confirmation. The structure of flow for the system is illustrated in Fig. 4.

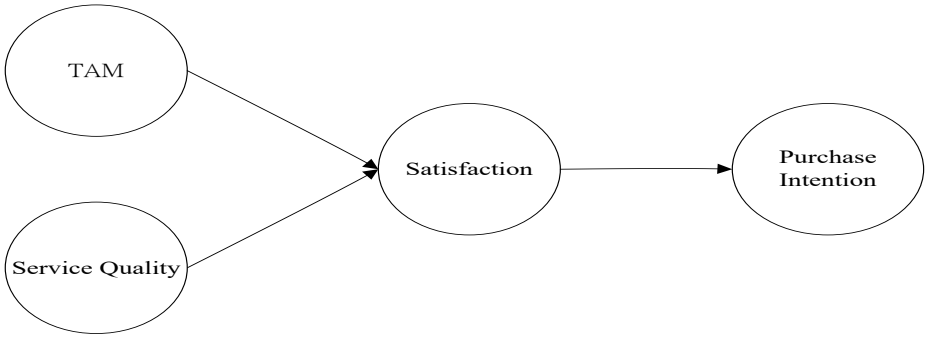

Fig. 3 The relation of TAM, service quality, satisfaction and purchase intention

Fig. 4 The structure of flow

In order to get facial image and recognize facial expression for consumers, the camera sets on the checkout counter. Fig. 5 shows the concept of structure. We wish that the director or the manager can find out consumers' purchase intention by results. Service quality of staff also is understood by these results. Our goal expects using this IS of facial expression recognition to improve service quality and to know consumers' purchase intention.

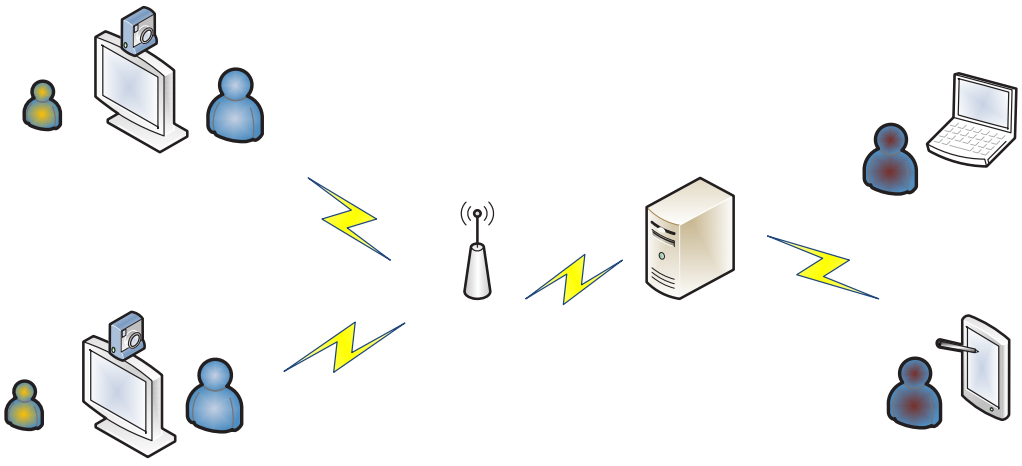

Fig.5 The concept of structure for information system

5. Conclusion

This research uses our facial expression recognition algorithm into this information system. SURF is used to detect and calculate all keypoint descriptors (feature vectors) of the facial image. The method of keypoint descriptor normalization creates the PDF descriptor. Next, Kullback Leibler Divergence is applied to compute the distance of two PDF descriptors. We can acquire two most of close PDF descriptors from two facial images. Recognition points from those PDF descriptors are found by an equation. It is an initial classification, and then, a final classification uses a theory of the weighted majority voting.

Our research purpose can implement an information system of facial expression recognition system. This paper uses TAM and SERVQUAL models to illustrate their possibility of the information system. TAM and service quality positively affect satisfaction, and then consumer's satisfaction also positively affects purchase intention. Thus, this system can apply to illustrate the purchase intention of consumers. We hope the system not only can find out purchase intention of consumers but also can replace traditional questionnaire. So this system is able to help the director or the manager to understand their relationship between the staff and the consumer, and then they can handle any situations quickly.

If the system completion, we will apply to explore customers' purchase intention in the convenience store. The company or the business also can depend on any requirements to expand this system to any areas. We expect that the system can utilize to every industries.

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REFERENCES

Ajzen, I., & Fishbein, M., Understanding attitudes and predicting social behavior. Englewood Cliffs, NJ: Prentice-Hall, 1980.

Bauer E. and Kohavi R.,1999. An empirical comparison of voting classification algorithms: Bagging, boosting, and variants, Machine Learning, vol. 36, issue. 1-2, 105-142.

Best, Roger J., 2009. "Market Based Management", New Jersey: Pearson Education Inc. Byrne, Patric. 1993. "Only 10% of Companies Satisfy Customers", Harvard Business Revies, Septmber-October.

Calder A. J., Burton A. M., Miller P., Young A. W., and Akamatsu S., 2001. A principal component analysis of facial expression, Vis. Res., vol. 41, no. 9,

1179–1208.

Churchill Jr., Gilbert A., and Carol Surprenant, 1982. An Investigation Into the Determinantsof Customer Satisfaction, Journal of Marketing Research (JMR), 19,no. 4: 491-504.

Cover M. Thomas, and Joy A., Thomas, Elements of Information Theory, 2nd ed., Wiley, 2006.

Cronin J.J. and Taylor S.A., 1992. Measuring Service Quality: A Reexamination and Extension, Journal of Marketing, 56 (3), 55-68.

Davis, F.D.,1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology, MIS Quarterly, 13 (3), 319–340.

Davis, F. D., Bagozzi, R. P., and Warshaw, P. R., 1989. User acceptance of computer technology: A comparison of two theoretical models, Management Science, 35(8), 982–1003.

Fukunaga K., Introduction to Statistical Pattern Recognition, 2nd edn. Academic Press, Boston, 1990.

Hu Y., 2011. Linking Perceived Value, Customer Satisfaction, and Purchase Intention in E-Commerce Settings, Advances in Intelligent and Soft Computing. vol 106, 623–628.

Legris, P., Ingham, J., & Collerette, P.,2003. Why do people use information technology? A critical review of the technology acceptance model, Information & Management, 40, 191–204.

McCorkle D. and Reardon J., 2015. THE EFFECT OF E-SHOPS' SERVICE QUALITY ON LITHUANIAN CONSUMERS' PURCHASE INTENTIONS, International Journal of Business, Marketing, and Decision Sciences, vol. 8, no. 1, 43-59.

Michael A. Jones, Jaebeom Suh, 2000. Transaction-specific satisfaction and overall satisfaction: an empirical analysis, Journal of Services Marketing, Vol. 14 Issue: 2, 147-159.

Nachiappan S., Angappa G. and Yanan G., 2016. Innovative service satisfaction and customer promotion behaviour in the Chinese budget hotel: an empirical study, International Journal of Production Economics, 171, 201–210.

Nick Littlestone and Manfred K. Warmuth, The weighted majority algorithm, 30th Annual Symposium on Foundations of Computer Science, 256–261, Oct. 1989.

Oliver, R.L., 1980. A cognitive model of the antecedents and consequences of satisfaction decisions, Journal of Marketing Researc, 17 (4), 460–469.

Oliver, R.L., 1993. A conceptual model of service quality and service satisfaction: compatible goals, different concepts, Advances in Services Marketing and Managemen, 2, 65–85.

Parasuraman, A., Zeithaml, V.A., Berry, L.L., 1988. SERVQUAL: a multiple-item scale for measuring consumer perceptions of service quality, Journal of Retailing, 64 (1), 12 – 40.

Pont, M., McQuilken, L., 2005. An empirical investigation of customer satisfaction and loyalty across two divergent bank segments, Journal of Financial Services Marketing, 9 (4), 344 – 359.

Raducanu B. and Vitria J., 2008. Online nonparametric discriminant analysis for incremental subspace learning and recognition, Pattern Anal Applic, vol. 11, 259-268.

Semina H. and Muris C., 2013. Understanding determinants of information systems users' behaviour: a comparison of two models in the context of integrated accounting and budgeting software, Behaviour & Information Technology, vol. 32, no. 12, 1280–1291.

Shinohara Y. and Otsu N., Facial Expression Recognition Using Fisher Weight Maps, IEEE Conf. on Automatic Face and Guesture Recognition, 499-504, 2004.

Tai S.C. and Huang H.F. Facial expression recognition in video sequences, Sixth Int'l Symposium on Neural Network, 1026-1033, Wuhan, China, May 2009.

Tai S.C. and Huang H.F., 2012. Facial Expression Recognition Using New Feature Extraction Algorithm, Electronic Letters on Computer Vision and Image Analysis, 11(1), 41-54.

Timo Ojala, Matti Pietikäinen and Topi Mäenpää, 2002. Multiresolution Gray-Scale and Rotation Invariant Texture Classification with Local Binary Patterns, IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 24, no. 7, 971-987.

Zeithaml VA, Berry LL, and Parasuraman A., 1993. The nature and determinants of customer expectations of service, Journal of Academy Marketing Science, 21 (1), 1-12.

Zeithaml, V.A., Berry, L.L., and Parasuraman, A., 1996. The behavioral consequences of service quality, Journal of Marketing. 60(2), 31–46.

Information and Communication Technology (ICT) and the Potential Emergence of Direct Democracies throughout the World

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ABSTRACT

Direct democracy is a form of democracy in which people are involved in making decisions on behalf of themselves without any need for intermediaries. A review of the history of political thought shows that direct democracy has always been considered the best type of governance. However, as it has always been impossible to bring people together and directly engage them in making decisions on behalf of themselves, man has never succeeded in establishing direct democracy and has settled for its indirect counterpart. In indirect democracy, people elect representatives to make decisions on their behalf.

Given the weaknesses and harms of indirect democracy, man has never stopped his endeavors to find a solution that would contribute to the establishment of direct democracy. The emergence of information and communication technology (ICT) has raised hopes that such a solution might be at hand as the widespread use of this type of technology and its recent advancements have considerably changed the circumstances. In the current situation, ICT has made it possible for governments to bring up different matters and problems, ask people for their opinions, and directly engage them in decision-makings. Thus, the main question of the present article was formulated as follows: “is it possible to establish direct democracies throughout the world by employing ICT?”

The present descriptive-analytical study was aimed at investigating the impact of ICT on democracy and answer the aforementioned question. A study of the sociopolitical implications of ICT showed that the widespread use of ICT and its advancements have had extensive impacts on the existing democracies (indirect democracies) and contributed to the spread and promotion of democracy across the globe. However, due to the diversity and multiplicity of the associated issues, specialization of matters, and the need for post-decision follow-up, the establishment of direct democracies is still impossible and man should inevitably settle for its indirect counterpart.

Keywords: Democracy, Direct Democracy, Indirect Democracy, Information and Communication Technology (ICT).

The Impact of Knowledge Sharing through Social Networks on Students' Academic Performance

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ABSTRACT

In this study, we seek to examine the factors that affect knowledge sharing via online social networks and its impact on students' academic performance in educational environment. The study sample was made up of 60 undergraduate students attending the accounting principles classes at Palestine Technical University. We applied the structural equation model to identify the factors that may motivate these students to share their knowledge via social network, specifically Facebook, for educational purposes. The results show that altruism and knowledge self-efficacy are the main factors that influence students to share their knowledge while trust and reputation are not motivators for students to share knowledge via social media. In addition, the result of this study reports that knowledge sharing via social networks has a strong impact on students' academic performance. The factors affecting students' knowledge sharing can differ between different people and context, therefore, future research could examine the differences in social networks participation based on gender, age, education level or subject. Based on the findings, recommendations are made about using Facebook in education.

Keyword: Knowledge Sharing, Academic Performance, Social Media, Social Networks, Facebook, Educational context.

1. Introduction

Social Network Sites (SNSs) have attracted an enormous number of Internet users, who have included these websites into their daily lives routines. Twitter and Facebook are among the most widely used social networks where the students spend most of their times (Karpinski et al., 2013; Michikyan et al., 2015). LinkedIn is an example of Social Network site that is used by many students and instructors for academic purposes, half 50% of online adults with college degrees are on LinkedIn (Greenwood et al., 2016). Facebook is one of the widely used social network that has over 1.26 billion users around the world (Smith, 2014). Facebook users can share opinions, ideas, pictures and other content with friends and relatives, and interact with either old or new friends, making the platform very popular with college students (Luckin et al., 2009). College students remain to be most of Facebook users (Duggan & Brenner, 2016). In the U.S., 71% of Facebook users are college students (Duggan et al., 2015). Confirming a notable number of educators and students are members of online social networks, use of online

social networks in academic processes is a subject thought to be worth researching (Yapıcı & Hevedanlı, 2014).

The growth of social networks has offered solutions, new insights, and mechanisms for knowledge sharing for many institutions (e.g., hospitals and educational institutions). Social Rapid exchange of information and knowledge via social network has substantially changed lifestyles and promoted personal and organizational learnings (Chen & Hung, 2010). The Internet eases knowledge exchange in different ways (Liang et al., 2008). Jones et al. (2010) Claimed that social networks are tools utilized by educators and students to facilitate education. With the expanding use of social networking websites, the demand for communication and information sharing among individuals is heightening. A growing number of Internet users are collaborating in social networks to earn knowledge for managing life difficulties (Liang et al., 2008). Grosseck et al. (2011) claimed that students spend most of their time on Facebook emailing their family members and acquaintances, sharing photos and videos, and commenting on posts, but less for academic purposes, even though they engage in conversations about their assignments, lectures, or share information about research. Bicen and Uzunboylu (2013) stated that social networks are providing an informal education. Social networks users in contact with plenty of information and ideas that show the learning potential that social network offers (Ünlüsoy et al., 2013). On the other hand, social network use needs to be purposeful also it should be utilized in instances that are suitable for learning, where educators and students' understanding can occur (Liu et al., 2011).

This study aims to identify the motivators that influence college students' knowledge sharing behavior via social networks (i.e., Facebook platform). And the impact of knowledge sharing behavior on students' academic performance. To achieve these aims, the authors have sought to answer the following questions:

- What are the factors that influence students' online knowledge sharing via Facebook?
- What is the effect of knowledge sharing via Facebook on students' academic performance?

2. Literature review

2.1 Social network websites and education

Today's college students are what Prensky (2001) refer to as digital natives: individuals born in a technological age who are professionals at using technology with a curiosity about interacting with technical devices. Most of online Social Networks (i.e. Facebook) are free of cost, easy to use, and easily available to students who have personal computers or even smartphones having Access to the Internet, and many college students, in fact, have founded Facebook accounts from high school and smoothly making use of the technology (Bowman et al., 2012).

Within the past few years, the use of social networking sites (SNSs) by students and educators reported a tremendous increase (Pempek et al., 2009; Roblyer et al., 2010). Researchers have found that some of the considerations on the lack of relationship between teacher and students could be reduced through developing connections between educators and students throughout the social networks (Mazer et al., 2007). With the use of Internet technology, activities that cannot be completed in lecture rooms could simply be completed on social networking websites by using smartphones and portable computers. Communication in education is easier today because of the use of technology. Some lecturers have used strategies to integrate social media

in their lectures and curricula although some are not willing to use it (Fewkes & McCabe, 2012).

Motivating college students to use Facebook as part of class might appear strange when confronted with a research that has pointed out that time used up using Facebook can restrict learning (Junco, 2012). Some researchers do not consider that Facebook itself is resulting in a negative effect on learning, but instead that Facebook can divert students from engaging their colleagues or studying course material.

On the other hand, Focus group work by Tian et al. (2011) infers that Facebook is mainly viewed as a social space by college students, however, they do see long-term investment into the social media platforms as essentially useful to their academic performance (Irwin et al., 2012). Thus, there is evidence to point out that students state Facebook as a potentially rewarding tool to their academic success.

2.2 Knowledge Sharing

Knowledge sharing signals the provision of task information and know-how to relieve other people and to work with others to solve issues, produce new ideas, or apply policies or procedures (Cross & Cummings, 2004). Knowledge sharing can happen through written or face-to-face communications through networking with other experts, or documenting, arranging and receiving knowledge for individuals (Cross & Cummings, 2004).

Williams and Bukowitz (1999) defined knowledge sharing as an activity by which knowledge (i.e. information, skills, or expertise) is exchanged among individuals, friends, colleagues, families, communities, or organizations. Argote and Ingram (2000) and Ko et al. (2005) defined knowledge sharing as the transmission of knowledge from a source in a manner that it is gained and used by the receiver. Knowledge sharing is the voluntary distribution procedure for earned skills and experience to other individuals (Davenport & Prusak, 1997; Ipe, 2003). Clearly, Social network suited to promote relationships, ideas sharing, and exchanging individual experiences. Usually, information technology communications tools are promoting knowledge sharing (Eid & Nuhu, 2011).

Vygotsky (1980) sociocultural theory of learning assures that people learn via social interaction and spreading ideas and experiences. Studies have revealed that knowledge sharing during collaborative learning leads to reflection and learning (Walker, 2002), and get advantage towards cognitive gains and favorable learning outcomes (Rafaeli & Ravid, 2003). Students grasp more academically and social relationships in cooperative interaction when compared with competitive or individualistic interaction (Roger & Johnson, 1988). Besides, such knowledge exchanges assist students answer questions, solve problems, learn new things improve understanding about a certain topic, or contribute in helping others (Högberg & Edvinsson, 1998). Several empirical research evaluate knowledge sharing based on participation and interaction (Kapur & Kinzer, 2007; Mazzolini & Maddison, 2007), yet others evaluate knowledge sharing intentions (Bock et al., 2005).

Many studies have documented findings about factors affecting knowledge sharing intention and behavior depending on Social exchange theory (SET) which was introduced in the late 1950s, with the main supporter George Homans. George and Homans (1961) suggested that exchange among individuals is an essential form of behavior and is usually depending on principles of cost and benefit. Knowledge sharing might be viewed as a type of social exchange (Bock et al., 2005), with individuals sharing their knowledge and skills with their peers and expecting, reciprocally, to get others' knowledge in return.

Notably research has been carried out on SET as an approach of understanding personal

behavior in knowledge sharing (Bock et al., 2005; Kankanhalli et al., 2005). Since social exchange is a challenging task, several studies have pointed out different aspects of it. Bock et al. (2005) employed cost and benefit analysis based on SET to examine incentives and inhibitory factors in knowledge sharing. Also, while Chua (2003) highlighted reciprocity in knowledge sharing, Constant et al. (1994) outlined self-interest and context.

Social exchange is much like economic exchange, they suppose that exchange happens when the benefit individual gains is higher than cost. The main difference is that social exchange looks into intangible costs and intangible benefits. Thus, it cannot surely identify rights or obligations (Blau, 1964). Prior research, however, recognize that regardless of using the same theory, different studies usually adopt different factors to suit the theory. For instance, Kankanhalli et al. (2005) analysed the impact of employees' knowledge self-efficacy and enjoyment in helping others on employees' knowledge contribution to electronic knowledge repositories. Ye et al. (2006) concentrated on several social exchange factors such as reputation, reciprocity, knowledge self-efficacy, enjoyment in helping others, and commitment to explain knowledge contribution of virtual community members. Moghavvemi et al. (2017) examined the relationship between perceived enjoyment, perceived reciprocal benefits, perceived status, outcome expectation, and the power of knowledge, and the way these factors impact knowledge sharing among students via Facebook. Even though several research studied knowledge sharing behavior based on the social exchange perspective, different studies normally recorded inconsistent results. Taking trust as an example, our survey shows that some studies showed significant positive influences on individuals' knowledge-sharing behavior (Chai & Kim, 2010; Hsu et al., 2007; Xiao et al., 2012; Zhang et al., 2010); but other studies did not agree with this finding (Chow & Chan, 2008; Hsu & Lin, 2008).

Chang et al. (2008) researched users' contribution behavior on blogs and forums. Their research results reveal that users' intention toward knowledge sharing is impacted by extrinsic benefits (reputation and reciprocity), intrinsic benefits (enjoy helping and self-efficacy), and costs (convenience and interaction).

Yu et al. (2010b) explored the determinant that enable voluntary knowledge sharing in Blogs especially the knowledge sharing behaviors of community members. They discovered that fairness, openness, and enjoyment related to helping others substantially influenced the culture of sharing knowledge. While identification for a sharing culture had not been determined significant.

Synthesis of earlier studies reveal that motivational factors on knowledge sharing reflect three motivator levels (Bock et al., 2005). The levels are individual benefits, group benefits, and organizational benefits. Individual benefits show self-interest and personal gains (Constant et al., 1994; McLure Wasko & Faraj, 2000). While, Group benefits imply reciprocal relationships with other people (Constant et al., 1994; McLure Wasko & Faraj, 2000). And organizational benefit refers to organizational gains and responsibility (Kalman, 1999).

As outlined by social learning theory, Bandura and Walters (1977) pointed out that people usually self-initiate and regulate their learning to get desired learning outcomes. By interacting with peers and the situated environment, individuals' cognition, affection, and behavior are affected. Based on social learning theory, three elements, including individual learners, peers, and situations, essentially impact individuals' learning outcomes. This theory highlight that it is peoples' interaction with the surroundings produces their behavioral consequences. As a result, individual interaction with peers, social support from peers and their understanding of situations are critical factors that produce individual learning outcome (DeAndrea et al., 2012). Most often, people will self-initiate, regulate learning and actively build knowledge by getting, producing, and structuring information.

To look into knowledge sharing behaviors in social networks, we draw on the Social Exchange Theory and social learning theory to conceptualize a research model for this study (see Fig. 1). We hypothesize that trust, reputation, altruism, and knowledge self-efficacy are some of the main factors that influences knowledge sharing among students via Facebook groups. In addition, we propose that Academic performance is the outcome of knowledge sharing behavior.

2.3 Trust and Knowledge Sharing

Trust has been seen as some of certain beliefs dealing with the integrity, affect, emotion, benevolence, and ability of another party in the organizational studies (Mayer et al., 1995, 2006). According to Lee et al. (2014) trust refers to integrity, which is an individual's expectation that members in a social network site will use an accepted set of values, norms, and principles.

Trust plays an essential role in diffusing knowledge (Shapin, 1988). Roloff (1981) stressed that trust is a key of social exchange theory. Also, trust may be important for online social interactions (Coppola et al., 2004; Dwyer et al., 2007). Trust advances interactions between individuals in an institution and in a virtual community (Chiu et al., 2006; Chow & Chan, 2008). In the online world, trust in the Internet with the online community is an early condition for users to take part in trusting interactions in online environment in which they transfer and exchange information (Czerwinski & Larson, 2002). In the online context, trust is mentioned as among the favorable influential factors in users' decisions to share information on the web (Kim et al., 2008). Trust plays a key motivator to share knowledge (Inkpen & Tsang, 2005; Reagans & McEvily, 2003) and considered as a positive factor on online user's decision making (Kim et al., 2008). Nahapiet and Ghoshal (1998) claimed the higher the level of trust is between individuals, the more willing individuals will be to share resources with one another.

We assume a positive relationship between students' knowledge sharing and the level of interpersonal trust. Considering that prior literature highlights the positive role of trust in knowledge sharing (McLeod, 2008; Shapin, 1988), we believe that online users' trust will improve their knowledge sharing in Facebook sphere. If Facebook users' are eager about other users' actions like misusing shared knowledge they may not share their knowledge via the Internet site. Simply, trust is to the tendency to believe in others and in their shared information in the social network (Hsu & Lin, 2008). Thus, H1 is introduced as follows:

H1: Trust has a positive effect on students' knowledge sharing behavior through Facebook

2.4 Reputation

Reputation refers to the degree to which a person believed that participation in online sphere could enrich personal image because of knowledge sharing (Hsu & Lin, 2008). Lakhani and Von Hippel (2003) argued that individuals assume to achieve greater status by interacting often and wisely, while Stewart (2005) found that reputation can be associated with social status.

Reputation can help people gain and keep their status within a community (Marett & Joshi, 2009). Some studies proposed that individuals share their knowledge because they thought that they may build and raise their personal reputation (Wasko & Faraj, 2005) or gain peer attention (Carrillo & Gaimon, 2004). Because of this, when individuals think that knowledge sharing can improve their reputation, they will be more likely to share their knowledge (Ba et al., 2001; Wasko & Faraj, 2005). Knowledge contributors can take advantage of displaying to others that they get valuable expertise (Ba et al., 2001). This earns them respect (Constant et al., 1994),

and a better image (Constant et al., 1996). Thus, contributors can benefit from improved self-concept when they contribute knowledge (Hall, 2001). Most people believe that sharing their knowledge with others will help them produce a good reputation and heighten their status within their respective social community (Liang et al., 2008). Furthermore, Wasko and Faraj (2005) stated the potential for bettering one's reputation serves as a significant motivational factor for providing helpful guidance to other people in social network. They inspected why individuals share knowledge with others in online social network and noted that both reputation and centrality have impact on the helpfulness and level of knowledge contribution. Earlier research noted that creating reputation is a strong motivator for effective involvement in social networks (Donath, 1999). Zywica and Danowski (2008) underlined that Facebook users may be involved in knowledge sharing to reach a preferred social status, to extend their relationship range, and strengthen their self-esteem. This leads to:

H2: Reputation has a positive effect on students' knowledge sharing behavior through Facebook.

2.5 Altruism

Altruism is described as the readiness to help other people without expecting rewards in return (Hsu & Lin, 2008). Altruism can be viewed as a kind of unconditional kindness with no concern of a return (Fehr & Gächter, 2000), where a person offers help and achieves a sense of pleasure from the action (Kollock, 1999). Hsu and Lin (2008) suggested that altruism impacts intention to share Knowledge.

Most of the time, people help other people whether or not they receive anything in return (Davenport & Prusak, 1998). Constant et al. (1994) stated that individuals who share tangible information may do so because of pro-social attitudes. Wasko and Faraj (2005) mentioned that these people are encouraged intrinsically to contribute knowledge to other people given that they take pleasure in helping others.

Several empirical research has also proved the positive relationship between altruism and knowledge sharing. Kankanhalli et al. (2005) reported that altruism significantly impacts electronic repository use by knowledge contributors and in addition, it substantially increases the helpfulness of the contribution. This result also recognized by He and Wei (2009), who claimed that knowledge workers share knowledge to the knowledge management systems because of their satisfaction in helping other people. In line with studies previously mentioned, we realize that altruism is an essential determinant for online users' behavior in social network contexts. For that reason, this study presents altruism as a variable that impact knowledge sharing among Facebook users. Thus, the following hypothesis is proposed:

H3: Altruism has a positive effect on students' knowledge sharing behavior through Facebook

2.6 Knowledge Self-efficacy

Self-efficacy is a form of self-evaluation that effects decisions about what behaviors to do, the effort and tolerance to put forth when dealing with difficulties, and last, the mastery of the behavior (Bandura, 1997). Therefore, individuals who have low self-efficacy should be less likely to carry out related behavior in the future, compared to those with higher level of self-efficacy.

Olson et al. (2012) claimed that Individual who owns personal efficacy to produce a favorable social impact may use online social network to develop, broaden, and keep their relationships with other online users. Individuals who have self-efficacy are the group of people who have a

powerful opinion in their own personal talents. Therefore, these are the type of individuals who will take an extra effort to interact and share knowledge with one another, thus improving the relationship to the next level.

Lately, self-efficacy has been applied to knowledge management to verify the effect of personal efficiency perception in knowledge sharing, that is, Knowledge Sharing Self-Efficacy (KSSE) (Hsu & Chiu, 2004). The desire to share knowledge is not enough to undertake the knowledge sharing behavior. A knowledge contributor should also have the perceived capabilities to perform it (Hsu et al., 2007; Teh et al., 2010).

Some studies have employed knowledge sharing self-efficacy to evaluate its impact on knowledge sharing intention. For example, Bock and Kim (2001) suggested that self-efficacy could be addressed as a main element of self-motivational source for knowledge sharing. Their results prove the individual's judgment of his contribution to organization performance has positive effect on knowledge sharing. Kankanhalli et al. (2005) dealt with knowledge sharing self-efficacy as a factor of intrinsic benefits and combined it with other factors to evaluate their effect on knowledge contribution behavior. The study results reveal that self-efficacy is positively related to knowledge sharing while using electronic knowledge repositories. Since knowledge sharing are broadly applied using the Internet as a communication tool, Internet self-efficacy ingrained in knowledge sharing contributors are important to promote knowledge sharing behavior (Teh et al., 2010).

Consistent with studies mentioned above, we find that knowledge sharing self-efficacy is an important determinant for online users' behavior in social network contexts. With it, online Facebook users are linked by a common interest Ba et al. (2001) to deliver access to other users for combining and exchanging knowledge (Nahapiet & Ghoshal, 1998). On that basis, this study proposes knowledge sharing self-efficacy as a variable that influences knowledge sharing among online Facebook users. This recognition leads to the following hypothesis.

H4: Knowledge Self-efficacy has a positive effect on students' knowledge sharing behavior through Facebook.

2.7 Academic Performance

Researchers noticed that people are more prone to engage in a specific behavior that will lead to favorable results (Chiu et al., 2006). Lu and Hsiao (2007) mentioned that people undertake behaviors that they believe will lead to a "better" outcome. Some students use Facebook for academic purposes, particularly to get in touch with people in their respective classes to acquire information about assignments, with some saying that they preferred Facebook to university education since it offered instant responses (Kosik, 2007). Although, there are no obvious measures to show that individuals learn from taking part in social networks (Ünlüsoy et al., 2013). Besides, there is a great academic interest in exploring the impact that online social networks may have on student academic outcomes (Abramson, 2011; Kamenetz, 2011).

Many studies disclosed the negative effect of using social networks like Facebook on students' academic performance. Rouis et al. (2011) claimed that Facebook usage is recognized as a leisure activity that negatively affect students' Academic Performance. Academic performance was reported to be negatively affected by time spent on social networks (Jacobsen & Forste, 2011; Paul et al., 2012). In the same line, social media network has long been reported to disturb students from studying and to result in academic issues (Al-rahmi et al., 2015b; Junco, 2012; Paul et al., 2012), and undesirable study habits (Ahmed & Qazi, 2011). Also, past frameworks of social networks have several notable negative impacts on student engagement, collaborative learning, and academic performance (Conway et al., 2011; Kirschner & Karpinski, 2010).

In contrast, recent studies reported distinctive results. Steinfield et al. (2008) revealed different results whereby they found the more the Facebook usage, the better the Academic Performance. Similarly, A study by Leung (2015) stated that heavy Facebook use has a positive impact on overall grades. Al-Rahmi et al. (2015a) confirmed that Social network can help in improving educational performance of students if lecturer assimilate social networks in their teaching methods. The findings marked that social network facilitates collaborative learning and engagement and this advances the academic performance of students.

Facebook can be used as a tool to produce and promote online connections among college students and faculty inside academic institutions (Mazer et al., 2007). The improvement in academic communication could have a positive effect on class discussions, and students' involvement and integration with their colleagues (Ross et al., 2009). Online social networking facilitates better and more efficient interpersonal support, collaborative information sharing, content creation, and knowledge accumulation (Lee & McLoughlin, 2008). Also, offering a learning environment that matches the needs of students' learning styles improves students' performance (Graf & Liu, 2010).

Using social networks (i.e., Facebook), as a facility that allows users to fulfill interpersonal interactions with colleagues, has achieved success on the web (Zhou et al., 2010). Colleagues interaction can be an essential way to obtain learning which offer emotional and intellectual support that facilitates academic satisfaction, capability development and performance improvement (Bauer et al., 2007; Yu et al., 2010a). Meanwhile, peer interaction would encourage the development of communication skills and those who have good interpersonal skills would have high self-esteem (Ainin et al., 2015). Thus, it is essential to ensure that these students spend their time with the right group of colleagues (Ainin et al., 2015). From the viewpoint of educators, providing online course materials, for example, electronic books, online videos, and PowerPoint files is useful to motivate participants to learning in the online environment (Chen, 2015). Afterwards, the following hypothesis is proposed:

H5: Knowledge sharing has a positive effect on students' academic performance.

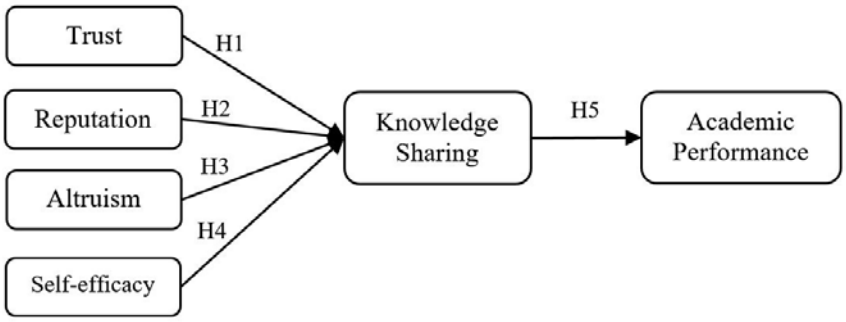


Figure 1. Research Model

3. Methodology

3.1 Procedure and Study Sample

The survey questionnaire method was adopted to collect empirical data for the study. The formal study population is comprised of first-year undergraduate students who were registered for the principle of accounting course at Palestine technical university. 150 first year undergraduate students registered for the principle of accounting course. At the beginning of

the semester the lecturer of the principles of accounting course created Facebook group to set up online environment to facilitate the communication between students and to share online materials with students. At the beginning of the course the lecturer announced the address of the Facebook group to the class, however, she left a choice of joining the online group to the students. The lecturer started uploading accounting materials, related videos, online books and notes, and other information related to the subject. Also, the lecturer updated the online group after each lecture based on the topic taught in the class. The enrollment to the Facebook group was voluntary, however, within a month, around 120 students 80% had asked to join the group. The group members started sharing information related to the class and assignments. They watched related videos and downloaded online materials provided by the lecturer and other colleagues. Most of the time, the number of seen and like on the online posts was almost equal to the number of the members in the group. Each time, around 40% of the group members' commented on Facebook group posts and share extra information related to the subject. Around 20% of the online students was active in the Facebook group. They put efforts in answering their colleague's questions, commenting on enquiries, sharing lecture notes, helping other colleagues to understand accounting issues, solving accounting problems, posting extra information related to the assignments, and updating the group with university news.

The data of the study was collected at the end of the semester (after 4-month). At the end of the semester, the lecturer told online students about her interest to evaluate their experience of using the Facebook group during the semester. The lecturer shared online questionnaire which was anonymous and was carried out among volunteer students. About 60 students 50% chose to take part in filling the questionnaire. All the responses were complete and considered valid for analyzing stage. Most of respondents (73%) were female and (27%) were male, the age of all respondent were between 18-19 years old.

3.2 Research instrument

This study is quantitative, the researcher designed the questionnaire and used the survey method to collect data. The study used the original validated scales and adapted them to the context of online knowledge sharing. Some previously validated scales were modified to better fit the current research context. Consequently, the items used to measure trust were adopted from Nahapiet and Ghoshal (1998) and Lee et al. (2014). The items employed to measure the reputation were adopted from Wasko and Faraj (2005). The items used to measure the knowledge self-efficacy were adopted from Van Den Hooff and De Ridder (2004), while the items designed to measure altruism were adopted from Kankanhalli et al. (2005). Knowledge sharing items were adopted from Lin (2007a) and Bock et al. (2005). And items used to measure academic performance were adopted from Yu et al. (2010a) and Igbaria and Tan (1997). To ensure the ease of answerability of the questionnaire, it was tested by 7 students, some comments were taken into consideration before sharing the last version with the study sample.

The respondents were required to answer all the items using a 5 point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. In addition, the respondents were asked to fill in their demographic profile (age and gender) using categorical scales. The questionnaire items were presented in the Appendix.

4. Data analysis and results

SmartPLS 2.0.M3 is used as the main statistical analysis tool to purify the measurement items and test the hypothetical relationship.

4.1 Measurement Model

To assess the reliability and validity of the study variables, we perform confirmatory factor analysis. Factor cross loading shows that all items are loading on their construct more than other constructs (Hair Jr et al., 2014), (see Table I).

All the variables were tested for reliability by using composite reliability and Cronbach's alpha. Compared to Cronbach's alpha, Composite reliability is acknowledged as a more rigorous assessment of reliability (Chin, 1998). As shown in Table III, the result of composite reliability and Cronbach's Alpha for all variables were greater than (0.70), which indicates that all variable measures are reliable. Variables validity were assessed by examining the convergent and discriminant validities. Convergent validity was evaluated by the average variance extracted (AVE) values. As explained in Table III, the AVE for all variables is more than the threshold value of (0.50) (Hair Jr et al., 2014). Further, discriminant validity is evaluated by comparing the square root of AVE values for each variable, with the correlation values located between the variable and other variables (Chin, 1998). As illustrated in Table II, all square roots of AVEs are larger than variables correlations, implying that the variance outlined by the particular variable is greater than the measurement error variance. Thus, all variables proved an acceptable level of convergent and discriminant validities.

Table I. Factors Cross Loading

	ALT	KSE	KSH	PRF	REP	TRS
ALT1	**0.910**	0.620	0.544	0.289	0.522	0.386
ALT2	**0.890**	0.546	0.435	0.307	0.414	0.541
ALT3	**0.893**	0.555	0.516	0.139	0.405	0.401
KSE1	0.456	**0.806**	0.323	0.369	0.538	0.330
KSE2	0.398	**0.766**	0.310	0.290	0.449	0.218
KSE3	0.633	**0.868**	0.628	0.356	0.512	0.362
KSH1	0.435	0.449	**0.774**	0.412	0.317	0.352
KSH3	0.505	0.421	**0.782**	0.374	0.219	0.301
KSH4	0.403	0.497	**0.840**	0.442	0.344	0.208
PRF1	0.253	0.313	0.369	**0.851**	0.381	0.311
PRF2	0.246	0.388	0.495	**0.878**	0.425	0.228
PRF3	0.213	0.428	0.512	**0.919**	0.432	0.292
PRF4	0.217	0.246	0.327	**0.744**	0.281	0.353
REP1	0.334	0.483	0.177	0.295	**0.669**	0.055
REP2	0.390	0.488	0.209	0.380	**0.885**	0.316
REP3	0.498	0.565	0.431	0.441	**0.940**	0.297
TRS1	0.400	0.153	0.204	0.120	0.082	**0.665**
TRS2	0.367	0.355	0.400	0.385	0.360	**0.867**
TRS3	0.402	0.289	0.135	0.116	0.057	**0.720**
TRS4	0.311	0.321	0.157	0.230	0.177	**0.656**

Table II. Correlation matrix of variables

	AVE	ALT	KSE	KSH	PRF	Rep	TRS

Alt	**0.806**	**0.898**					
KSE	**0.663**	0.641	**0.814**				
KSH	**0.639**	0.560	0.571	**0.799**			
PRF	**0.723**	0.270	0.415	0.513	**0.850**		
Rep	**0.705**	0.501	0.608	0.368	0.454	**0.840**	
TRS	**0.536**	0.486	0.385	0.358	0.337	0.287	**0.732**

Items on the diagonal are square roots of AVE scores

Table II. Variables Measurement Model Assessment

Constructs	Items	Loading	AVE	Composite Reliability	Cronbachs Alpha
Academic Performance (PRF)			**0.723**	**0.912**	**0.872**
	PRF1	0.851			
	PRF2	0.878			
	PRF3	0.919			
	PRF4	0.744			
Knowledge Sharing (KSH)			**0.639**	**0.841**	**0.717**
	KSH1	0.774			
	KSH2	0.782			
	KSH3	0.840			
Trust (TRS)			**0.536**	**0.820**	**0.739**
	TRS1	0.665			
	TRS2	0.867			
	TRS3	0.720			
	TRS4	0.656			
Reputation (REP)			**0.705**	**0.875**	**0.800**
	PEP1	0.669			
	PEP2	0.885			
	PEP3	0.940			
Altruism (ALT)			**0.806**	**0.926**	**0.880**
	ALT1	0.910			
	ALT2	0.890			
	ALT3	0.893			
Knowledge Self-Efficacy (KSE)			**0.663**	**0.855**	**0.773**
	KSE1	0.806			
	KSE2	0.766			
	KSE3	0.868			

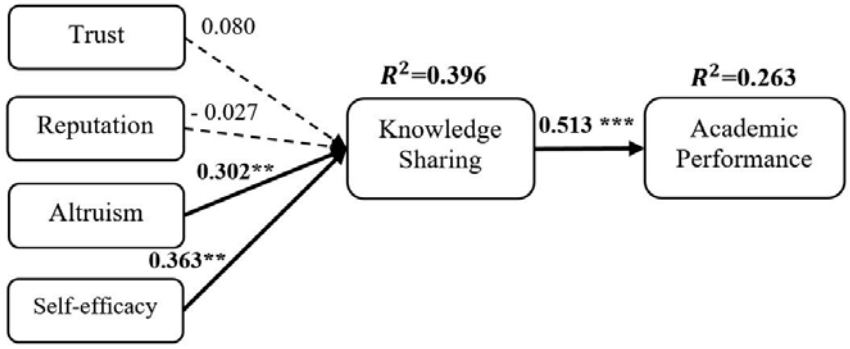
4.2 Structural Model

Figure 2 shows the test results of the five hypothesis executed by PLS. The overall assessment of the model is shown in Table IV. The results show that, the relationships between trust (β= 0.080, p = 0.158) and reputation (β= -0.027, p = 0.801) to knowledge sharing are not significant.

Thus, H1 and H2 are not supported. On the other hand, the results show the relationships between altruism (β= 0.302, p = 0.044) and knowledge self-efficacy (β= 0.363, p = 0.026) to knowledge sharing are significant and positive. Thus, H3 and H4 are supported. The result show that knowledge sharing reported $R^2 = 0.396$, which means 40% of the variance associated with knowledge sharing was accounted for by these four variables. Also, the results reveal that knowledge sharing has a strong positive significant effect on academic performance (β= 0.513, p = 0.000), therefore, H5 is supported. Finally, academic performance reported R^2 of (0.263) that means about 26.3 % of students' academic performance can be explained by knowledge sharing.

Table IV. Structural Model

Hypothesis	Path Coefficient	Sample Mean	Standard Deviation	T Values	P-Values	Result
TRS -> KSH	0.080	0.158	0.110	0.725	0.472	Rejected
REP -> KSH	-0.027	-0.141	0.106	0.254	0.801	Rejected
ALT-> KSH	0.302	0.274	0.145	2.075	0.044	**Supported**
KSE -> KSH	0.363	0.367	0.157	2.312	0.026	**Supported**
KSH -> PRF	0.513	0.534	0.116	4.415	0.000	**Supported**



Level of significance : * p<0.10 **p<0.05 ***p<0.01

Figure 2. Results of PLS analysis

5. Discussion

Influenced by previous literature, we propose the research model at Figure 1 to examine the impact of trust, reputation, altruism and knowledge self-efficacy on knowledge sharing in Facebook. The overarching goal of this study was to examine the effect of knowledge sharing through Facebook onto students' academic performance. Since the analysis, three hypotheses out of five were supported.

The results reported a nonsignificant relationship between trust in others and knowledge sharing behavior among the students through Facebook. This result implies that trust in online colleagues is not an important motivator that affects students when they use and share their knowledge online. This may be because of the students' community is close, all students in the class are knowing each other in offline classes, therefore, trust is already implied. And possibly the result is because of the culture of Palestine that criticized the person who spread wrong information and encourage people to say or share correct information only. In other words, when a student have a correct information he will share it otherwise he will not. The result is

consistent with a study by Hsu and Lin (2008) and Chow and Chan (2008).

The results of this study indicate that reputation is not a significant determinant of the student's knowledge sharing. This result pointed out that reputation among friends and lecturer is not an important factor to students compared with other factors. This may be because it is known that students are friends and classmates, and they know one another, therefore, sharing knowledge to increase status is not an essential matter for them. This finding was consistent with previous research by Moghavvemi et al. (2017), who argued that caring about strengthening the reputation among university colleagues is not important, and this finding might differ between different groups and communities.

This study reported a significant impact of altruism on online knowledge sharing. This result tells that students share their knowledge because they enjoy helping other colleagues without asking for return. The possible explanation was that frequent communication between students affected their knowledge sharing behavior, which indirectly encouraged the feeling of intrinsic enjoyment (Yu et al., 2010b). Students who feel pleasure in sharing knowledge and helping others be more motivated to share knowledge with colleagues. Students shared knowledge because they think that helping others facing problems would be enjoyable and interesting, and they feel good when doing so (Rahab & Wahyuni, 2013). The result is consistent with previously studies that reported that altruism influences knowledge sharing (Hsu & Lin, 2008; Lin, 2007b; Moghavvemi et al., 2017).

The current study found that knowledge self-efficacy plays a vital role in knowledge sharing behavior. This shows that students will share knowledge based on their abilities. This result infers that a sense of the competence and self-confidence of students may be a need for students to engage in knowledge sharing. Therefore, students who believe in their ability to share useful knowledge have stronger motivation to contribute their knowledge to colleagues. The finding of this paper is consistent with other research mentioning that students with knowledge self-efficacy will contribute to knowledge sharing more than others (Chen & Hung, 2010; Lin, 2007b).

The finding of this study also revealed a significant impact of online knowledge sharing on students' academic performance. This means the more the lecturers promote and use the social networks in the academic context, the more the students will achieve higher academic performance, and vice versa. This was in agreement with the findings proposed by Ainin et al. (2015) and Al-rahmi et al. (2015b) who find out a positive and strong relationship between using the social network and student academic performance. This means that educational institutions need to provide collaborative and interactive online social media to improve the students' academic performance. In addition, a study by Du et al. (2007), approved the significant influence of knowledge sharing on performance.

5.1 Managerial implication

This study suggests the following recommendations for academic facilitators (i.e. institution managers or lecturers) who care of launching knowledge sharing practices or wish to encourage knowledge sharing within their academic institutions. First, academic institutions should encourage their lecturers to integrate online social network as a tool in their teaching courses, by training them on how to use this tool in the academic context and by supplying them with a suitable online material they may need in their courses. Second, academic institutions may need to impose suitable policies and rules which satisfy the new online academic environment. Third, this study provides evidence that knowledge self-efficacy is an important antecedent to students' knowledge sharing behavior. Therefore, we recommend knowledge facilitators (i.e. lecturers)

to pay more attention by providing useful feedback to students to improve their knowledge self-efficacy. A self-efficacious can be established by motivating and selecting students who are proactive, and who have high intellectual skills and self-esteem. Also, managers can boost the perceptions of knowledge self-efficacy among valued knowledge students by showing to them their role in producing a great contribution to their University and colleagues. Finally, since altruism and enjoyment in helping others significantly influences students' knowledge sharing behavior, academic managers have to raise the level of enjoyment that students experience when they help one another by improving the positive mood state of students. Academic institutions can set up and sustain knowledge sharing by facilitating the use of social networks inside the University by equipping suitable computer labs and by providing Internet access on campus.

5.2 Limitation

There are several limitations to this study, requiring further examination and additional research. The first limitation of this paper is that it focuses on junior undergraduate students having their principle of accounting university course. Future research could study different levels of learner and different academic courses. Second, the sample of the study was limited to students in one Palestinian University. Therefore, it is interesting to test the research model on other Palestinian and universal Universities, since cultural differences influence students' opinion about knowledge sharing. Third, based on a sample of 60 respondents, several significant results have been obtained. However, a larger sample that brings more statistical power could increase the generalizability.

6. Conclusion

The study examined the relationship between Trust, Reputation, Altruism and Knowledge Self-efficacy on Knowledge Sharing through Facebook. As well as the impact of knowledge sharing on students' Academic performance. It was found that only Altruism and Knowledge Self-efficacy significantly predicted Knowledge Sharing behavior through Facebook while Trust and Reputation were not found to be significant. It was also found that Knowledge Sharing through Facebook significantly predicted Academic Performance.

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REFERENCES

Abramson, L. 2011. Can social networking keep students in school. ***NPR: Morning edition***.

Ahmed, I. & Qazi, T. F. 2011. Deciphering the social costs of Social Networking Sites (SNSs) for university students. ***African Journal of Business Management***, 5(14): 5664.

Ainin, S., Naqshbandi, M. M., Moghavvemi, S., & Jaafar, N. I. 2015. Facebook usage, socialization and academic performance. ***Computers & Education***, 83: 64-73.

Al-Rahmi, W., Othman, M. S., & Yusuf, L. M. 2015a. The role of social media for collaborative learning to improve academic performance of students and researchers in malaysian higher education. ***The International Review of Research in Open and Distributed Learning***, 16(4).

Al-rahmi, W. M., Othman, M. S., Yusof, L. M., & Musa, M. A. 2015b. Using social media as a tool for improving academic performance through collaborative learning in Malaysian higher education. ***Review of European Studies***, 7(3): 265.

Argote, L. & Ingram, P. 2000. Knowledge transfer: A basis for competitive advantage in firms. ***Organizational behavior and human decision processes***, 82(1): 150-169.

Ba, S., Stallaert, J., & Whinston, A. B. 2001. Research commentary: introducing a third dimension in information systems design—the case for incentive alignment. ***Information Systems Research***, 12(3): 225-239.

Bandura, A. & Walters, R. H. 1977. Social learning theory.

Bandura, A. 1997. ***Self-efficacy: The exercise of control***: Macmillan.

Bauer, T. N., Bodner, T., Erdogan, B., Truxillo, D. M., & Tucker, J. S. 2007. Newcomer adjustment during organizational socialization: a meta-analytic review of antecedents, outcomes, and methods. ***Journal of applied psychology***, 92(3): 707.

Bicen, H. & Uzunboylu, H. 2013. The Use of Social Networking Sites in Education: A Case Study of Facebook. ***J. UCS***, 19(5): 658-671.

Blau, P. M. 1964. ***Exchange and power in social life***: Transaction Publishers.

Bock, G.-W. & Kim, Y.-G. 2001. Breaking the myths of rewards: An exploratory study of attitudes about knowledge sharing. ***Pacis 2001 proceedings***: 78.

Bock, G.-W., Zmud, R. W., Kim, Y.-G., & Lee, J.-N. 2005. Behavioral intention formation in knowledge sharing: Examining the roles of extrinsic motivators, social-psychological forces, and organizational climate. ***MIS quarterly***: 87-111.

Bowman, N. D., Westerman, D. K., & Claus, C. J. 2012. How demanding is social media: Understanding social media diets as a function of perceived costs and benefits–A rational actor perspective. ***Computers in Human Behavior***, 28(6): 2298-2305.

Carrillo, J. E. & Gaimon, C. 2004. Managing knowledge-based resource capabilities under uncertainty. ***Management Science***, 50(11): 1504-1518.

Chai, S. & Kim, M. 2010. What makes bloggers share knowledge? An investigation on the role of trust. ***International Journal of Information Management***, 30(5): 408-415.

Chang, C.-C., Chiu, H.-C., Keng, N.-Y., & Chou, S.-Y. 2008. A study on the knowledge sharing behavior on blogs and forums. ***The Journal of Business***, 10(4): 885-908.

Chen, C.-J. & Hung, S.-W. 2010. To give or to receive? Factors influencing members' knowledge sharing and community promotion in professional virtual communities. ***Information & Management***, 47(4): 226-236.

Chen, Y.-c. 2015. Linking learning styles and learning on mobile Facebook. ***The International Review of Research in Open and Distributed Learning***, 16(2).

Chin, W. W. 1998. Issues and Opinion on Structural Equation Modeling, ***MIS Quarterly***, vol. 22: 1-1: MIS Quarterly & The Society for Information Management.

Chiu, C.-M., Hsu, M.-H., & Wang, E. T. 2006. Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. ***Decision support systems***, 42(3): 1872-1888.

Chow, W. S. & Chan, L. S. 2008. Social network, social trust and shared goals in organizational knowledge sharing. ***Information & Management***, 45(7): 458-465.

Chua, A. 2003. Knowledge sharing: A game people play, ***Aslib Proceedings***, vol. 55: 117-129: MCB UP Ltd.

Constant, D., Kiesler, S., & Sproull, L. 1994. What's mine is ours, or is it? A study of attitudes about information sharing. ***Information Systems Research***, 5(4): 400-421.

Constant, D., Sproull, L., & Kiesler, S. 1996. The kindness of strangers: The usefulness of electronic weak ties for technical advice. ***Organization science***, 7(2): 119-135.

Conway, M., Cao, Y., & Hong, P. 2011. Antecedents and consequences of social media utilization in college teaching: a proposed model with mixed-methods investigation. ***On the Horizon***, 19(4): 297-306.

Coppola, N. W., Hiltz, S. R., & Rotter, N. G. 2004. Building trust in virtual teams. ***IEEE transactions on professional communication***, 47(2): 95-104.

Cross, R. & Cummings, J. N. 2004. Tie and network correlates of individual performance in knowledge-intensive work. ***Academy of management journal***, 47(6): 928-937.

Czerwinski, M. P. & Larson, K. 2002. ***Cognition and the Web: moving from theory to Web design***: Erlbaum: NJ.

Davenport, T. H. & Prusak, L. 1997. ***Information ecology: Mastering the information and knowledge environment***: Oxford University Press on Demand.

Davenport, T. H. & Prusak, L. 1998. ***Working knowledge: How organizations manage what they know***: Harvard Business Press.

DeAndrea, D. C., Ellison, N. B., LaRose, R., Steinfield, C., & Fiore, A. 2012. Serious social media: On the use of social media for improving students' adjustment to college. ***The Internet and higher education***, 15(1): 15-23.

Donath, J. S. 1999. Identity and deception in the virtual community. ***Communities in cyberspace***, 1996: 29-59.

Du, R., Ai, S., & Ren, Y. 2007. Relationship between knowledge sharing and performance: A survey in Xi'an, China. ***Expert systems with Applications***, 32(1): 38-46.

Duggan, M., Ellison, N. B., Lampe, C., Lenhart, A., & Madden, M. 2015. Demographics of key social networking platforms. ***Pew Research Center***, 9.

Duggan, M. & Brenner, J. 2016. The demographics of social media users–2012. Pew Research Center. 2012.

Dwyer, C., Hiltz, S., & Passerini, K. 2007. Trust and privacy concern within social networking sites: A comparison of Facebook and MySpace. ***AMCIS 2007 proceedings***: 339.

Eid, M. & Nuhu, N. A. 2011. Impact of learning culture and information technology use on knowledge sharing of Saudi students. ***Knowledge Management Research & Practice***, 9(1): 48-57.

Fehr, E. & Gächter, S. 2000. Fairness and retaliation: The economics of reciprocity. ***The journal of economic perspectives***: 159-181.

Fewkes, A. M. & McCabe, M. 2012. Facebook: Learning tool or distraction? ***Journal of Digital Learning in Teacher Education***, 28(3): 92-98.

George, H. & Homans, M. 1961. Social behavior: its elementary forms. ***New York***.

Graf, S. & Liu, T. C. 2010. Analysis of learners' navigational behaviour and their learning styles in an online course. ***Journal of Computer Assisted Learning***, 26(2): 116-131.

Greenwood, S., Perrin, A., & Duggan, M.; Social Media Update 2016 - Facebook usage and

engagement is on the rise, while adoption of other platforms holds steady; http://www.pewinternet.org/2016/11/11/social-media-update-2016/.

Grosseck, G., Bran, R., & Tiru, L. 2011. Dear teacher, what should I write on my wall? A case study on academic uses of Facebook. ***Procedia-Social and Behavioral Sciences***, 15: 1425-1430.

Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. 2014. ***A primer on partial least squares structural equation modeling (PLS-SEM)***: SAGE Publications, Incorporated.

Hall, H. 2001. Social exchange for knowledge exchange.

He, W. & Wei, K.-K. 2009. What drives continued knowledge sharing? An investigation of knowledge-contribution and-seeking beliefs. ***Decision Support Systems***, 46(4): 826-838.

Högberg, C. & Edvinsson, L. 1998. A design for futurizing knowledge networking. ***Journal of Knowledge Management***, 2(2): 81-92.

Hsu, C.-L. & Lin, J. C.-C. 2008. Acceptance of blog usage: The roles of technology acceptance, social influence and knowledge sharing motivation. ***Information & Management***, 45(1): 65-74.

Hsu, M.-H. & Chiu, C.-M. 2004. Internet self-efficacy and electronic service acceptance. ***Decision support systems***, 38(3): 369-381.

Hsu, M.-H., Ju, T. L., Yen, C.-H., & Chang, C.-M. 2007. Knowledge sharing behavior in virtual communities: The relationship between trust, self-efficacy, and outcome expectations. ***International Journal of Human-Computer Studies***, 65(2): 153-169.

Igbaria, M. & Tan, M. 1997. The consequences of information technology acceptance on subsequent individual performance. ***Information & management***, 32(3): 113-121.

Inkpen, A. C. & Tsang, E. W. 2005. Social capital, networks, and knowledge transfer. ***Academy of management review***, 30(1): 146-165.

Ipe, M. 2003. Knowledge sharing in organizations: A conceptual framework. ***Human resource development review***, 2(4): 337-359.

Irwin, C., Ball, L., Desbrow, B., & Leveritt, M. 2012. Students' perceptions of using Facebook as an interactive learning resource at university. ***Australasian Journal of Educational Technology***, 28(7).

Jacobsen, W. C. & Forste, R. 2011. The wired generation: Academic and social outcomes of electronic media use among university students. ***Cyberpsychology, Behavior, and Social Networking***, 14(5): 275-280.

Jones, N., Blackey, H., Fitzgibbon, K., & Chew, E. 2010. Get out of MySpace! ***Computers & Education***, 54(3): 776-782.

Junco, R. 2012. The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. ***Computers & Education***, 58(1): 162-171.

Kalman, M. E. 1999. ***The effects of organizational commitment and expected outcomes on the motivation to share discretionary information in a collaborative database: communication dilemmas and other serious games***: University of Southern California.

Kamenetz, A. 2011. Gates Foundation bets on Facebook app to help kids graduate. ***Fast Company***, 14.

Kankanhalli, A., Tan, B. C., & Wei, K.-K. 2005. Contributing knowledge to electronic knowledge repositories: an empirical investigation. ***Mis Quarterly***: 113-143.

Kapur, M. & Kinzer, C. K. 2007. Examining the effect of problem type in a synchronous computer-supported collaborative learning (CSCL) environment. ***Educational Technology Research and Development***, 55(5): 439-459.

Karpinski, A. C., Kirschner, P. A., Ozer, I., Mellott, J. A., & Ochwo, P. 2013. An exploration of social

networking site use, multitasking, and academic performance among United States and European university students. ***Computers in Human Behavior***, 29(3): 1182-1192.

Kim, D. J., Ferrin, D. L., & Rao, H. R. 2008. A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk, and their antecedents. ***Decision support systems***, 44(2): 544-564.

Kirschner, P. A. & Karpinski, A. C. 2010. Facebook® and academic performance. ***Computers in human behavior***, 26(6): 1237-1245.

Ko, D.-G., Kirsch, L. J., & King, W. R. 2005. Antecedents of knowledge transfer from consultants to clients in enterprise system implementations. ***MIS quarterly***: 59-85.

Kollock, P. 1999. The economies of online cooperation: gifts and public goods in cyberspace, ***Communities in the cyberspace***: 259-262. London: Routledge.

Kosik, A. 2007. The implications of Facebook. ***Sharing the Commonwealth: Critical issues in higher education***, 910.

Lakhani, K. R. & Von Hippel, E. 2003. How open source software works:“free” user-to-user assistance. ***Research policy***, 32(6): 923-943.

Lee, M. J. & McLoughlin, C. 2008. Harnessing the affordances of Web 2.0 and social software tools: Can we finally make" student-centered" learning a reality, ***Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications***: 3825-3834.

Lee, M. R., Yen, D. C., & Hsiao, C. 2014. Understanding the perceived community value of Facebook users. ***Computers in Human Behavior***, 35: 350-358.

Leung, L. 2015. A Panel Study on the Effects of Social Media Use and Internet Connectedness on Academic Performance and Social Support. ***International Journal of Cyber Behavior, Psychology and Learning (IJCBPL)***, 5(1): 1-16.

Liang, T.-P., Liu, C.-C., & Wu, C.-H. 2008. Can Social Exchange Theory Explain Individual Knowledge-Sharing Behavior? A Meta-Analysis, ***ICIS***: 171.

Lin, C.-P. 2007a. To share or not to share: Modeling tacit knowledge sharing, its mediators and antecedents. ***Journal of business ethics***, 70(4): 411-428.

Lin, H.-F. 2007b. Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions. ***Journal of information science***, 33(2): 135-149.

Liu, C.-C., Liu, K.-P., Chen, W.-H., Lin, C.-P., & Chen, G.-D. 2011. Collaborative storytelling experiences in social media: Influence of peer-assistance mechanisms. ***Computers & Education***, 57(2): 1544-1556.

Lu, H.-P. & Hsiao, K.-L. 2007. Understanding intention to continuously share information on weblogs. ***Internet Research***, 17(4): 345-361.

Luckin, R., Clark, W., Graber, R., Logan, K., Mee, A., & Oliver, M. 2009. Do web 2.0 tools really open the door to learning? Practices, perceptions and profiles of 11–16-year-old students. ***Learning, Media and Technology***, 34(2): 87-104.

Marett, K. & Joshi, K. 2009. The decision to share information and rumors: Examining the role of motivation in an online discussion forum. ***Communications of the Association for Information Systems***, 24(1): 4.

Mayer, R. C., Davis, J. H., & Schoorman, F. D. 1995. An integrative model of organizational trust. ***Academy of management review***, 20(3): 709-734.

Mayer, R. C., Davis, J. H., & Schoorman, F. D. 2006. An integrative model of organizational trust. ***Organizational trust: A reader***: 82-108.

Mazer, J. P., Murphy, R. E., & Simonds, C. J. 2007. I'll see you on “Facebook”: The effects of computer-mediated teacher self-disclosure on student motivation, affective learning, and

classroom climate. ***Communication Education***, 56(1): 1-17.

Mazzolini, M. & Maddison, S. 2007. When to jump in: The role of the instructor in online discussion forums. ***Computers & Education***, 49(2): 193-213.

McLeod, C. 2008. Trust. In E. N. Zalta (Ed.), ***The stanford encyclopedia of philosophy***, Fall 2008 Edition ed. Stanford, CA.

McLure Wasko, M. & Faraj, S. 2000. "It is what one does": why people participate and help others in electronic communities of practice. ***The Journal of Strategic Information Systems***, 9(2): 155-173.

Michikyan, M., Subrahmanyam, K., & Dennis, J. 2015. Facebook use and academic performance among college students: A mixed-methods study with a multi-ethnic sample. ***Computers in Human Behavior***, 45: 265-272.

Moghavvemi, S., Sharabati, M., Paramanathan, T., & Rahin, N. M. 2017. The impact of perceived enjoyment, perceived reciprocal benefits and knowledge power on students' knowledge sharing through Facebook. ***The International Journal of Management Education***, 15(1): 1-12.

Nahapiet, J. & Ghoshal, S. 1998. Social capital, intellectual capital, and the organizational advantage. ***Academy of management review***, 23(2): 242-266.

Olson, D. A., Liu, J., & Shultz, K. S. 2012. The influence of Facebook usage on perceptions of social support, personal efficacy, and life satisfaction. ***Journal of Organizational Psychology***, 12(3/4): 133-144.

Paul, J. A., Baker, H. M., & Cochran, J. D. 2012. Effect of online social networking on student academic performance. ***Computers in Human Behavior***, 28(6): 2117-2127.

Pempek, T. A., Yermolayeva, Y. A., & Calvert, S. L. 2009. College students' social networking experiences on Facebook. ***Journal of applied developmental psychology***, 30(3): 227-238.

Prensky, M. 2001. Digital natives, digital immigrants part 1. ***On the horizon***, 9(5): 1-6.

Rafaeli, S. & Ravid, G. 2003. Information sharing as enabler for the virtual team: an experimental approach to assessing the role of electronic mail in disintermediation. ***Information Systems Journal***, 13(2): 191-206.

Rahab & Wahyuni. 2013. Predicting Knowledge Sharing Intention Based on Theory of Reasoned Action Framework: An Empirical Study on Higher Education Institution. ***American International Journal of Contemporary Research***, 3: 138–147.

Reagans, R. & McEvily, B. 2003. Network structure and knowledge transfer: The effects of cohesion and range. ***Administrative science quarterly***, 48(2): 240-267.

Roblyer, M. D., McDaniel, M., Webb, M., Herman, J., & Witty, J. V. 2010. Findings on Facebook in higher education: A comparison of college faculty and student uses and perceptions of social networking sites. ***The Internet and higher education***, 13(3): 134-140.

Roger, T. & Johnson, D. W. 1988. Cooperative learning: Two heads learn better than one. ***Transforming Education: Awakening the Full Human Potential... in Everyone, Context Institute, Langley, WA***: 34-36.

Roloff, M. E. 1981. ***Interpersonal communication: The social exchange approach***: Sage Beverly Hills, CA.

Ross, C., Orr, E. S., Sisic, M., Arseneault, J. M., Simmering, M. G., & Orr, R. R. 2009. Personality and motivations associated with Facebook use. ***Computers in human behavior***, 25(2): 578-586.

Rouis, S., Limayem, M., & Salehi-Sangari, E. 2011. Impact of Facebook usage on students' academic achievement: Role of self-regulation and trust. ***Electronic journal of research in educational psychology***, 9(3): 961-994.

Shapin, S. 1988. The house of experiment in seventeenth-century England. ***Isis***: 373-404.

Smith, C. 2014. By the numbers: 98 amazing facebook user statistics. ***http://expandedramblings. com/index. php/by-the-numbers-17-amazing-facebook-stats/#. U0FiwPk0V8E. A ccessed on April***, 6: 2014.

Steinfield, C., Ellison, N. B., & Lampe, C. 2008. Social capital, self-esteem, and use of online social network sites: A longitudinal analysis. ***Journal of Applied Developmental Psychology***, 29(6): 434-445.

Stewart, D. 2005. Social status in an open-source community. ***American Sociological Review***, 70(5): 823-842.

Teh, P.-L., Chong, C.-W., Yong, C.-C., & Yew, S.-Y. 2010. Internet self–efficacy, computer self–efficacy, and cultural factor on knowledge sharing behavior. ***African Journal of Business Management***, 4(18): 4086-4095.

Tian, S. W., Yu, A. Y., Vogel, D., & Kwok, R. C.-W. 2011. The impact of online social networking on learning: a social integration perspective. ***International Journal of Networking and Virtual Organisations***, 8(3-4): 264-280.

Ünlüsoy, A., de Haan, M., Leander, K., & Volker, B. 2013. Learning potential in youth's online networks: A multilevel approach. ***Computers & Education***, 68: 522-533.

Van Den Hooff, B. & De Ridder, J. A. 2004. Knowledge sharing in context: the influence of organizational commitment, communication climate and CMC use on knowledge sharing. ***Journal of knowledge management***, 8(6): 117-130.

Vygotsky, L. S. 1980. ***Mind in society: The development of higher psychological processes***: Harvard university press.

Walker, J. W. 2002. Research, knowledge sharing, and you.(Perspectives). ***Human Resource Planning***, 25(2): 10-13.

Wasko, M. M. & Faraj, S. 2005. Why should I share? Examining social capital and knowledge contribution in electronic networks of practice. ***MIS quarterly***: 35-57.

Williams, R. L. & Bukowitz, W. R. 1999. The knowledge management field book. ***London: FT Management***.

Xiao, H., Li, W., Cao, X., Tang, Z., & Jiaotong, S. 2012. The online social networks on knowledge exchange: Online social identity, social tie and culture orientation. ***Journal of Global Information Technology Management***, 15(2): 4.

Yapıcı, İ. Ü. & Hevedanlı, M. 2014. Educational use of social networks: Facebook case study. ***European Journal of Research on Education***, 2(4): 16-21.

Ye, S., Chen, H., & Jin, X. 2006. Exploring the moderating effects of commitment and perceived value of knowledge in explaining knowledge contribution in virtual communities. ***PACIS 2006 Proceedings***: 25.

Yu, A. Y., Tian, S. W., Vogel, D., & Kwok, R. C.-W. 2010a. Can learning be virtually boosted? An investigation of online social networking impacts. ***Computers & Education***, 55(4): 1494-1503.

Yu, T.-K., Lu, L.-C., & Liu, T.-F. 2010b. Exploring factors that influence knowledge sharing behavior via weblogs. ***Computers in Human Behavior***, 26(1): 32-41.

Zhang, Y., Fang, Y., Wei, K.-K., & Chen, H. 2010. Exploring the role of psychological safety in promoting the intention to continue sharing knowledge in virtual communities. ***International Journal of Information Management***, 30(5): 425-436.

Zhou, T., Li, H., & Liu, Y. 2010. The effect of flow experience on mobile SNS users' loyalty. ***Industrial Management & Data Systems***, 110(6): 930-946.

Zywica, J. & Danowski, J. 2008. The faces of Facebookers: Investigating social enhancement and social compensation hypotheses; predicting Facebook™ and offline popularity from sociability

and self-esteem, and mapping the meanings of popularity with semantic networks. ***Journal of Computer-Mediated Communication***, 14(1): 1-34.

APPENDIX

Study variables measurement items

Variable	Items

Academic Performance Yu et al. (2010a) & Igbaria and Tan (1997)	PRF1: Knowledge sharing helps me enrich my research.
	PRF2: I am confident I have adequate academic skills and abilities.
	PRF3: I feel competent conducting my course assignment.
	PRF4: I have learnt how to do my coursework in an efficient manner.
	PRF5: I have performed academically as I expected I would.
Knowledge Sharing Lin (2007a) & Bock et al. (2005)	KSH1: I share my knowledge based on my experience with my colleagues.
	KSH2: I share my expertise at the request of my colleagues.
	KSH3: I frequently share reports, papers and notes that I prepared with other students in my school.
	KSH4: I frequently share reports, papers and notes prepared by others with other students.
Trust Nahapiet and Ghoshal (1998) & Lee et al. (2014)	TRS1: I have faith in my colleagues and trust them.
	TRS2: I have belief in the good intent and concern of in my colleagues.
	TRS3: I have belief in my colleagues' reliability.
	TRS4: I trust in my colleagues when discussing topics via Facebook accounting group.
Reputation Wasko and Faraj (2005)	REP1: I earn respect from my colleagues by participating in Facebook accounting group.
	REP2: I feel that participation improves my status in Facebook accounting group.
	REP3: Participating in Facebook accounting group can enhance my reputation among my colleagues and lecturer.
	REP4: I can earn some feedback or rewards through participation that represent my reputation and status in Facebook accounting group.
Altruism Kankanhalli et al. (2005)	ALT1: I enjoy sharing my knowledge with other colleagues through Facebook accounting group.
	ALT2: I enjoy helping other colleagues by sharing my knowledge through Facebook accounting group.
	ALT3: It feels good to help someone else by sharing my knowledge through Facebook accounting group.
	ALT4: Sharing my knowledge with other colleagues through Facebook accounting group gives me pleasure.
Knowledge Self-Efficacy Van Den Hooff and De Ridder (2004)	KSE1: I have confidence in my ability to provide information on the Facebook accounting group that can solve my colleagues' problem
	KSE2: I have confidence in my ability to provide information on the Facebook accounting group which my colleagues are interested in or consider useful.
	KSE3: I am confident that most information which I provide can attract my colleagues' attention.

A Study on the Relationships among Innovation Orientation, Processes of Value Co-creation, and Relational Performance

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ABSTRACT

Studies related to value co-creation have received much attention recently. The past research indicates that it is beneficial for enterprises to understand and keep contact with customers, but there are few studies to explore how firms and social actors can benefit each other through the process of value co-creation. The purpose of this study is to fill the gap by developing and empirically testing a model of value co-creation stages. According to the service-dominant (SD) logic, this study considers value co-creation containing two stages, and examines the relationships among innovation orientation, value co-creation stages, and relational performance. Data were collected from manufacturing companies in Taiwan. A partial least square (PLS) was used to address sophisticated data analysis issues. The empirical evidence indicated that firms with more innovation orientation can facilitate involving stakeholders to reciprocity; In addition, firms have better relational performance at reciprocity stage than initial engagement stage. Detail findings and implications are discussed.

Keyword: Value Co-creation, Innovation Orientation, Relational Performance.

1. Introduction

There are plenty of quantitative and qualitative studies on the phenomenon of co-creation or value creation recently, and as expected the results consistently support that companies can benefit from understanding and keeping contact with customers. However, the literature lacks knowledge about how the co-creation process unfolds to benefit co-creation actors, a perspective that involving multiple stakeholders. To fulfill the research gap, the purposes of this study are (1) to propose a stage view of value co-creation; and (2) to empirically test a co-creation model that depicts the relationships among innovation orientation, co-creation processes, and relational performance. Conceptual foundation and hypotheses were drawing from the service-dominant (SD)

and will be briefly discussed below.

2. Theoretical background and hypotheses

2.1 Value co-creation stages

A new premise of SD logic which has been proposed in the article of Vargo and Lusch (2016) is that value creation is an "actor to actor" perspective that implies each actor engages in co-creation and aim to integrate other's resource. It renovated service-dominant logic from a B2C perspective to all stakeholders are included. The new premise implies a key evolution to the SD literature: (1) co-creation is a process which will proceed successfully in a long run only if parties involved can benefit from the process. Accordingly, this study argues that there is a need to have a better understanding about how the co-creation unfolds to reach a state of mutually beneficiary. A review of the literature has revealed that researchers of value co-creation have defined the concept from many related but distinct points of views: ranging from customer involvement, customer engagement, co-production, joint development, customization, collaborative commerce, to value co-creation (Chathoth, Altinay, Harrington, Okumus, & Chan, 2013). All these conceptualizations of co-creation suggest that cornerstones are necessary for reaching the state of mutually beneficiary. Not surprisingly, a stage view of co-creation have been proposed by Prahalad (2004) asserting that a firm-centric co-creation will go through five stages to engage customers: (1) persuading customers through advertising and promotion; (2) customer self-service; (3) staging of an experience; (4) customers solve a problem using a firm's system; (4) co-design and co-produce products and services. Although Prahalad (2004)'s stage view of co-creation can been criticized for its in-balanced position: co-creation is led by firms, however, Prahalad (2004) is the first one who contributes the idea to the literature: co-creation can be further understood by a stage model.

In line with Vargo and Lusch (2016)'s premise, this study proposes that social actors involved in a successful co-creation relationship may go through two stages: initial engagement and reciprocity. These two stages are analogous to the idea of initial trust and trust in the relationship marketing literature. Social actors may develop their initial attitude toward each other before or/and in the very beginning periods of interactions. One key characteristic of the initial engagement is that there exists no or little emotional contracts among one and another (McKnight, Cummings, & Chervany, 1998). These social actors involved may change their feelings or attitudes toward mutual interactions depending on perceived benefits they received and perceived costs they devoted as the co-creation process unfolds. To the extents of the co-creation

relationship are mutually beneficiary, actors may form more solid ties that facilitate further cooperation and collaboration in creating value together. The study terms this stage as reciprocity. The key characteristic of reciprocity in value co-creation is that engaged social actors are more willing and committed to integrate resources and exchange services for a win-win initiative (Vargo and Lusch, 2016).

2.2 Hypotheses

Firms with innovative culture often are open-minded for a changing environment. As a result, high innovation orientation firms are more likely to communicate and interact with other social actors to promote well-coordinated collaboration and are willing to invest more efforts in creating open collaboration to provide enhanced service (Tsou and Hsu, 2015). We expect this kind of organizational culture may encourage and support both the proceeding of initial engagement and the advancement of reciprocity (Hurley & Hult, 1998). Therefore, we propose that,

H1: Innovation orientation has a positive relationship with initial engagement

H2: Innovation orientation has a positive relationship with reciprocity.

Prior studies of customer engagement consistently hold the postulate that engaged customers are more likely and willing to keep interactions with and contribute innovative ideas to a focal firm (e.g., Jaakkola and Alexander, 2014). Likewise, we hold the similar position that to the extent of a focal firm and their social actors are well-engaged, the firm will have a better relational performance. As to the reciprocity process, we expect that the presence of mutually beneficiary norms will lead to a further better relational performance than the performance of initial engagement. This discussion leads to following hypothesis,

H3: Initial engagement are positively associated with relational performance

H4: reciprocity are positively associated with relational performance, and the impact of reciprocity on relational performance is higher than the impact of initial engagement on relational performance.

3. Research methodology

A survey within a cross-sectional study was used to collect the data and examined the research model. The data collection composed of 71 managers who have worked for their firm for more than ten years. All measurement items were drawn and adapted from existed studies (e.g., Tsou and Hsu, 2015). In this study, we applied Partial least squares (PLS) to analyze the structural equation model. PLS is able to evaluate relationships within a structural equation model through a nonparametric approach, and with comparatively small sample size and to construct with formative measure, it is

particularly useful in this study.

4. Result

The Cronbach's alpha of all terms ranged from 0.828 to 0.903, all higher than the recommended 0.7 (Chin, 1988). Therefore, the construct reliability was sufficient for all factors. According to Fornell and Larcker (1981), average variance extracted (AVE) of each construct should higher than 0.5. The AVE of all constructs in this study ranged from 0.704 to 0.837, demonstrating good convergent validity. The results were listed below.

Table 1 The construct reliability and validity

Latent Construct	Cronbach's Alpha	Composite Reliability	AVE
IO	0.828	0.897	0.744
RP	0.903	0.939	0.837
Initial engagement	0.865	0.917	0.787
Reciprocity	0.859	0.905	0.704

The structural model was tested with Smart PLS 3.0. Bootstrap analysis was conducted with 1000 samples and n=71 cases per sample in the full model. Table 2 showed the results of PLS analysis. Innovation orientation is positively associated with reciprocity, but not positively associated with initial engagement. And initial engagement doesn't have positive relationship with relational performance, but reciprocity has positive relationship with relational performance.

Table 2 Analysis results of structural model

	Path coefficients	t-value
Innovation orientation→initial engagement	0.006	0.941
Innovation orientation→reciprocity	0.654	9.485(supported)
Initial engagement→relational performance	0.202	1.264
reciprocity→relational performance	0.558	4.318(supported)

5. Discussion and Conclusion

This study proposes a stage view of value co-creation and empirically test a value co-creation model that depicts the relationships among innovation orientation, value co-creation processes, and relational performance. According to the results, innovation orientation is positively associated with reciprocity, but not with initial engagement. It implies that different value co-creation processes will be influenced by different

antecedents. Managers should manage the right factors to ensure the success of value co-creation. Furthermore, initial engagement does not lead to relational performance, but reciprocity does. This result indicates that a mutually beneficiary relationship dose result in a better relational performance, and that performance implication of initial engagement is weak. Managers should view initial engagement as an necessary investment, and receive its returns when co-creation is truly in a mutually beneficiary relationship.

REFERENCE

Chathoth, P., Altinay, L., Harrington, R. J., Okumus, F., & Chan, E. S. 2013. Co-production versus co-creation: A process based continuum in the hotel service context. ***International Journal of Hospitality Management***, 32: 11-20.

Chin, W. W. 1998. Issues and opinion on structural equation modeling. ***MIS Quarterly***, 22(1):7-16.

Fornell, C. & Larcker, D. F. 1981. Structural equation models with unobservable variables and measurement error: Algebra and statistics. ***Journal of Marketing Research***, 18:382-388.

Hurley, R. F., & Hult, G. T. M. 1998. Innovation, market orientation and organizational learning: An integration and empirical examination. ***Journal of Marketing***, 62(3):42–54.

Jaakkola, E., & Alexander, M. 2014. The role of customer engagement behavior in value co-creation a service system perspective. ***Journal of Service Research***, 17: 247–261.

McKnight, D. H., Cummings, L. L., & Chervany, N. L. 1998. Initial trust formation in new organizational relationships. ***Academy of Management review***, 23(3): 473-490.

Prahalad, C. K. 2004. The cocreation of value. ***Journal of Marketing***, 68(1): 23.

Tsou, H. T., & Hsu, S. H. Y. 2015. Performance effects of technology–organization–environment openness, service co-production, and digital-resource readiness: The case of the IT industry. ***International Journal of Information Management***, 35(1):1-14.

Vargo, S. L., & Lusch, R. F. 2016. Institutions and axioms: an extension and update of service-dominant logic. ***Journal of the Academy of Marketing Science***, 44(1): 5

Applying Neuroscience to Talent Management: A Literature Review on Neuro Talent Management

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ABSTRACT

Neuroscience, the science of how the nervous system and brain works, can help companies do each of these more effectively (Hills, 2012). The neurosciences have been full of promises throughout the last century and they enjoy an astoundingly benevolent public interest. Just after the ending of "The Decade of the Brain" some managers of research in the neurosciences had already arranged to mark the beginning of the next millennium with a conference proclaiming the next hundred years the "Century of the Brain." Whether a justifiable prediction or wishful thinking, the neurosciences have gained momentum (Hagner & Borck, 2001).

Advances in the measurement of neural processes accelerated by quantum leaps in imaging technology have enabled scientists to provide research insights as to the neurological dynamics of human interaction. Theoretical foundations underlying organizational phenomena can be advanced through the incorporation of themes, methods, and findings emerging from neuroscience (McDonald & Tang, 2014).

Another emerging concept that named talent management, beginning in the late 1990s, for organizations across the globe, talent management (GTM) has been defined in broad terms as an organization's efforts to attract, select, develop and retain key talented employees (Stahl et al., 2007; Scullion, Collings, & Caligiuri, 2010). Hence, talent

attraction, development, deployment and retention became a crucial task in global business (Guthridge, Komm, & Lawson, 2008; Schuler, Jackson, & Tarique, 2011).

Many organizations started creating and implementing programs, processes, and systems that built the internal talent pool. These efforts included various programs on leader- ship development, high - potential identification and development, engagement, retention, and others that became known as talent management (Dowell, 2010).

Salient examples in the literature include the nascent interdisciplinary fields of neuroeconomics, neuromarketing and neuro talent management. Neuroscience offers an emergent research opportunity for organizational science (Senior, Lee, & Butler, 2011). Hence, new advances in the field of neuroscience may help us unravel the new approaches on Talent management (Hills, 2012).

In addition to that that, Neuroscience is providing powerful insights into cognitive and behavioral processes, how the mind and body interrelate, and is changing the way we think about thinking. This is now being extended to draw implications for how we tap into and nurture workplace talent (www.pageuppeople.com, 2016).

Therefore, in order to shed light on this emerging field we may ask the following questions:

- How to attract the talented employees?
- How to make sure you hire the right person for the right job?
- How to engage and enable Talent?

Within this context our proposed book chapter's examines the relationship between Neuroscience and Talent management.

In summary, our proposed book chapter's outline will consist of the following:

1. An Overview of Neuroscience
2. The concept of Talent Management
3. The Effects of Neuroscience on Talent management.
4. Predictions about Neuro Talent Management

Keyword: Neuro Science, Talent Management, Neuro Talent Management, Social Neuro Science, Human Resources

References

Dowell, R. S. and B. E. (Ed.). (2010). *Strategy-Driven Talent Management*. *Strategy-Driven Talent Management: A Leadership Imperative*. San Francisco, CA: Jossey-Bass.

Hagner, M., & Borck, C. (2001). Mindful Practices: On the Neurosciences in the Twentieth Century. *Science in Context*, *14*(04), 507–510. http://doi.org/10.1017/S0269889701000229

Hills, J. (2012). Neuroscience and talent: How neuroscience can increase successful execution of talent strategy. *Human Resource Management International Digest*, *20*(3), 34–37. http://doi.org/10.1108/09670731211224375

McDonald, P., & Tang, Y.-Y. (2014). Neuroscientific insights into management development: Theoretical propositions and practical implications. *Group & Organization Management*, *39*(5), 475–503.

http://doi.org/10.1177/1059601114550712

Schuler, R. S., Jackson, S. E., & Tarique, I. (2011). Global talent management and global talent challenges: Strategic opportunities for IHRM. *Journal of World Business*, *46*(4), 506–516. http://doi.org/10.1016/j.jwb.2010.10.011

Scullion, H., Collings, D. G., & Caligiuri, P. (2010). Global talent management. *Journal of World Business*, *45*(2), 105–108. http://doi.org/10.1016/j.jwb.2009.09.011

‘’ The Neuroscience Of Talent Management’’

Retrieved from: http://www.pageuppeople.com/research_item/the-neuroscience-of-talent-management-2/ accessed: April 3, 2016.

Determinants of foreign portfolio investment in emerging markets

Application on Saudi Stock Market

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ABSTRACT

Recently the Saudi Arabian stock market officially opened up to foreign investors. This step aimed to promote market stability and reduce volatility. In this study we try to explore the determinants that lead foreigners to invest in this market.

we used cross section data from all nonfinancial companies listed in the Saudi stock market in 2015. This is equal to 125 companies spread among 14 sectors.

The model of this study is an OLS cross sectional regression model where we regress foreign ownership on a group of independent variables to test their significance on foreigners investment decision.

We found that existence of government institution in the ownership structure has a negative significant effect on foreign ownership while private institutional ownership is found to have a positive significant effect on foreign ownership. In addition we found that Liquidity measured by current ratio has negative significant effect on foreign ownership, while tangibility measured by ratio of tangible assets to total assets has positive significant effect on foreign ownership.

Using time series – cross section analysis is expected to give more explanation of foreign investor's behavior due to possible inclusion of macro variables, however this analysis is not possible in our study since the market was open to foreigners in 2016.

Further analysis in this study that has not been done due to data limitation could be differentiation between institutional and individual foreign investors to investigate the factors that determine each category behavior.

Keyword: foreign portfolio investment, Saudi stock market, ownership structure.

Impact of Digitalization on Automotive Industry: Challenges & Opportunities

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Abstract

In this emerging era of digitalization, our society wants everything approachable in just a single click or on hand to hand distance. People started communicating from off-line methods like writing letters then telephones, smartphones and now they want even something greater from these innovations. Most of the industries including Automobiles are going towards the era of digitalization bringing new insights to the market. This study will emphasize on the digitalization of automobile industry. The automobile industry may face the problems in the context of digital infrastructure through the process of digitalization. This paper will focus on the challenges in respect to India's economy faced by industries like Low Purchasing Power as compared to other economies, acceptance of purchasing vehicles online, delivering delightful customer services and values. It also aims to discuss the viable solutions like bringing customer awareness, educate the customers in technical aspects & some practices to promote the usage of digital methods in the purchasing process of automobiles.

Keyword: Digitalization, Automobile, Challenges, Technical Aspects, Purchasing Process

Introduction

Digitalization means the conversion of analogue information into digital information. In this evolving era, many industries are shifting towards digitalization, In order to survive & provide the best services to the customers to get an edge over the competitors. If we talk in context to the Indian economy, the country has large millennial population & tech savvy with rising income. According to the facts, figures

& assumptions by 2017, India will have more than 250 million smartphones, there are over 2.2 million android as well as ios applications, an average user is spending over 167 minutes each day on his smartphone. In E-commerce, quoting some recent figures, 80 million users will be on the e-commerce, with Rs. 15,000 as an average spend, there has an increase of 75.8% in e-commerce sales in 2016 over 2015 (R.S.Kalsi, Digital Conclave 2016). These figures will exponentially change considering the current environment; Demonetization has played a major role in promoting the cashless economy, it has boosted up the trend of payments through digital portals like Paytm, Freecharge, Mobikwik, and more. People are now more into using application, from paying bills to book tickets to purchasing from supermarkets, they want everything just a click away. If we talk about how industries are adapting digital methods for example, banking sector, they have changed the way they bank, by introducing facilities like online banking by which customers can check their account status without going to banks, advanced payment systems, 24*7 Service. In E-commerce, people now search & gain knowledge online about products instead of going to the respective retail outlets, if they don't like the product, they try & return and it's also cost effective because it eliminates the levels in the distribution channel. In Education, everyone uses laptop & tablets to study, learn, grow & teach to make complex processes simpler by showing videos or through searching on the internet which gives access to the real time information, smart boards and even online classrooms, so one can access it anytime they want to learn. Most of the industries including automotive industry have also taken steps towards the way of digitalization, and it has been massively influenced by the digital technology like 3D Experience, Car customization, Product information, Sound of the engine, VR enabled motion platform, In order to meet demands of the customer according to the changing business environment, companies have adopted new techniques to approach customers, making and implementing new business models & Touchpoint strategies(Prabhjit Didyala, Accenture 2016), but with new opportunities, there are certain challenges which comes with it. In context to India, as it is still a developing economy and faces some infrastructural issues within the country like lack of digital infrastructure, Security of data is very important because digital medium is very unsafe, & data vulnerability is a big issue especially in financial transactions, Improving IT Literacy is a great task in two or three tier cities (DigitalIndia.gov.in). In general, the industry is facing, loss of control over the customer relationship, threat of commoditization & increased competition. To deal with challenges companies should start developing end to end response (Digitization of Everything, EY).

Review Literature

According to Ernst & Young report "The digitization of everything" (July 2011), businesses have finally realized that must use digital channels to engage with their key stakeholders. The challenge for business is to face the implications of digital change. Loss of control over the customer relationship, increased competition, threat of commoditization, need to engage digitally with stakeholders. To deal with challenges the company must develop end to end response.

According to Accenture study 2016 of consumer's acceptance of digitalization from 8 countries including India, it showed that what the future Indian drivers wants. The study raised some questions as would they go through the purchasing process of the cars online, what are the factors which may be influential when buying a car online, how customer can define themselves on technology usage, what provides the weakest digital experience in the digital process, what parts of the process they would miss while purchasing the car online. This study also focus the existing channel or is it ready for the digital consumer, gap between expected & actual behavior, new business models to bridge the gap & steps to implement the digital touch point strategy.

According to Survey of "Car buyer of the Future" study 2015 in which they looked at the current shopping, buying & ownership process and asked more 4002 buyers about their ideal process. This study shows that consumers want change in the car-buying process. It identified key areas where consumer demand is influencing rapid change, the shopping process, the buying & the ownership process where the industry should focus on making improvements.

According to Ernst & Young report "Risk & opportunity in an increasing digital world" (May 2015), the study discussed about some raised questions on digital transformation, why it become a need for the future. This trend started because of the emergence of new technology, changing customer preference, and the advent of new competition. It said that digitalization is both risk & opportunity for the market which is coming with threats of price volatility, lower revenue, less retention, new competitors, distribution problems, channel conflicts & the risk of inaction and cybercrime but at the same time comes with the opportunity new product & services, partnership, better underwriting, pricing, lower operating cost, higher profits, and new opportunities to cross-sell, up-sell and retain.

According to Ankit Rawat, AMP Motors Pvt. Ltd. (official of Jaguar Land Rover 2017), the digitization will bring more harm to the dealerships than profits and it will not give any additional advantage to the consumer or it will bring dissatisfaction in the future because of the technical issues & lack of digital infrastructure in the country. They also stated that it will decrease their profit margins of the vehicle and if more

than 5 customers will come at the same time, it will be a big challenge to attend or demonstrate the vehicle to all at the same time through that technology and even after that they want a person to advise them according to their utility and clear all their doubts. So, if they still have to hire sales executives then why will they increase the cost and lower their profit margins unnecessarily by investing in technology.

According to Journal of Direct, Data and Digital Marketing Practice (2015), they stated that to successfully built customer relationships companies need to balance both digital perfection and the human touch. Nowadays, customers are more into using technology and want ease in the process as digital transformation is necessary for the success of businesses, but they also need to ensure that staff retains the human touch. As the digital interface becomes customary everywhere, it will be the emotional, human dimension in a business relationship that delivers success.

According to Joe Richards, Director Cox Automotive (July 2016) stated that virtual reality is the sleeping giant of the automotive industry; it will be a weapon to reach younger buyers. 88% of the buyer would not purchase a vehicle unless they took a test drive, but marketers are using virtual reality as a way to lure younger buyers into dealerships to take those test drives with online marketing that goes beyond static words and images and staid promotional videos.

According to Francine Harsini, senior director of marketing at Mitsubishi Motors North America stated that “A lot of times it's hard to get people into the dealership to experience a test drive; this is a new marketing launch for us. So this enables people to get familiar with the brand, but also with the car and then get into the dealership."

According to Rakesh Naru, North-East zonal head Jaguar Land Rover (May 27, 2017), He stated that the Indian customer is still not ready for the digitalization, there may possibly be the growth in the digital payments from last 6 months and customers are showing acceptance towards the change because of the demonetization in the economy, but it is still only 10% in comparison to the whole population. In addition, making every process digitalized will bring dissatisfaction to the customer because in India decisions are emotionally based. If we talk about survey reports which shows that the customer wants change in the buying process or customers who comes in the dealership doing all the research online are not the one who actually buys the vehicle and a company runs on the sales not on the statistics. Companies are prepared with the digital methods but there is no as such demand from the customers in the current automobile market.

According to Ernst & Young Report,” Delivering delightful customer experience in digital World”. Tradition methods are changing very speedily into digital methods with the help of the advanced gadgets and the demand of the customers is also matching the same pace with the market. In Auto parts retailing consumer’s faith have

increased in online purchasing, from online sale of accessories like, car perfumes, seat covers, now OEM venturing into online retails of spare parts. 5 years below the line, no. of consumers is used to going dealerships to get information, stage of pre-purchase cycle is reduced significantly with almost 70% of consumers having done research & they don't come to dealership now to gather information is largely accessible, available online, they come when they have shortlisted the products. Indian consumers have evolved in a big way. Consumers are shifting from a product centric model to experience focused customer centric model. Now, there needs to be a balance between physical & digital and it has to be taken into account based how customer wants to interact with you. If customers are important to us, if we want to provide the brand experience then we better start working at specific KPI's & matrix. Digital can be very efficiently or effectively to build transparency and trust which from a customer point of view today is very opaque in automotive industry.

According to Neha Tarsolia, CRM Manager, AMP Motors Pvt. Ltd. (Jaguar Land Rover 2017), Digitalization, which helps in improving the relation and satisfaction of the customer in long term with the company, has come with many opportunities for the customers. Customers have become more aware about the complaints and feedback systems, earlier when there was no way to complaint about the problem to the company, it created a gap between customers & company and it lead to dissatisfaction but nowadays everything is accessible from hand to hand distance, so they can freely lodge their complaints and this will increase customers loyalty. The better will be the service it will spread positive word of mouth on social media and will attract more customers. Elimination of manual proceeding helped in improving the efficiency of the relationship managers.

According to R.S. Kalsi, Executive Director (Maruti Suzuki 2016), Industry is on a verge of digital avalanche. Our country has large millennial population & tech savvy with rising earning & disposable income. Thanks to demonetization, the figures will go to change exponentially and promote more & more towards cash less economy. Now it's time to change the way we deal by incorporating both traditional & digital dealerships. In India, there is an increase of 75.8% in E-commerce growth over 2015. There shouldn't be a debate between traditional & digital, this is a false choice, and instead the conversation needs to shift to focus on how the two channels work together. The challenge is to allow mix traditional models & new models to cater to customer needs & demand. It's time to focus on redefining customer relationships, transforming business models to embrace data & digital, and introducing an innovative culture in support of strategic decision making.

According to Mahesh Murthy, Founder, Pinstorm (2016), The formula to ride on the digital age for auto sector is to build the product/ process effectively & efficiently, the

only way to drive new product in the market is the extraordinary word of mouth publicity from the customers, by quoting Google, Starbucks, Gmail, Facebook, Twitter, Zara, YouTube these companies have never advertised them anywhere and in current market they are with 70%-100% market share in their respective niche markets. If the people like it they will buy it or with that they will promote it.

Objective of the study

- To see the impact of the digitalization on automobile industry.
- To study about the challenges to be faced by the companies, dealers & customers after digitalization
- To discuss the opportunities for the industry as well as consumers
- To analyze the future expectations of the generation alpha from the industry

Research Methodology

Collection of Data

This study is based on primary and secondary sources.

Research Design

The research design adopted for this study is exploratory. The data collection sources are:- interviews of the industry officials; some published reports on the research topic; previous Research Papers on the research topic; web Searches; various Surveys on Consumer behavior; video references from Conclaves & Forums. These are the collection methods which are used as research instrument.

Analysis

The study identified many challenges which industry will face while digitalization.

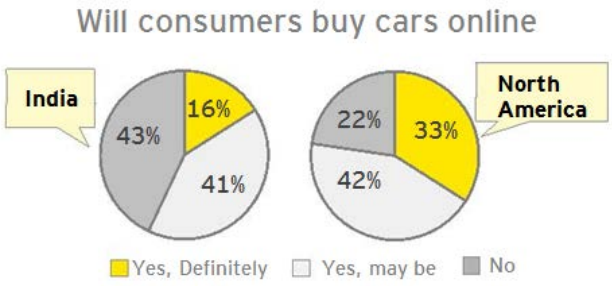
Industry

1. Lack of Digital Infrastructure: After demonetization, digital payments have increased by 400-1000% says Ravi Shankar Prasad, Law & IT minister. But the big

question, is India's digital infrastructure capable of handling so much load on online servers or is the facility of internet have reached all parts of the country including every village and town, for now the answer is negative. According to the Akamai report, India is at 105th position in the world in average internet speed and still ranks last in Asia-Pacific region. There is no mobile connectivity in more than 50,000 villages, and fiber networks which have only reached to only 56,000 of the 2.5 lakh Village Panchayat. As results, India is now home to highest transaction failures and the figures has only risen after demonetization.

2. Low Paid Economy:-

Can an Indian purchase vehicle online? Well, if we talk about the statistics only 16% of Indians says that they would like to buy vehicle online in comparison to North America which is 33%. (Source: Ernst & Young, December 2016)



Why this difference lies? According to the Central bureau reported in September 2014, average household income in USA is $51,939 and average household income in India according to the World Bank statistics is $1455 in the year 2014, which is approximately 35.69% less than the USA's income. So, spending Rs. 10 lakh on any vehicle is a big thing in India for a rational consumer.

3. Security of Data: Country has stepped towards the digitization, and now progressing for becoming a cashless economy. The biggest challenge is to keep the data of the customer safe and give proper assurance for financial transaction security. With an increase of digital payments through wallets, mobile has become a gateway for financial transactions and mobile frauds are expected to grow 60-65% by the end of 2017.

4. I.T. Literacy: Improving IT literacy is amongst the most important & toughest task, as discussed above in more than 50,000 villages there are no mobile connectivity and internet connections, in two-three tier cities and villages there are connectivity and speed issues. People still don't know about the trending technology and how to use it.

5. Increased Competition: As industry has entered into a new market, it'll going to increase the competition in order to survive, to remain in competition, to stand upon the expectations & to fulfill the demand of the customers; companies have to do innovations and bring new technologies to give better experiences that can add value

to services.

6. Threat of Commoditization: This threat arises due to more and more transparency in the product which making it less and less acceptable for the customers to buy, by providing more knowledge about the product characteristics, price comparisons, values it will end up becoming simple in the eyes of the market and the consumer. The consumer will not be able to become loyal to only one brand, they will tend to shift as more and more options and knowledge will be given to them.

Dealership:-

Existing Channel is not ready: Is the existing channel ready for digital consumer? No, the traditional dealerships are not yet ready. It has restricted hours but customers want it always on, it does not provide online transactional support, have salespersons for attending walk-ins in the showrooms. No use of technologies like Augmented and virtual reality yet for providing better services to the customers.

2. Additional cost with no returns, Man Power still needed & Low Profit Margins: According to the interview of the officials of Jaguar land rover, the digitization will bring more harm to the dealerships than profits and it will not give any additional advantage to the consumer or it will bring dissatisfaction in the future because of the technical issues & lack of digital infrastructure in the country. They also stated that it will decrease their profit margins of the vehicle and if more than 5 customers will come at the same time, it will be a big challenge to attend or demonstrate the vehicle to all at the same time through that technology and even after that they want a person to advise them according to their utility and clear all their doubts. So, if they still have to hire sales executives then why will they increase the cost and lower their profit margins unnecessarily by investing in technology.

3. Loss of control over Customer Relationship: In an interview with CRM Manger, she said that now maintaining relationship with customers is a great task. As now, because of digitization, customers have access to the media & can contact companies' headquarters anytime they want. Nowadays, customers don't want to solve their problems on small scale, they find opportunities to get the service free of cost and directly shoot mails to the main offices, which creates pressure on the dealerships.

Customers:-

There are some important experiences which customer's think that they would miss in the digital buying process like test drives, in car buyer of the future survey report, 88% people said that they won't buy vehicles without taking a test drive. They would miss reviewing the models in person in the showroom by sitting and checking all the features, negotiating with sales person on pricing, they would lose the personal touch

and getting additional insight from the dealer. By digitizing everything it would create confusion in choosing the right product because there would be no sales person who could really understand their needs and suggest vehicle according to that.

The study identified many opportunities which industry will avail through digitalization. Convenience to the customers, consumers are now exposed to many data points like social media websites, third party aggregators, OEMs, online reviews, etc. Through digitization, they have now exposed to endless amount of information about the brand, product, price, its various models, even its reviews from the current users. Now they even can go on the particular car brand website and customize their own model with ample number of features to choose. Adaptation of new technologies like QR coding, Electronic paper, augmented & virtual reality have helped customers to have better experiences and better understanding of the product. It has also increased depth of awareness. Seamless Meaningful Experience, companies have evolved the way the deal with people from traditional local stores to websites then e-commerce and now to converged networks, applications, devices, channels to give a seamless meaningful cross channel customers experiences. It brings new opportunities for customer acquisition and retention by being relevant to what their customer is searching for, they have rethink the idea to sell by giving customer the ability to choose, the color, the specs of the car, all in a virtual world in massive rooms with VR where customer can actually see & feel the vehicle, and by being proactive of how the customer is getting information about your dealership, through which channels most of the customers are getting influence to come and see. The most essential part is CRM data through which companies get a track on customers by maintaining long term relationship with them. For customers, it has become very easy to reach companies for the complaints, if the dealer is not able or willing to solve the problem, customers can directly contact to the company headquarters regarding their issues with the product and give their feedback at the end of the service.

Recommendations

The main vision of this research paper is to “transform automobiles into a digitally empowered industry & highly accessible to the people”. There are 4 marked vision areas:-

1. Making digital infrastructure as a utility & necessity to every buyer.
2. Making dealership services on demand.

3. Making buyers mind set towards using digital methods rather than traditional one.
4. Changing their perspective on purchasing vehicles.

Important Objectives:-

- To make dealership services available in real time through online medium.
- To improve ease of purchasing through transformed digital services.
- To educate customers on technical backgrounds of the vehicle.

Through the implementation of this scheme, the gap between traditional dealerships & digital methods would be minimized.
Therefore, to realize the objective of making automobiles a digitalized industry in which you don't need to step out of your home to purchase a vehicle.
All the paper work while purchasing the vehicle should be on applications. Everything should be linked with "Aadhaar". The Aadhaar project was initiated as an attempt towards having a single, unique identification document or number that would capture all the details, including demographic and biometric information, of every resident Indian individual.
To promote this scheme, you can only avail discounts on vehicle when you pay the amount in digital form after negotiating with the dealer. There will be an option of paying it through cash but with no benefits. Each Dealership will need to design a virtual payment portal for the financial transaction.
In the Interview, Ankit Rawat said, it will be impossible to handle many customers at one point of time, because the VR can demonstrate only one customer at a time and the remaining customer won't wait for their turn and walk out of the showroom. For this problem, companies can start a new trend of setting appointments for the virtual tour, if a customer wants to take a virtual tour they have to book appointments at least a day before in the respective slots and CRM takes their conformation half an hour before their set time. Then, the customer will have only two options to take a virtual tour or to book a test drive through applications.

Syncing android & ios operating systems with car's infotainment software are to provide with a virtual assistant to the user. Elimination of manual proceedings and directly upload the entire customer's data on cloud systems for backup. Aggregation of all dealership & company product information through one application, which provides location on maps, some dealership information about which model are available right now in which color, models in real time.

Conclusion

In the initial stage of digitization both the approaches have to go hand in hand with taking advantages of both traditional & digital. India, right now lacks in efficient digital infrastructure, and it cannot be improved overnight, it will take some time to stable servers and providing high speed internet in the country. This paper has discussed all the possible challenges which will be faced by the companies, dealers and customers. It also considers the changing customer behavior towards buying process. entry of new technologies and the types of opportunities it will going to get.

Reference

- Ernst & Young, “Digitization of Everything”, How organizations must adapt to changing consumer behavior, 2011
- Ernst & Young, “Risk and opportunity in an increasingly digital world”, 2015
- Steven van Belleghem, “When digital becomes human”, Journal of Direct, Data and Digital Marketing Practice (2015) 17, 2–4
- R. S. Kalsi, ED, Maruti Suzuki, “Relevance of Traditional Dealership in Digital Age”, ET Auto Digital Conclave, Dec 2016
- Kaushik Dasgupta, Head, Google Automotive India, “How to Create Effective Digital Presence for Customer Acquisition & Retention”, ET Auto Digital conclave, Dec 2016
- Mahesh Murthy, Founder, Pinstorm, “The Formula to Ride on the Digital Wave for Auto Sector”, ET Auto Digital Conclave, Dec 2016
- Rakesh Batra, Head, Automotive India, Ernst & Young, “How to Deliver Delightful Customer Experience in Digital World”, Dec 2016
- Prabhjit Didyala, MD, Accenture Study- Automotive & Industrial Equipment, “Use of technology such as virtual dealership to be closer and easily accessible to customers”, Dec 2016
- Ankit Rawat, Sales Official, AMP Motors Pvt. Ltd, Jaguar Land Rover, India, May 2016
- Neha Tarsolia, CRM Manager, AMP Motors Pvt. Ltd, Jaguar Land Rover, India, May 2016

- Rakesh Naru, After Sales Head, North-East Zone, Jaguar Land Rover India, May 2016
- Autotrader, “Car buyer of the future study,” 2014 & 2015.
- http://www.dailyo.in/business/demonetisation-digital-india-paytm-cashless-economy-india-modi/story/1/14774.html
- http://www.newindianexpress.com/business/2016/dec/17/go-digital-drive-brought-cyber-security-to-the-fore-in-india-1550149.html
- http://www.indiacelebrating.com/government/digital-india/
- http://whatis.techtarget.com/definition/Aadhaar
- http://www.adageindia.in/marketing/cmo-strategy/why-virtual-reality-is-auto-marketings-sleeping-giant/articleshow/53268238.cms

Complexity Dynamics of Entrepreneurial Creativity

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ABSTRACT

Entrepreneurial activity has been very active in the world, and entrepreneurship has become the important driving force for country's economic development. During different stages of entrepreneurship process, entrepreneurs encounter challenges to adjust the development of gestation process and efficient use bricolage process to help development of entrepreneurial creativity. But most of us know very little about entrepreneurial creativity how to makes some startups' entrepreneurs more creative than anthers via different kind of bricolage process and gestation process, especially under within- industrial and between-industrial contextual moderators influence. Therefore, firstly this study attempts to discuss complexity dynamics and entrepreneurial creativity. Secondly focuses on two contextual-level factors which are suggested by previous studies and theories as important determinants of entrepreneurial creativity at bricolage process and gestation process. Finally, industrial contextual moderators how to influence these relationship during two entrepreneurial processes stages.

Keywords: Entrepreneurial Creativity, Bricolage Process, Gestation Process

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The Evaluation of Health Expenditures and Health Outcomes of Medium Upper Income Groups Countries

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ABSTRACT

The aim of this study is to rank the countries in the upper middle income group according to the World Bank classification by health expenditure and health outcomes, to see the most successful and least successful countries by making a distinction between the two rankings. The data set used in the study was obtained from the World Health Organization database. Our data set consists of horizontal section data for 2014 year. Per capita health expenditure based on purchasing power parity, share of health expenditure in GDP and share of public health expenditures in public expenditures are used as indicators of health expenditure in the study. Life expectancy at birth and infant mortality rate were used as health output. MOORE analysis from Multi-Criteria Decision Making Techniques was used to obtain a single ranking score for health expenditure and health outcomes. Microsoft Excel was used during the analysis phase. According to the analysis results, Cuba is the first country in terms of health expenditure among 49 upper middle income groups. In terms of health outcomes, Cuban was also found to be the most successful country. In the comparison of the achievements of the countries in terms of expenditure and output, the health expenditure and health output ranking scores of each country in 49 countries were differentiated. According to the calculations made, Albania is seen as quite successful in this area. Albania is in the top rank in health outcomes (ranked No. 9 in 49 countries), although it has very low values for health expenditure (number 41 in 49 countries). Another noteworthy result of the study is Equatorial Guinea, South Africa and Russia. According to the results obtained, although these countries are in the top rank in health expenditure, they are quite behind in health outcomes. In addition, Cuba, Mexico, Iraq and Angola have reached the order of no change in the order according to both criteria.

Keyword: MOORA, Health Indicators, Health Expenditure, Health Outcome.

Social Media Marketing Practices and Entrepreneurship: Evidence from Malaysian Small and Medium Enterprises

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ABSTRACT

The aim of this paper is to identify the social media marketing practices by small and medium enterprises (SMEs) in Malaysia by adopting Technology, Organization, and Environment (TOE) model by Tornatzky & Fleischer (1990) as a part of the theoretical framework. This paper also presented the marketing strategies implemented by SMEs, as well as relevant to their social media marketing strategies. Social media networks become no optional for business. It offers a new platform for businesses to expand their marketing activities globally. Besides, it transforms the traditional marketing practices into web based marketing, which might create challenges for SMEs. Thirty-six in-depth interviews were conducted with Malaysian SME owners. The findings indicated that environment factor; consumer readiness and competitive pressure influenced the adoption of social media marketing by SMEs. Interestingly, it was also found that, SMEs used dissimilar marketing strategies for each of their social media platforms such as Facebook and Instagram.

Keyword: social media marketing, small and medium enterprises, marketing strategies, TOE model

1. Introduction

Social media marketing has become an increasing popular platform for businesses to market products and services to current and prospective customers. The rapid development of Internet and the use of mobile devices such as smart phones and tablets have generally create wider opportunities for SMEs to publish their online content either about the products or services globally. Perhaps the societies nowadays are more likely adopt social media such as Facebook, Instagram or Twitter as a new communication pattern. The subsequent trend of social media marketing encouraged small and medium enterprises (SMEs) to adopt social media as a part of their marketing tools. Indeed, the social media has radically transformed traditional marketing practiced by SMEs into digital marketing via social media. The social media able to provide a better customer shopping experience (Wamba and Carter, 2016) improve collaboration and communication with suppliers and stakeholders

(Kafai et al., 2010, Culnan et al., 2015) innovative way to determine the high potential selling products(Liang and Turban, 2011) and channel to attract and retain online customers (IBM, 2009). This is supported by Michaelidou et al. (2011) that businesses can use social media to maintain relationship and communicate with customers and suppliers and identify prospective business partners in terms of business-to-business selling. According to Internet Live Stats (2017), the Internet usage in Malaysia was 68.6 % of Malaysia population, which was approximately 31 million of people. It indicated that almost more than half of Malaysian population was Internet subscribers. A report by Statista (2016) found that 93 per cent of Internet users in Malaysia were under 25 years old, followed by the ages between 35 – 44 with 90 percent, and 88 per cent for the ages between 25 – 34.

From the author view, it is noticed that the tremendous development of Internet and social media leads to the adoption of social media particularly for marketing by small and medium enterprises in Malaysia. As per acknowledged that, social media marketing able to reduce the marketing and operation cost, enhance customer relationship management and increase the business value by targeting to specific market.

This paper presents the social media marketing practices by SMEs in Malaysia and their marketing strategies in a competitive market. The structure of the paper is organized as follow. In section 2, there will be a literature review on social media marketing and SMEs, and technology-organization-environment (TOE) model that been adopted as a part of the framework. Section 3 explains the research methodology that applied in this study and Section 4 presents the findings from the interviews conducted with SME owners. Section 5 concludes the paper with the future research.

2. Literature review

Social media marketing and SME

Social media has become an important part of people daily life in communication and sharing the information and media with others (McCann and Barlow, 2015). Social media is defined as “a group of Internet-based applications that build on the ideological foundations of Web 2.0 and that allow the creation and exchange of user-generated content”(Kaplan and Haenlein, 2010). Social media also been described as an extension of traditional media by engaging a more sophisticated set of tools, techniques, and technologies for connecting, building relationships and social interactions (Safko, 2010). Social media consists of a range of social activities which includes blogging, micro-blogging, photo-sharing, social networking, and

video-sharing (Centeno et al., 2009).

Social media act as a new meeting platform meeting platform for friends and acquaintances (Harrigan et al., 2015). At the time of writing, Facebook has approximately 1.94 billion of monthly active users and Instagram has 200 million of daily active users (Statista, 2017). The statistics demonstrate that the popularity of social media influences the social communication and definitely provide a great opportunity for businesses to market the products and services via social media. From the business perspective, social media provide advantages in term of free and easy to use which for the businesses it leads to cost benefits; quick and low cost approach of connecting with customers (Fisher and Reuber, 2011).

According to Luo et al. (2013) social media provides significant impact particularly on business processes; from marketing, operations and finance. Perhaps, social media can be seen as a new digital media for marketing (Hoffman and Novak, 2012, Hennig-Thurau et al., 2010). For small and medium enterprises (SMEs) social media significantly benefits due to the low cost which often most of them may not have financial backing or technical expertise (Kaplan and Haenlein, 2010, Stockdale et al., 2012, Zeiller and Schauer, 2011, Dyerson et al., 2009) and entail short term and tangible value in any business activities (Stockdale et al., 2012, Mehrtens et al., 2001). Besides, businesses increasingly exploring and adopting social media as a part of working life and a part of competitive advantage (Kiron et al., 2012, Qualman, 2010). Nevertheless, Stockdale et al. (2012) posited that businesses not only creating social media page or account such as Facebook and Twitter but it require a business strategy to support the business objectives.

Technology-Organization-Environment (TOE) Model

There are several theories or models that used in technology adoption studies. Among theories and models are widely used by the scholars in technology adoption studies are Technology Acceptance Model (TAM) by (Davis, 1989), Theory of Planned Behavior (TPB) (Ajzen, 1985, Ajzen, 1991), Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), Diffusion on Innovation (DOI) (Rogers, 1995) and Technology-Organization-Environment (TOE) model by (Tornatzky et al., 1990).

The TOE model developed by Tornatzky et al. (1990) outlined a holistic and guiding a theoretical basis on technology/ICT adoption which typically focus on technology, organization and environment contexts in an organization. The TOE model has been

used to describe the adoption of numerous innovation (Baker, 2012, Zhu et al., 2002) including e-supply chain management (Mirkovski et al., 2016, Lin, 2014), e-business (Yeh et al., 2015, Wang et al., 2016) and general applications (Jia et al., 2017, Tsou and Hsu, 2015, Bradford et al., 2014).

The TOE model consists of three main antecedents of the business context that influence the adoption and the implementation which are technology – includes the ICT infrastructure, ICT expertise, and e-business know-how; the organization – firm scope, firm size and organization readiness, and finally environment – consumer readiness, competitive pressure, and government policies (Tornatzky et al., 1990).

Technology context explained both the internal and external technologies that relevant to the organization. The technology context highlights a several of technologies available for businesses to adopt (Scupola, 2003, Tornatzky et al., 1990) and how they fit to the current technology that a business process (Tornatzky et al., 1990). Organization context basically refers to the internal characteristics of an organization which are important indicators for the innovation of the organization (Pullen et al., 2009). According to Del Aguila-Obra and Padilla-Melendez (2006) business scope, business size, and business strategy are the factors that influence the adoption of the Internet or ICT in businesses. Besides, the business size is significantly related to the capabilities of business, including the resources, such as financial and human resource (Mole et al., 2004). The environment context is referred to the environment of the industry in which the business operates. Zhu et al. (2003) posited that the firm should consider consumer readiness before adopting the Internet. Instead, competitive pressure and trading partner pressure also factors that influence Internet adoption (Lippert and Govindarajulu, 2015, Lin and Lin, 2008).

3. Research methodology

This study is solely focuses on qualitative approach which thirty-six in depth interviews were conducted with Malaysian SME owners. This study applied a purposive sampling; where the selection of participants was searched through SME directories, social media and business websites. The participants were selected based on three criteria: (1) numbers of employees between 5 and not exceed 75[1], (2) independent management which the owner is also a manager of the business, and (3) adopt any social media networking for marketing activities such as Facebook, Instagram, Pinterest, or else.

[1] The definition of the SME is based on the definition by the SME Corp. Malaysia (2016).

The participants were invited for the interview session through emails, personal message via instant messaging, and telephone calls. The introductory message was sent to all selected participants to invite in the interviews session, explaining the purpose and objectives of the study, the estimation time for the interview sessions, and the way the interview will be conducted. This is essential to brief the participants about the study so that the participants are aware and prepare in the interview sessions. A total of 72 invitation messages were sent to potential participants and out of that 41 invitees were positive to participate in the interview sessions. Nevertheless, 5 participants withdrawn at the last minute due to several reasons. Thus, the actual interview sessions were conducted with only 36 participants (refer to Table 1). In order to protect the privacy and identification of participants, all participant profiles will be remained anonymous. For this study, the selections of participants were based on zoning areas around Peninsular of Malaysia; the East coast, the West Coast, the North, and the South (refer Table 2). The findings of this study were analyzed using thematic analysis.

Table 1: Summary of response rate in Malaysia

Items	**Quantity**
Number of invitation	72
Positive responses received	41
No response	24
Refused to participate	5
Actual interview performed	36

Table 2: Profile of respondents

Zone	**Quantity**	**Zone**	**Quantity**
East coast		**West coast**	
Beauty products	3	Beauty products	-
Café / Bakery	3	Café / restaurant	3
Services	3	Services	-
Clothing	1	Clothing	3
Others	2	Others	1
North		**South**	
Beauty products	1	Beauty products	-
Café / bakery	3	Café / bakery	6
Services	1	Services	1
Clothing	3	Clothing	1
Others	-	Others	-

4. Findings and discussion

This study explores the factors affecting Malaysian small and medium enterprises (SMEs) in adopting social media marketing through the theoretical views of Technology, Organization, and Environment (TOE) model by Tornatzky & Fleischer (1990) and identifies the social media marketing practices by them.

Technology context

In the technology context, three antecedents that will be discussed which are ICT infrastructure, ICT expertise, and e-business know-how. The findings indicated that overall of the participants most likely to use their smartphones and tablets to update their business activities via the social media. One of participant who runs the clothing business for almost four-years in North area claimed that she found that it was difficult to keep her business updates through laptop or personal computer as she spent most of the day handling the orders from customers, completing the packaging, and delivery. She also agreed that smartphone was more convenient for her to access the Internet and social media. In term of Internet connection, a few of participants stated that sometimes they were having difficulties with the Internet speed and coverage where the signal showed inconsistency particularly at certain remote areas or during bad weather.

"I use mobile Internet because it is easier for me. However, during heavy rain I hardly to get the signal and the Internet speed will be retarded. It caused me a problem especially when I want to communicate with customers or upload my new products at social media as it will take longer time to complete"
– Bakery owner, East coast area

Most participants agreed that they did not focus much to find employees who are expert in ICT. They claimed that handling and communicating through social media has become a common practice nowadays. Participant from South area, who runs a modern café argued that it was easy to find the employees who knows to communicate and familiar with social media but it was hard to find employees who are dedicated and love about the job. All participants also aware of the importance of e-business know-how and the needs to equip themselves with ICT and social media marketing knowledge.

"I think the most essential requirement for employees are honest and enjoy their job. If they enjoy their job, they are willing to learn more, which I believe that communicating and do marketing through social media can be learned"
– Café owner, South area

Organization context

In organization context, three antecedents will be discussed which are organization scope, organization size, and organization readiness. Almost more than half of participants stated that they involved in the business because of their interest. Perhaps there was a few of participants actually came from non-business formal education background. For example one of the bakers from East coast area had a formal education background in architecture. Due to her personal interest in baking, after graduated and practicing a few years in architect firm in city centre, she had decided to quit the job and became a full time baker. She also enjoys herself sharing and promoting her business at Facebook and Instagram. Most participants also aware with Facebook Advertising (FB Ads) and several of them believed that FB Ads really assist them to promote their business through social media. Perhaps they were willing to spend some of money to pay for FB Ads; considering as business investment and they looked up for the business benefits in return.

Being a small or medium enterprise, participants agreed that they often face problems marketing their products in social media especially on numbers of available stocks. As social media can be considered as an open market, sometimes the demands of the products were high and they received massive orders from customers. Nevertheless, due to financial limitation, they were unable to have a numerous of stocks. Due to that matter, they had lost the customers as they unable to meet the customers' demand and definitely the customers will shift to other online retailers.

"I received a lot of orders of biscuits from customers during festive season due to heavy promotion at my Facebook page. I also used FB advertising to boost my sales. I am so happy. But I was unable to accept all the orders due as I only have 4 ovens for baking" – Bakery owner, North area

Overall, all participants are ready to adopt social media marketing for their businesses. They stated that social media manage to minimize their marketing costs, better market coverage and easy to use. From social media also, they able to improve the customer relationship management, keep in touch with previous customers, and handle any feedback or comments from customers promptly.

Environment context

Three antecedents will be discussed in environment context – customer readiness, competitive pressure and government policies. Most participants claimed that customer readiness plays a big role for traditional business practices shifted into online businesses; the social media. Perhaps the competitive pressure also a factor that influenced SMEs to adopt the social media. According to one participant who runs his own photography studio in East coast area claimed that most of his customers knew about his photography services through his Instagram. He also regularly updated his Instagram so that his followers will keep updates about his art work.

Participants were aware the government policies especially on the needs of Malaysian SMEs to register their online business with Companies Commission of Malaysia (SSM). They also acknowledged on the importance of business registration in order to protect the sellers and buyers' right.

In term of social media marketing practices, participants are most likely to adopt Facebook and Instagram as their social media marketing platforms. The main reasons they prefer to adopt Facebook and Instagram for their business page instead of others are due to interactive page layout and user friendly. They also claimed that they will update their social media account regularly; almost twice or once in a day and promptly response to their customers' feedbacks either through private message or instant messaging (IM).

5. Conclusion

As the overall, the three components of technology-organization-environment are the relevant factors that influence the social media marketing adoption for SMEs. Based on the findings, the ICT infrastructure in term of Internet speed may require further development and innovation to support the online businesses. In the context of organization, often SME faced a financial limitation which creates a challenge for them to expand and grow the businesses. However, social media marketing open a new opportunities for them to minimize the marketing and operational costs which able to cater wider market.

The key limitations of this study are as follows. Although this study focused on Malaysian SMEs, the finding of this study is generalized. It would be better findings for future studies to focus specifically to certain sectors and more details findings will be gathered. The study only focused on a limited geographical area (Peninsular Malaysia only). It is suggested to expand the studies into East Malaysia (Borneo

areas). To gain a more holistic understanding, it would be interesting to look on social media marketing adoption of SMEs among ASEAN countries, which could empirically examine the different factors influencing ASEAN SMEs in adopting social media marketing.

References

AJZEN, I. 1985. From intentions to actions: A theory of planned behavior. *Action control.* Springer.

AJZEN, I. 1991. The theory of planned behavior. *Organizational behavior and human decision processes,* 50**,** 179-211.

BAKER, J. 2012. The technology–organization–environment framework. *Information systems theory.* Springer.

BRADFORD, M., EARP, J. B. & GRABSKI, S. 2014. Centralized end-to-end identity and access management and ERP systems: A multi-case analysis using the Technology Organization Environment framework. *International Journal of Accounting Information Systems,* 15**,** 149-165.

CENTENO, C., WAINER, L., MISURACA, G., PUNIE, Y. & BROSTER, D. 2009. Key findings, future prospects, and policy challenges. *Joint Research Centre Institute for Prospective Technological Studies***,** 15-32.

CULNAN, M. J., MCHUGH, P. J. & ZUBILLAGA, J. I. 2015. How Large U.S. Companies Can Use Twitter and Other Social Media to Gain Business Value. *MIS Quarterly Executive,* 9**,** 243-259.

DAVIS, F. D. 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly***,** 319-340.

DEL AGUILA-OBRA, A. R. & PADILLA-MELENDEZ, A. 2006. Organizational factors affecting Internet technology adoption. *Internet research,* 16**,** 94-110.

DYERSON, R., HARINDRANATH, G. & BARNES, D. 2009. National Survey of SMEs' Use of IT in Four Sectors. *Electronic Journal of Information Systems Evaluation,* 12.

FISHER, E. & REUBER, A. 2011. Social interaction via new social media:(how) can interactions on Twitter affect effectual thinking and behaviour. *Journal of business venturing,* 26**,** 1-18.

HARRIGAN, P., SOUTAR, G., CHOUDHURY, M. M. & LOWE, M. 2015. Modelling CRM in a social media age. *Australasian Marketing Journal (AMJ),* 23**,** 27-37.

HENNIG-THURAU, T., MALTHOUSE, E. C., FRIEGE, C., GENSLER, S., LOBSCHAT, L., RANGASWAMY, A. & SKIERA, B. 2010. The impact of

new media on customer relationships. *Journal of service research,* 13**,** 311-330.

HOFFMAN, D. L. & NOVAK, T. P. 2012. Toward a deeper understanding of social media. Elsevier.

IBM 2009. Social Commerce Defined. IBM: IBM (Ed.).

INTERNET LIVE STATS. 2017. *Malaysia Internet Users* [Online]. Available: http://www.internetlivestats.com/internet-users/malaysia/ [Accessed June 19 2017].

JIA, Q., GUO, Y. & BARNES, S. J. 2017. Enterprise 2.0 post-adoption: Extending the information system continuance model based on the technology-Organization-environment framework. *Computers in Human Behavior,* 67**,** 95-105.

KAFAI, Y. B., FIELDS, D. A. & BURKE, W. Q. 2010. Entering the clubhouse: Case studies of young programmers joining the online Scratch communities. *Journal of Organizational and End User Computing (JOEUC),* 22**,** 21-35.

KAPLAN, A. M. & HAENLEIN, M. 2010. Users of the world, unite! The challenges and opportunities of Social Media. *Business horizons,* 53**,** 59-68.

KIRON, D., PALMER, D., PHILLIPS, A. N. & KRUSCHWITZ, N. 2012. Social business: What are companies really doing? *MIT Sloan management review,* 53**,** 1.

LIANG, T.-P. & TURBAN, E. 2011. Introduction to the special issue social commerce: a research framework for social commerce. *International Journal of Electronic Commerce,* 16**,** 5-14.

LIN, H.-F. 2014. Understanding the determinants of electronic supply chain management system adoption: Using the technology–organization–environment framework. *Technological Forecasting and Social Change,* 86**,** 80-92.

LIN, H.-F. & LIN, S.-M. 2008. Determinants of e-business diffusion: A test of the technology diffusion perspective. *Technovation,* 28**,** 135-145.

LIPPERT, S. K. & GOVINDARAJULU, C. 2015. Technological, organizational, and environmental antecedents to web services adoption. *Communications of the IIMA,* 6**,** 14.

LUO, X., ZHANG, J. & DUAN, W. 2013. Social media and firm equity value. *Information systems research,* 24**,** 146-163.

MCCANN, M. & BARLOW, A. 2015. Use and measurement of social media for SMEs. *Journal of small business and enterprise development,* 22**,** 273-287.

MEHRTENS, J., CRAGG, P. B. & MILLS, A. M. 2001. A model of Internet adoption by SMEs. *Information & management,* 39**,** 165-176.

MICHAELIDOU, N., SIAMAGKA, N. T. & CHRISTODOULIDES, G. 2011. Usage, barriers and measurement of social media marketing: An exploratory investigation of small and medium B2B brands. *Industrial Marketing Management,* 40**,** 1153-1159.

MIRKOVSKI, K., LOWRY, P. B. & FENG, B. 2016. Factors that influence interorganizational use of information and communications technology in relationship-based supply chains: evidence from the Macedonian and American wine industries. *Supply Chain Management: An International Journal,* 21**,** 334-351.

MOLE, K. F., GHOBADIAN, A., O'REGAN, N. & LIU, J. 2004. The use and deployment of soft process technologies within UK manufacturing SMEs: an empirical assessment using logit models. *Journal of Small Business Management,* 42**,** 303.

PULLEN, A., WEERD-NEDERHOF, D., GROEN, A., SONG, M. & FISSCHER, O. 2009. Successful patterns of internal SME characteristics leading to high overall innovation performance. *Creativity and Innovation Management,* 18**,** 209-223.

QUALMAN, E. 2010. *Socialnomics: How social media transforms the way we live and do business*, John Wiley & Sons.

ROGERS, E. M. 1995. Diffusion of innovations. *New York,* 12.

SAFKO, L. 2010. *The social media bible: tactics, tools, and strategies for business success*, John Wiley & Sons.

SCUPOLA, A. 2003. The adoption of Internet commerce by SMEs in the south of Italy: An environmental, technological and organizational perspective. *Journal of Global Information Technology Management,* 6**,** 52-71.

STATISTA. 2016. *Daily Internet Usage Rate in Malaysia in 2016, by age group* [Online]. Available: https://www.statista.com/statistics/348017/daily-internet-usage-age-group-malaysia/ [Accessed June 19 2017].

STATISTA. 2017. *Facebook: number of monthly active users worldwide 2008-2017* [Online]. Available: https://www.statista.com/statistics/264810/number-of-monthly-active-facebook-users-worldwide/ [Accessed June 16 2017].

STOCKDALE, R., AHMED, A. & SCHEEPERS, H. Identifying Business Value From The Use Of Social Media: An Sme Perspective. PACIS, 2012. 169.

TORNATZKY, L. G., FLEISCHER, M. & CHAKRABARTI, A. K. 1990. *Processes of technological innovation*, Lexington Books.

TSOU, H.-T. & HSU, S. H.-Y. 2015. Performance effects of technology–

organization–environment openness, service co-production, and digital-resource readiness: The case of the IT industry. *International journal of information management,* 35**,** 1-14.

VENKATESH, V., MORRIS, M. G., DAVIS, G. B. & DAVIS, F. D. 2003. User acceptance of information technology: Toward a unified view. *MIS quarterly***,** 425-478.

WAMBA, S. F. & CARTER, L. 2016. Social media tools adoption and use by SMEs: An empirical study. *Social Media and Networking: Concepts, Methodologies, Tools, and Applications.* IGI Global.

WANG, Y.-S., LI, H.-T., LI, C.-R. & ZHANG, D.-Z. 2016. Factors affecting hotels' adoption of mobile reservation systems: A technology-organization-environment framework. *Tourism Management,* 53**,** 163-172.

YEH, C.-H., LEE, G.-G. & PAI, J.-C. 2015. Using a technology-organization-environment framework to investigate the factors influencing e-business information technology capabilities. *Information Development,* 31**,** 435-450.

ZEILLER, M. & SCHAUER, B. Adoption, motivation and success factors of social media for team collaboration in SMEs. Proceedings of the 11th International Conference on Knowledge Management and Knowledge Technologies, 2011. ACM, 4.

ZHU, K., KRAEMER, K. & XU, S. 2003. Electronic business adoption by European firms: a cross-country assessment of the facilitators and inhibitors. *European journal of information systems,* 12**,** 251-268.

ZHU, K., KRAEMER, K. L. & XU, S. 2002. A cross-country study of electronic business adoption using the technology-organization-environment framework. *Center for Research on Information Technology and Organizations*.

APPLICATION OF FUZZY ANALYTICAL HIERARCHAL PROCESS IN MULTI-CRITERIA DECISION-MAKING OF VENTURE CAPITALISTS: EVIDENCE FROM EMERGING MARKETS

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ABSTRACT

The purpose of this study is to investigate the venture capital investment process in an emerging market like India. In venture capital industry, decision to invest in a new venture has emerged as a proactive measure where certain factors are directly or indirectly involved in the investment process. This study aims to determine the factors of venture capital investment process that may influence the multi-criteria investment process of venture capitalists. Firstly, we used the exploratory factor analysis to identify and analyze the consistency of several factors that may facilitate the adoption of multi-criteria decision-making (MCDM) techniques in an Indian venture capital industry. Secondly, fuzzy analytical hierarchal process (FAHP), a most suited technique for MCDM to handle the fuzziness, vagueness and multi-dimensionality, was adopted to assign the weights and prioritize the pre-defined criteria and sub-criteria. These findings indicate that venture capitalists' investment decision does not emphasize solely on entrepreneurial activities, product and market; however economic and regulatory environment also plays a significant role in the venture capitalists' investment decision-making process. The priority weight of the factors such as entrepreneur's characteristics, economic environment, product and financial constraints facilitates the relative importance of the pre-defined factors. Based on these criteria, entrepreneurs may recognize their strengths in respective criteria before approaching a right venture.

Keyword: Venture Capital, Investment decision-making, Multi-criteria decision-making (MCDM), Fuzzy analytical hierarchal process (FAHP)

INTRODUCTION

In recent years, venture capital industry has witnessed as a driving force for the development of a wide variety of Small and Medium Enterprises (SMEs), which results in the advancement of industrial and economic growth (Maier and Walker, 1987). It is apparent that venture capital industry has a long history in the Asian regions that provided new impetus to the economic growth of the developing countries (Alyward, 1998). Today, emerging economies like India has shifted their focus from traditional labor-intensive techniques to knowledge-intensive ideas that results into a significant paradigm shift in the venture capital industry. Moreover, Rajan and Deshmukh (2011) has also stated the India as a fastest economy in terms of the industry growth rate and it reached to the No. 3 slot in terms of the quantum of investment during 2004-2008. Gradually, the Indian economy has opened to the international investments and they

started raising their funds from international markets as well. It has been argued that existing industrial market growth proposed a thorough knowledge of venture capital industry in an emerging market because venture capital directly affects the economic development and entrepreneurial growth of firms (Patricof, 1989).

With the increased tendency of start-ups, venture capitalists have experienced huge demand of funds from the entrepreneurs and to meet the growing demand while ascertaining a right investment decision from a number of proposals has become the most tedious job for venture capitalists (Mechner, 1989). Thus, it is required to develop a right investment decision making process due to its direct or indirect impact on the success or failure of a new venture (Batterson, 1986). To develop an understanding of venture capital investment decision, researchers have frequently investigated the venture capital investment process (Wells, 1974; Poindexter, 1997; Tyebjee and Bruno, 1984, 1984b; Macmillan et al., 1987; Timmons et al., 1987; Zacharakis and Meyer 1995, 1998). Earlier literature mainly concentrated on the course of events and various activities that shaped the investment decision-making process (Tyebjee and Bruno, 1984; Silva, 1985; Hall and Hofer 1993), while others centered towards the specific criteria used by venture capitalists (MacMillan et al. 1987; Khan 1987; Robinson 1988; Zacharakis and Shepherd 2007). It believes that a better understanding of investment process may direct effective decisions which may lead to more successful ventures. However, these studies produced a derived list of 'espoused' criteria used by venture capitalists in the screening of a new proposal. The factors that affect the investment decision have always been an issue of scholarly debate. Despite all these studies, there have been very few studies that investigate the factors that influence venture capitalists' decision at micro as well as macro level; and weighting and prioritization of these factors. The existing literature concluded that previous studies mainly based on the entrepreneurial level activities, while very few studies have covered the economic environment of an economy and it remained neglected. In this study, we have tried to develop a mix approach related to venture capitalists' investment decisions. For this purpose, firstly we applied exploratory factor analysis to explore the determinants which may influence the venture capitalists investment decision. It reveals that venture capitalists follow multi-criteria decision-making approach for investing a new project. In particular, fuzzy logic has always been a subject of much attention in various disciplines for solving the multi-criteria decision-making problems (Pahal et al., 2015). It is considered to be much useful when combined with the AHP to deal with the fuzziness, ambiguity and vagueness associated with the human behavior. The motivation behind this study is to provide due attention to the various factors of venture capitalists' decision-making and prioritize them using factor analysis and fuzzy analytical hierarchal process (FAHP) respectively. The FAHP is applied to determine the relative importance of various criteria and sub-criteria used by venture capitalists in their decision-making process. In this study, our objective is to understand the determinants of investment process and to evaluate the consistency and generate the ranking of pre-defined factors.

The remainder of this paper is proceeds as follows: First it starts with the relevant literature in the venture capital decision-making process which is followed by the proposed research methodology used for this study. Thereafter, detailed explanations of

results are discussed; and finally the paper concludes the present study with some future research avenues in the related field.

REVIEW OF LITERATURE

In this section, the theoretical underpinnings of our empirical analysis are discussed, and explain the driving powers behind the venture capitalists' behaviour. In last few years, many researchers across the globe attempted to study the investment decision making behaviour of venture capitalists. Majority of earlier literature can be divided into two categories viz. i) assessment of venture investment, ii) factors affecting investment decision making process. This study primarily contributesto the later part of literature and investigates the factors affecting venture capitalists investment decision-making process. There are many studies available in literature that discussed the thorough process of venture capital investment decisions such as Wells (1974), Tyebjee and Bruno (1984), and Hall and Hofer (1993). A large number of studies conclude the several factors like institutional, regulatory, economic and entrepreneurial that may influence the investment decision.

The research done by the Bruton and Ahlstrom (2003) states that institutional environment highly affects the actions of venture capitalists around the nations. Institutional theory suggests that environmental institutions strongly and subtly affects the beliefs and goal of individuals and groups (Scott, 1987; Boisot and Child, 1996). Although, earlier literature discuss the role of institutional environments in economy growth (Peng and Heath, 1996; Henisz, W. J. 2000), but there are very few study that discussed the institutional environment from venture capital perspective (Manolova et. al, 2008; Giamartino et al., 1993). Fried and Hisrich (1994) concluded that these institutional have a significant impact on the venture capital firm's process which leads to uniformity in the venture capitalists' behaviour. Thus, we can say these institutions complement the sociological and economic approaches (Hisrich and Lounsbury, 1997). Thus, these approaches may include various government policies, legal framework and regulatory bodies operating in an economy. Economic environment of any country substantially affects the venture capital investment decision. Economic growth rate and inflation rate strongly contribute in investment decision making process as it enhances the demand for venture capitalist (Gompers and Lerner, 1994). Moreover, macroeconomic fluctuations always influence the start-up activities (Acs and Audretsch, 1994). For an instance, GDP growth rate, a measure of economic fluctuations is significantly and positively related with the venture capital investment. Similarly, market capitalization is also taken as a proxy for favourable investment environment in venture capital industry (Jeng and Wells, 2000). Furthermore, various government policies and initiatives can yield favourable benefits for the entrepreneurs and venture capitalists. Thus, venture capitalist takes into account all these aforesaid factors before investing in a new industry or new venture.

Along with these economic and regulatory factors, an entrepreneurial firm has to pass through a due-diligence process, which includes an entrepreneur's characteristics, market or industry, product characteristics and other organizational relationships (Fried and Hisrich, 1994). Macmillan et al. (1985) have confronted the six major factors that highly influence the venture capitalists' perception. These criteria incorporate the importance of

entrepreneur's characteristics and experience as the most influential criteria for decision-making process. In continuation, Khan (1987) has rated the entrepreneur's integrity and creativity as the highest influencing key factors. Pandey (1995, 1996) has provided the empirical evidences of investment decision from Thailand and Indian venture capital industry. He stated the competition, integrity, managerial skills as important factors in Thailand; whereas entrepreneur's personality is considered as the most significant factor for Indian venture capitalists. After critical analysis of several factors from various perspectives, we found out that there are many factors which affect the venture capitalists investment decision at various levels. Some factors may be at the economic and institutional level; while others may be associated with the entrepreneurial activities. In this paper, we make an attempt to evaluate all the possible factors from various levels and how it may influence the behaviour of Indian venture capitalists.

RESEARCH METHODOLOGY

The process starts with the formation of hierarchy of factors affecting venture capitalists' investment decision using exploratory factor analysis. To develop the questionnaire, an in-depth and systematic analysis of existing literature was conducted which formed the basis for this study. A five point likert scale (1 – not significant to 5 – highly significant) was administered and respondents were asked to rate their perception and indicate the extent to which these items significant in their investment decision-making process. The data was mainly collected from the executives of Indian venture capital firms based in the Delhi-NCR regions. A total of 100 questionnaires after cleaning up the data were used for final sample to extract and validate the critical factors alongside economic environment. Principal component analysis with varimax factor rotation was performed to extract the factors from 23 items. Kaiser (1974) and Bagozzi and Yi (1998) suggested the various measures of sampling adequacy of which Bartlett's test of sphericity and Kaiser-Meyer-Olkin (KMO) measures are widely accepted to check the suitability of the data for employing exploratory factor analysis. The KMO value is 0.679, which exceeds the significant value of 0.05 and hence found within acceptable limits (hair et al., 1995). Next, principal component analysis was utilized to determine the factors having eigenvalues of relative constructs greater than 1 and factor loadings greater than 0.5 (Tabachnick and Fidell, 1989). Therefore, after considering all the necessary requirements, factor analysis was performed to extract the factors and a hierarchy was framed which is used for FAHP thereafter.

Analytical Hierarchal Process (AHP) technique was propounded by Saaty (1980), to establish the hierarchal structure and prioritize a set of criteria and sub-criteria used to solve the complex problems. The main advantage of AHP is that it deals with the quantitative as well as qualitative data used in multi-criteria decisions (Kahraman et al., 2004). Contrarily, Chan and Kumar (2007) criticized the AHP approach for its incapability, uncertainty and vagueness associated with the perception of decision-makers. Subsequently, they argue that assigning a numerical value to evaluate the perception of respondents is a complex task. Therefore, FAHP was applied to judge the perception of venture capitalists towards venture capital investment decision-making process. This technique expects to satisfy the respondents by providing their preferences in linguistic

terms to each criteria and sub-criteria. We incorporated fuzzy logic into AHP (Mehbodniya et al., 2012), a weight assessment technique which is capable to handle the fuzziness and uncertainty associated with the decision-makers. FAHP incorporates the nine judgment levels which are used in the form of triangular fuzzy numbers (TFNs) to illustrate the relative importance among the pair of criteria. The TFN value is defined by the three numbers (l, o, u) where o is the optimized value, l is the lower bound; and u represents the upper bound limits of the possible evaluation. FAHP has involved the following steps:

1. First, a hierarchal structure was constructed and then the relative preference of decision-makers is taken for 'k' parameters. Afterwards, pair-wise comparison matrix 'Z' for TFNs is developed as per Table 1.

$$Z = [Z_{xy}] = \begin{bmatrix} (1,1,1) & (l_{12}, o_{12}, u_{12}) & (l_{1k}, o_{1k}, u_{1k}) \\ \vdots & (1,1,1) & \vdots \\ (l_{k1}, o_{k1}, u_{k1} & \cdots & (1,1,1) \end{bmatrix} \quad (1)$$

Where Z_{xy} represents the relative preference of xth criteria w.r.t yth criteria, thus

$$Z_{yx} = [Z_{xy}]^{-1} = (l_{xy}, o_{xy}, u_{xy})^{-1} = \left(\frac{1}{u_{xy}}, \frac{1}{o_{xy}}, \frac{1}{l_{xy}}\right) \quad (2)$$

2. Fuzzy synthetic w.r.t xth criteria is calculated by

$$F_x = \sum_{y=1}^{k} Z_{xy} \times \left[\sum_{x=1}^{k} \sum_{y=1}^{k} Z_{xy}\right]^{-1} \quad (3)$$

$$\text{Where, } \sum_{y=1}^{k} Z_{xy} = \left(\sum_{y=1}^{k} l_{xy}, \sum_{y=1}^{k} o_{xy}, \sum_{y=1}^{k} u_{xy}\right) \text{ and}$$

$$\left[\sum_{x=1}^{k} \sum_{y=1}^{k} Z_{xy}\right] = \left(\frac{1}{\sum_{x=1}^{k} \sum_{y=1}^{k} u_{xy}}, \frac{1}{\sum_{x=1}^{k} \sum_{y=1}^{k} o_{xy}}, \frac{1}{\sum_{x=1}^{k} \sum_{y=1}^{k} l_{xy}}\right) \quad (4)$$

3. The probability associated with a convex fuzzy number F_x to be greater than n convex fuzzy numbers F_y (y = 1, 2, ……, n; x ≠ y) is calculated as below:

$$P_b\ (F_x \geq F_y) = \begin{Bmatrix} 1 & o_x \geq o_y \\ 0 & l_y \geq u_y \\ \frac{l_y - u_y}{(o_x - u_x) - (o_y - l_y)} & otherwise \end{Bmatrix} \quad (5)$$

4. Considering $S_x = \min \{P_b\ (F_x \geq F_y)\}$, weight vector is provided by W` = (S_1, S_2,…, S_n).
5. The weight vector is normalized as follows:

$$W` = (W1, W2,\ldots., Wn) = \left(\frac{S_1}{\sum_{x=1}^{k} S_1}, \frac{S_2}{\sum_{y=1}^{k} S_2}, \ldots\ldots, \frac{S_n}{\sum_{x=1}^{k} S_n}\right) \text{ and}$$

$$\sum_{y=1}^{k} W`_y = 1$$

The priority weights are assigned to the pre-defined constructs in linguistic terms as described in Table 1 which are later converted into TFNs. The local and global weights for various constructs are calculated using above methods as described in Table 3.

Table 1: Inputs with Triangular Fuzzy Numbers (TFNs)

Linguistic variables	TFN	1/TFN
Equally strong (E)	(1, 1, 1)	(1, 1, 1)
Moderately strong (M)	(2/3, 1, 3/2)	(2/3, 1, 3/2)
Strong (S)	(3/2, 2, 5/2)	(2/5, 1/2, 2/3)
Very Strong (VS)	(5/2, 3, 7/2)	(2/7, 1/3, 2/5)
Extremely strong (ES)	(7/2, 4, 9/2)	(2/9, 1/4, 2/7)

RESULTS AND DISCUSSION

To examine the importance of various criteria and sub-criteria used in venture capitalists investment decision-making process, a collective judgment is used to generate the local and global weights for each criterion. The findings of the priority weights and ranking recognized the relative importance, which in turn can be more useful to identify the factors on which venture capitalists and entrepreneurs should put their efforts while taking an investment decision. For selecting the most influencing criteria, a proposed methodology, FAHP was applied to evaluate the multi-criteria decision-making factors by using pair-wise multi-level comparisons. In order to achieve these goals, researchers carefully identified the factors responsible for investment decision. The seven extracted factors measured at the various levels and formed a hierarchy as represented in figure 1. The following steps were considered to select the most influential key factors of investment decisions.

Determining the Factors affecting Investment Decision

Exploratory factor analysis was utilized for 23 items; therefore seven factors were extracted, which were further demonstrated as a hierarchy for factors associated with the venture capitalists decision-making process (See figure 1). Table 2 lists the results of factor loadings, Eigenvalues, Cumulative variance explained and Cronbach's alpha values for the factors extracted. Generally, eigenvalues exceeding 1 are considered as significant and Cronbach's alpha greater than 0.7 are considered to be highly consistent.
Reliability measures the extent to which a test or experiment generates the same results while employing repeatedly (Carmines and Zeller, 1979). Cronbach's alpha was used to measure the internal consistency of each item under each critical factor (Wee and Quazi, 2005). Table 2 shows that all the Cronbach's alpha values for each critical factor in our study are greater than 0.6, which is considered significant and hence acceptable. Content

validity shows the validity of measurement items to cover the content domain of the variable measured item (Nunnally, 1967). Convergent validity of the extracted constructs was measured using Composite Reliability (CR), Average Variance Explained (AVE), Maximum Variance Explained (MVE) and Average Shared Variance (ASV). All these values for pre-defined constructs were found to be within their acceptable limits. Therefore, the discriminant and convergent validity were found to be valid and reliable.
Next, exploratory factor analysis was employed and seven factors were extracted namely: Industry-specific environment, economic environment, financial constraints, business environment, entrepreneur's characteristics, investment environment; and product and market characteristics. After extracting the results of factor analysis, experts' suggestions were used to design and develop the pair-wise comparisons. Linguistic variables were utilized to assign the relative importance to pair-wise comparisons among various criteria and sub-criteria. The results of this study may provide useful inputs for better understanding of the venture capitalists investment decision-making process.

Table 1: Exploratory Factor Analysis (EFA)

Criteria	Sub-criteria	Factor Loading	Eigen-values	Cumulative percentage	Cronbach's alpha
Institutional environment (C_1)	1.Government policies (C_{11})	0.781			
	2. Legal framework (C_{12})	0.728			
	3. Technological advancement (C_{13})	0.706	3.339	16.697	0.781
	4. Regulatory policies (C_{14})	0.688			
	5. Financial reporting standards (C_{15})	0.657			
Economic environment (C_2)	1. High variability in inflation (C_{21})	0.868			
	2. GDP growth rate (C_{22})	0.820	2.690	30.147	0.816
	3. Market capitalization (C_{23})	0.788			
Financial Constraints (C_3)	1.High absolute returns (C_{31})	0.761			
	2.Profitability and liquidity (C_{32})	0.724			
	3. Higher IRR (C_{33})	0.673	1.883	39.560	0.703
	4. Higher growth rate projections (C_{34})	0.642			
Business environment (C_4)	1.Political stability (C_{41})	0.803			
	2. Favorable tax treatment (C_{42})	0.797	1.594	47.532	0.740
	3. Market perception (C_{43})	0.797			
Entrepreneur's Characteristics (C_5)	1.Honesty and integrity (C_{51})	0.789			
	2. Skills and experience (C_{52})	0.674	1.369	54.375	0.673
	3. Leadership qualities (C_{53})	0.653			
Investment Environment (C_6)	1.Valuation of investee (C_{61})	0.813			
	2. Fit within investment strategies (C_{62})	0.810	1.298	60.863	0.674
Product Characteristics (C_7)	1.Innovative and unique product (C_{71})	0.722			
	2.Market acceptability (C_{72})	0.691	1.250	67.114	0.620
	3. Competitive advantage (C_{73})	0.504			

Note: Principal component analysis with varimax factor rotation

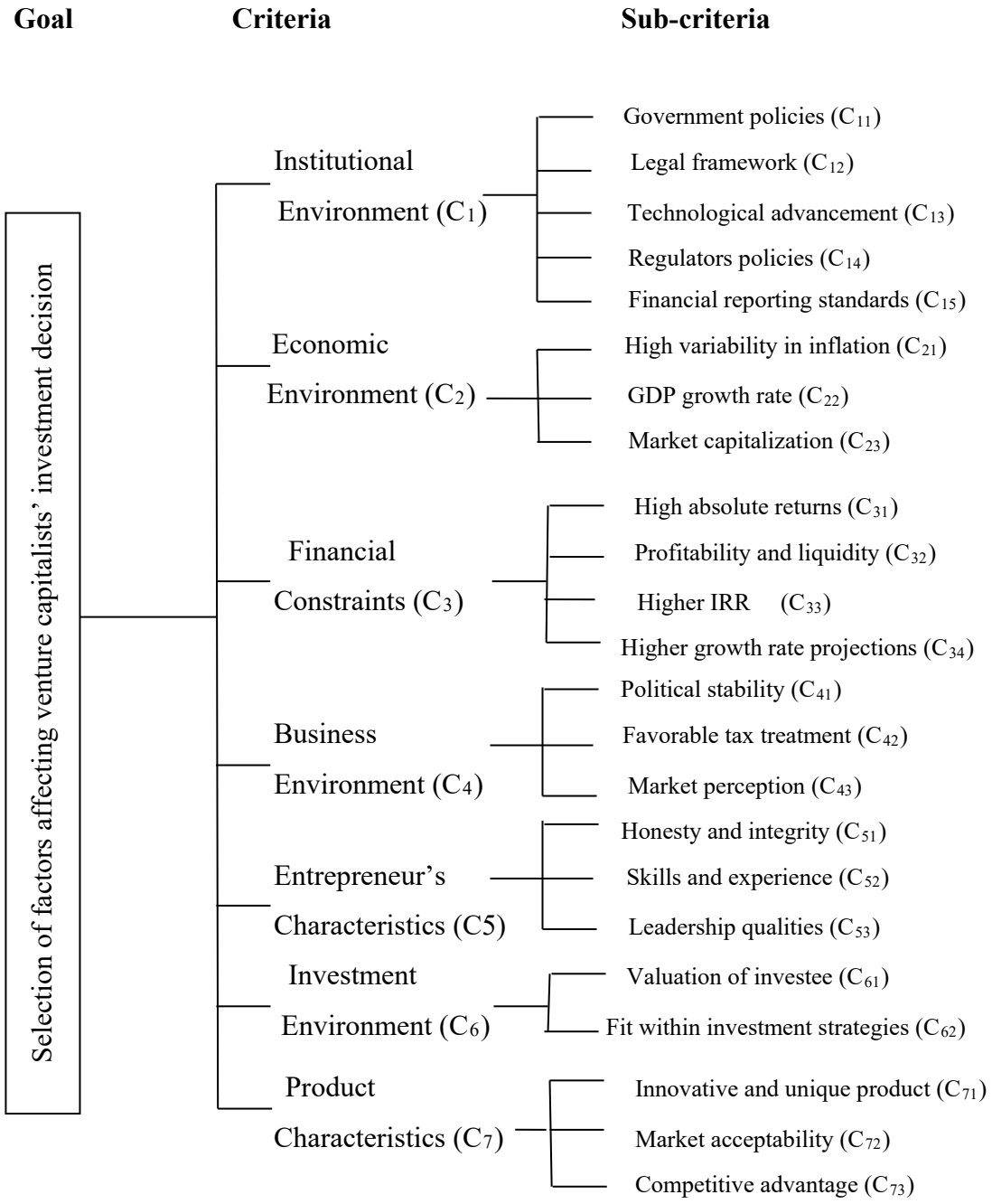

Figure 1: Hierarchy of factors influencing venture capitalists' investment decision

Determining the weights using fuzzy logic

While calculating the global and local weights of various criteria and sub-criteria using fuzzy logic in AHP, a set of pair-wise comparison matrices were normalized and translated to acquire the different priorities. The aggregated responses were utilized to

generate the pair-wise comparisons for all the approaches. The linguistic variables were considered as inputs and outcomes in the terms of local and global weights were calculated by the procedure aforementioned (See Appendices: Table 4 to 11). The findings revealed that the overall consistency of respondents fall within the acceptable limits (0.10). In addition, Table 3 describes the three sets of weights to determine the influencing power of each criteria and sub-criteria in decision-making. The second column, local weights represents the weighting of seven factors with respect to respective parameters; while fourth and fifth columns explains the local and global weights of sub-criteria respectively. The global weights of each sub-criterion are derived by multiplying the local weights with each criterion's local weight. It shows the proportion of each sub-criterion with respect to its criteria.

Table 3: local and global weights for each criteria and sub-criteria

Criteria	Local Weights	Sub-criteria	Local weights	Global weights*	Ranks
Institutional environment (C_1)	0.1067	Government policies (C_{11})	0.2724	0.0290	14
		legal framework (C_{12})	0.3467	0.0369	12
		Technology advancement (C_{13})	0.1254	0.0133	19
		Regulators policies (C_{14})	0.1491	0.0159	17
		Financial reporting standards (C_{15})	0.1064	0.0113	23
Economic environment (C_2)	0.1925	High variability in inflation (C_{21})	0.4507	0.0867	2
		GDP growth rate (C_{22})	0.3237	0.0623	4
		Market capitalization (C_{23})	0.2256	0.0434	9
Financial Constraints (C_3)	0.1399	High absolute returns (C_{31})	0.2984	0.0417	10
		Profitability and liquidity (C_{32})	0.2984	0.0417	11
		Higher IRR (C_{33})	0.2016	0.0282	15
		Higher growth rate projections (C_{34})	0.2016	0.0282	16
Business environment (C_4)	0.0854	Political stability (C_{41})	0.7078	0.0604	6
		Favorable tax treatment (C_{42})	0.1461	0.0124	20
		Market perception (C_{43})	0.1461	0.01242	10
Entrepreneur's characteristics (C_5)	0.2731	Honesty and integrity (C_{51})	0.6584	0.1798	1
		Skills and experience (C_{52})	0.1135	0.0309	13
		Leadership qualities (C_{53})	0.2281	0.0622	5
Investment Environment (C_6)	0.0625	Valuation of investee (C_{61})	0.2306	0.0144	18
		Fit within investment strategies (C_{62})	0.7694	0.0480	8
Product Characteristics (C_7)	0.1399	Innovative and unique product (C_{71})	0.5639	0.0788	3
		Market acceptability (C_{72})	0.3468	0.0485	7
		Competitive advantage (C_{73})	0.0893	0.0124	22

*Global weight is calculated from multiplication by the weight of respective criteria.

After implementing the FAHP technique effectively, the weights demonstrate that entrepreneur's characteristics (0.2731) and economic environment (0.1925) are the most influential factors of investment-decision. These weights illustrates that venture capitalists consider the entrepreneur's willingness, honesty and leadership qualities as the prime factors before investing a new venture. On the contrary, business environment

(0.0854) and investment environment (0.0625) are considered as the least influential factors as shown in Table 3. The sub-criteria 'honesty and integrity' (0.1798), 'high variability in inflation' (0.0867), and 'innovative and unique product' (0.0788) disclose the highest importance with respect to each criteria in sequence of entrepreneur's characteristics, economic environment and product and market characteristics, respectively. The plausible argument that the initial evaluation is started with the person approaching his/her business idea and the other factors comes into consideration later on. Reflecting the global weights of sub-criteria, the top ten parameters those affects the venture capitalists investment decision in India is as follows: 'honesty and integrity', (0.1798), 'high variability in inflation' (.0867), 'innovative and unique product' (0.0788), 'GDP growth rate ' (0.0623),'leadership qualities' (0.0622), 'political stability' (0.0604), 'market acceptability' (0.0485), 'fit within investment strategies' (0.0480), 'market capitalization' (0.0434), and 'high absolute returns' (0.0417). However, none of the criteria shows a clear majority of any single dimension or criteria. Therefore, it is evident that there are several factors which affect the venture capitalists' investment decision. In addition, the priority weights of some factors such as entrepreneur's characteristics, economic environment, product characteristics and financial constraints show the venture capitalists perception towards the importance of these factors and entrepreneur's may recognize their strengths before approaching a right venture. The consistency and prioritization of these factors are important for decision-making process due to the uncertainty of the various economic and investment environment so that entrepreneurs can comply with the various regulatory environments.

CONCLUSION AND REMARKS

In this paper, we have extracted and prioritized the various factors that may affect the venture capitalists investment decision in Indian venture capital industry. The objectives of this study are two-folded: first, it explores the factors of investment decision; second, this study proposed a methodology for ranking these factors. This study provides insights of Indian venture capital industry by recognizing and ranking the several factors. The results revealed that entrepreneur's characteristics are considered as prime indicators. It seems that the initial evaluation centers on the person leading the proposed investment. The proposed hierarchy may be useful for different stakeholders to assess the relative importance of each criteria and sub-criteria. This model may be useful for some industries to understand the investment process thoroughly as per their needs and specifications. Additional, the results of this research may guide the prospective entrepreneurs to assess the perception of decision-makers. The findings of this study can be used as a base for further research in different industries and regions. Further, analytical network process (ANP) is suggested for application of analytical tools in determining weights for various parameters.

Appendix

Table 4: Pair-wise comparison matrix and weights for criteria

Parameters	C_1	C_2	C_3	C_4	C_5	C_6	C_7	Weights
C_1	E	M	S	E	1/M	M	1/VS	0.1067
C_2	1/M	E	M	S	1/VS	S	S	0.1925
C_3	1/S	1/M	E	M	1/S	VS	M	0.1399
C_4	1/E	1/S	1/M	E	1/S	S	M	0.0854
C_5	M	VS	S	S	E	VS	S	0.2731
C_6	1/M	1/S	1/VS	1/S	1/VS	E	M	0.0625
C_7	VS	1/S	1/M	1/M	1/S	1/M	E	0.1399

Table 5: Pair-wise comparison matrix and weights for sub-criteria (C_1)

	C_{11}	C_{12}	C_{13}	C_{14}	C_{15}	Weights
C_{11}	E	M	S	S	VS	0.2724
C_{12}	1/M	E	S	1/M	VS	0.3467
C_{13}	1/S	1/S	E	1/S	M	0.1254
C_{14}	1/S	M	S	E	S	0.1491
C_{15}	1/VS	1/VS	1/M	1/S	E	0.1064

Table 6: Pair-wise comparison matrix and weights for sub-criteria (C_2)

	C_{21}	C_{22}	C_{23}	Weights
C_{21}	E	M	S	0.4507
C_{22}	1/M	E	M	0.3237
C_{23}	1/S	1/M	E	0.2256

Table 7: Pair-wise comparison matrix and weights for sub-criteria (C_3)

	C_{31}	C_{32}	C_{33}	C_{34}	Weights
C_{31}	E	M	S	M	0.2984
C_{32}	1/M	E	M	S	0.2984
C_{33}	1/S	1/M	E	1/M	0.2016
C_{34}	1/M	1/S	M	E	0.2016

Table 8: Pair-wise comparison matrix and weights for sub-criteria (C_4)

	C_{41}	C_{42}	C_{43}	Weights
C_{41}	E	S	S	0.7078
C_{42}	1/S	E	1/M	0.1461
C_{43}	1/S	M	E	0.1461

Table 9: Pair-wise comparison matrix and weights for sub-criteria (C_5)

	C_{51}	C_{52}	C_{53}	Weights
C_{51}	E	S	VS	0.4507
C_{52}	1/S	E	1/S	0.3237
C_{53}	1/VS	1/S	E	0.2256

Table 10: Pair-wise comparison matrix and weights for sub-criteria (C_6)

	C_{61}	C_{62}	Weights
C_{61}	E	1/S	0.2306
C_{62}	S	E	0.7694

Table 11: Pair-wise comparison matrix and weights for sub-criteria (C_7)

	C_{71}	C_{72}	C_{73}	Weights
C_{71}	E	VS	S	0.5639
C_{72}	1/VS	E	M	0.3468
C_{73}	1/S	1/M	E	0.0893

REFERENCES

Alyward, A. (1998). *Trends in Venture Capital financing in Developing Countries* (No. 36). IFC Discussion Paper.

Audretsch, D. B., &Acs, Z. J. (1994). New-firm startups, technology, and macroeconomic fluctuations. *Small Business Economics*, *6*(6), 439-449.

Bagozzi, R. P., & Yi, Y. (1988).On the evaluation of structural equation models. *Journal of the academy of marketing science*, *16*(1), 74-94.

Batterson, L. A. (1986). *Raising venture capital and the entrepreneur*.Prentice-Hall.

Boisot, M., & Child, J. (1996). From fiefs to clans and network capitalism: Explaining China's emerging economic order. *Administrative Science Quarterly*, 600-628.

Bruton, G. D., & Ahlstrom, D. (2003). An institutional view of China's venture capital industry: Explaining the differences between China and the West.*Journal of Business Venturing*, *18*(2), 233-259.

Chan, F. T., & Kumar, N. (2007). Global supplier development considering risk factors using fuzzy extended AHP-based approach. *Omega*, *35*(4), 417-431.

Fried, V. H., &Hisrich, R. D. (1994).Toward a model of venture capital investment decision making.*Financial management*, 28-37.

Giamartino, G. A., McDougall, P. P., & Bird, B. J. (1993). International entrepreneurship: The state of the field. *Entrepreneurship: Theory and Practice*, *18*(1), 37-43.

Gompers, P. A., & Lerner, J. (2004). The money of invention: how venture capital creates new wealth. *Computing Reviews, 45*(1), 55-56.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., &Tatham, R. L. (2006). *Multivariate data analysis* (Vol. 6). Upper Saddle River, NJ: Pearson Prentice Hall.

Hall, J., & Hofer, C. W. (1993).Venture capitalists' decision factor in new venture evaluation.*Journal of Business Venturing*, 8(1), 25-42.

Henisz, W. J. (2000). The institutional environment for economic growth.*Economics and politics*, *12*(1), 1-31.

Hirsch, P. M., &Lounsbury, M. (1997).Ending the family quarrel toward a reconciliation of "old" and "new" institutionalisms. *American Behavioral Scientist*, *40*(4), 406-418.

Jeng, L. A., & Wells, P. C. (2000). The determinants of venture capital funding: evidence across countries. *Journal of corporate Finance*, *6*(3), 241-289.

Kahraman, C., Cebeci, U., &Ruan, D. (2004). Multi-attribute comparison of catering service companies using fuzzy AHP: The case of Turkey.*International Journal of Production Economics*, *87*(2), 171-184.

Kaiser, H. F. (1958). The varimax criterion for analytic rotation in factor analysis.*Psychometrika*, *23*(3), 187-200.

Khan, A. M. (1987).Assessing venture capital investments with noncompensatory behavioral decision models.*Journal of Business Venturing*, 2(3), 193-205.

MacMillan, I. C., Zemann, L., &Subbanarasimha, P. N. (1987). Factor distinguishing successful from unsuccessful ventures in the venture screening process.*Journal of business venturing*, 2(2), 123-137.

MacMillan, I. C., Zemann, L., &Subbanarasimha, P. N. (1987).Factor distinguishing successful from unsuccessful ventures in the venture screening process.*Journal of business venturing*, 2(2), 123-137.

Maier, J. B., & Walker, D. A. (1987).The role of venture capital in financing small business. *Journal of Business Venturing*, *2*(3), 207-214.

Manolova, T. S., Eunni, R. V., &Gyoshev, B. S. (2008). Institutional environments for entrepreneurship: Evidence from emerging economies in Eastern Europe. *Entrepreneurship Theory and Practice*, *32*(1), 203-218.

Mechner, F. (1989). Present certainty equivalents and weighted scenario valuations. Journal of Business Venturing, 4(2), 85-92.

Mehbodniya, A., Kaleem, F., Yen, K. K., & Adachi, F. (2012, August). A dynamic weighting of attributes in heterogeneous wireless networks using fuzzy Linguistic Variables. In *Communications in China (ICCC), 2012 1st IEEE International Conference on* (pp. 698-703). IEEE.

Nunnally, J. C., Bernstein, I. H., & Berge, J. M. T. (1967). *Psychometric theory* (Vol. 226). New York: McGraw-Hill.

Pahal, S., Singh, B., &Arora, A. (2015). Cross Layer Based Dynamic Handover Decision in Heterogeneous Wireless Networks. *Wireless Personal Communications*, *82*(3), 1665-1684.

Pandey, I. M. (1995, April).Venture capital investment factor used by venture capitalists in India.In *7th Annual Symposium on Small Business Finance, Florida USA*.

Pandey, I. M. (1996). Venture Capitalists' Evaluation Criteria in a Developing Country: A case of India. *International Journal of Development Banking, 14(*1).

Patricof, A. (1989). The internationalization of venture capital. *Journal of Business Venturing*, *4*(4), 227-230.

Peng, M. W., & Heath, P. S. (1996). The growth of the firm in planned economies in transition: Institutions, organizations, and strategic choice.*Academy of management review*, *21*(2), 492-528.

Poindexter, J. B. (1997). *The efficiency of financial markets: the venture capital case* (Doctoral dissertation).

Robinson Jr, R. B. (1988). Emerging strategies in the venture capital industry.Journal of Business Venturing, 2(1), 53-77.

Saaty, T. 1980, The Analytic Hierarchy Process. McGraw-Hill, New York.

Scott, W. R. (1987). The adolescence of institutional theory. *Administrative science quarterly*, 493-511.

Silva, J. (2004). Venture capitalists' decision-making in small equity markets: a case study using participant observation. *Venture capital*, *6*(2-3), 125-145.

Tabachnick, B. G., &Fidell, L. S. (2001).Using multivariate statistics.

Timmons, J. A., Muzyka, D. F., Stevenson, H. H., &Bygrave, W. D. (1987). Opportunity recognition: the core of entrepreneurship. Frontiers of entrepreneurship research, 109-123.

Tyebjee, T. T., & Bruno, A. V. (1984). Venture capital: Investor and investee perspectives. *Technovation*, *2*(3), 185-208.

Tyebjee, T. T., & Bruno, A. V. (1984).A model of venture capitalist investment activity.Management science, 30(9), 1051-1066.

Wells, W. A. (1974). Venture capital decision-making, Doctoral dissertation, Carnegie-Mellon University.

Zacharakis, A. L., & Meyer, G. D. (1995). The venture capitalist decision: understanding process versus outcome. Frontiers of entrepreneurship research,1995, 465-78.

Zacharakis, A. L., & Meyer, G. D. (1998). A lack of insight: do venture capitalists really understand their own decision process?. Journal of business venturing, 13(1), 57-76.

Zacharakis, A., & Shepherd, D. A. (2007). The pre-investment process: Venture capitalists' decision policies. Handbook of research on venture capital, 1, 177.

Branding Indigenous Silks of India: Causal Models Using Consumer Data

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ABSTRACT

India produces three types of silk indigenous in the country, namely Eri, Muga and Tussar. These silks are grown and produced mainly by the tribal communities of India. Consumer survey of 4234 women across 6 cities of India, from July - December 2016, was conducted in order to understand the branding aspects of these silks. Causal models were built based on three categories of data, namely, consumer expectations, consumer experiences, and brand equity as expressed by the consumer. The analysis shows clear branding features emerging around product features, heritage value, and purity of silk. However, significant differences are seen across income levels and nature of profession. The theory of contestable markets is used to discuss the relevance of the significant branding features. The results also highlight the need to evaluate the effect of consumer tastes on the production structures of handloom silk.

Keyword: Indigenous Silk, India, Brand building; Brand features; Theory of Contestable Markets

BUSINESS MODEL INNOVATION AND CORPORATE SUSTAINABILITY: A MEDIATED MODERATION MODEL

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Abstract: In the current competitive economic environment, business models through their value creation mechanisms act as a support system in fostering the sustainability of a firm. Business model innovation is typically performed either by renewal or replication strategy. Drawing on the instrumental and integrative theories, a framework of hypotheses is developed that underlines the effects of business model innovation on a firm's corporate sustainability practices. The operational responsiveness of the relationship between business model innovation and corporate sustainability practices is tested using organizational learning, strategic flexibility as sequential mediating variables and environmental dynamism as a moderating variable. Using a conclusive research design, the present study tests the two types of business model innovation (replication, renewal) on the triple bottom line approach of corporate sustainability with special reference to managerial workforce of the select Indian pharmaceutical companies. Furthermore, the study uses Structural Equation Modeling and Sequential Mediation Analysis, to test the proposed research model. Some of the findings indicate that both the types of business model innovation significantly predict corporate sustainability practices and organizational learning sequentially mediates strategic flexibility.

Keywords: Corporate Sustainability, Business model innovation, Organizational Learning, Strategic Flexibility, Environmental Dynamism

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1. INTRODUCTION

Recent crisis in the global economic and financial market have risen dramatically. This change has led to certain basic questions regarding the extent to and the manner in which existing corporate business models influence the sustainability of the global economy and society. To reconsider the possible contributions of organization to sustainable development, various international associations and scholars have come up together (WBCSD, 2011, 2012). The concept of business model has emerged at the end of twentieth century, as the need to describe and analyze novel ways of doing business (e.g., e-businesses or virtual organizations; Alt & Zimmermann, 2014; Wirtz, Pistoia, Ullrich, & Göttel, 2015). At this stage, the concept gained the attention of scholars merely as a general management theory (Chesbrough and Rosenbloom (2002) & Magretta (2002). and the influence of it on sustainability took over the research arena. Scholars proposed that business model perspectives are important for sustainability as it signifies organization's value creation logic and its influence and importance for governance of firms. Although the issues and methods in this aspect is spreading continuously (Bocken, Rana, & Short, 2015; Bocken, Short, Rana, & Evans, 2014), a clearly explained definition of a business model for sustainability is missing. The study further describes a brief literature review of all the constructs along with the rationale behind the hypotheses development followed by research methodology, discussion, implications and conclusion.

2. LITERATURE REVIEW

2.1 Business Model Innovation

Business model innovation refers to introduction of a novel or improved logic to understand how a firm creates and acquires value (Björkdahl and Holmén, 2013; Casadesus-Masanell and Zhu, 2013; Markides, 2006). Three different but related to non technological innovation i.e. management innovation, co-creation and business model innovation are key variables in the capacity of an organization to transform technological innovation into commercial achievement or to speed up the process to succeed (e.g., Chesbrough, 2007; Damanpour et al., 2009; Slater and Mohr, 2006). \

2.2 Organizational Learning

Organizational learning is the process of improving business practices through better knowledge and understanding (Fiol and Lyles, 1985) to maximize the organization's value (Huber, 1991). Learning happens by concurrently exploring new knowledge while exploiting the known knowledge (March, 1991). Pepsitenend, Deegman and Li, (2007)

categorized organization learning as the process of information acquisition, knowledge dissemination, shared interpretation and organizational memory.

2.3 Strategic Flexibility

Strategic flexibility refers to the firm's ability to alter the plans and strategies in order to adapt to internal and external environmental changes (Combe and Greenley, 2004; Lei et al., 1996; Matusik and Hill, 1998; Sanchez, 1995) and react promptly to the ongoing developments (Shimizu and Hitt, 2004). Some studies defined strategic flexibility as firm's capability to create and to keep opportunities and alternatives (Johnson et al., 2003; Matthyssens et al., 2005) while some considered it as firm's ability to manage and control the environmental risks (Grewal and Tansuhaj, 2001) through the variety of managerial capabilities that can quickly be activated to do so.

2.4 Corporate Sustainability

Corporate sustainability has increasingly gained the attention of varied scholars in the field of management and organizational researches. A consensus has been drawn on the conceptualization of corporate sustainability as going beyond the corporate growth and profitability. Further, it has been explained to include firm's involvement to social motives and initiatives towards the protection of environment, social justice and equity and economic development (Carroll & Shabana, 2008; van Marrewijk, 2003; Wilson, 2003).

2.5 Environmental Dynamism

Environmental dynamism, also known as environmental turbulence or high velocity environment, refers to the frequency with which the environmental elements are changing. Studies established that dynamism includes continuous technological changes with change in market demand and rivalries (Freel, 2005) and proved that under the higher level of environmental turbulence, uncertain and risky conditions induce innovation through developing an organisation more informed of 'cues' to innovate (Aldrich, 1979). ED can also be explained as degree to which unexpected shifts occur in the business environment. The one who pioneer can attain first mover advantage and skim the cream out of the market.

3. THEORETICAL DEVELOPMENT AND HYPOTHESIS TESTING

3.1 Business Model Innovation & Corporate Sustainability

Business models for sustainability have gained the attention of many scholars (Bocken, Short, Rana, & Evans, 2014; Boons & Lüdeke-Freund, 2013). Initially, emphasis was given on green product development, "eco-efficiency" and the so called win-win

solutions (Schmidheiny, 1992; von Weizsäcker, Hargroves, Smith, Desha, & Stasinopoulos, 2009). Though, this aspect failed to fulfill the needs and challenges included in the process of development of sustainability (Roome, 2001). Based on this, we consider both the categories of business model innovation: business model replication and business model renewal and we hypothesize that-

H1a: Business Model replication positively associates with corporate sustainability practices.
H1b: Business Model renewal positively associates with corporate sustainability practices.

3.2 Organizational Learning & Strategic Flexibility

Organization's ability to learn and improve in modern markets is often considered as the strategic capability for competition. Few studies argued that organizational learning can induce firm's capability to identify opportunities. This helps firms to initiate new investment decisions in an effective manner, continuously adapt to their environment (Beer et al., 2005; Lumpkin and Lichtenstein, 2005) and enables them to transform itself in accordance to fast-changing settings so as to attain continual efficient/effective production for some target markets (Madhavaram and Hunt, 2008). Therefore, strategic flexibility, with immediate responsiveness, in a defensive manner for market prospects and threats, indicates an organization's ability to manage market changes. Accordingly the study hypothesizes,

H2: Organizational Learning is significant predictor of Strategic Flexibility.

3.3 Mediating effects of Organizational Learning & Strategic Flexibility

The innovation of an established business model has also been recognized as a very demanding job that supports a firm to triumph over barriers such as resistance to change and perplexity about the need to change (Chesbrough and Rosenbloom, 2002; Chesbrough, 2010). In line with it, strategic flexibility has emerged as an enabling capacity for firms (Bock et al., 2012) to flexibly re-allocate its resources, alter its plans and strategies and to maintain alternatives wherever required (Nadkarni and Hermann, 2010). Corporate Sustainability in the contemporary business paradigms is understood more as a Triple Bottom Line (TBL) approach than the endurance aspect of sustainability. Dyllick and Hockerts (2002) explained is as a business strategy which aims to fulfill the needs of the organizational stakeholders and at the same time, not compromising the interests and resources of the local community.

H3a: Organizational Learning and partially mediates the relationship between Business Model replication and Corporate Sustainability.

H3b: Organizational Learning partially mediates the relationship between Business Model renewal and Corporate Sustainability.
H3c: Strategic Flexibility partially mediates the relationship between Business Model replication and Corporate Sustainability.
H3d: Strategic Flexibility partially mediates the relationship between Business Model renewal and Corporate Sustainability.
H3e: Organizational Learning and Strategic Flexibility sequentially mediates the relationship between Business Model Replication and Corporate Sustainability.
H3f: Organizational Learning and Strategic Flexibility sequentially mediates the relationship between Business Model Renewal and Corporate Sustainability.

3.4 Moderating effect of Environmental Dynamism

Environmental dynamism is significant for firm to attain competitive advantages (Demil and Lecocq, 2010), though for long term sustainability, business mode redesign is needed. Business model redesign enables a firm to meet and change itself in accordance to the changing environmental variables (e.g., Baden-Fuller and Morgan, 2013; Schneider and Spieth, 2013). In line with this, Morris et al (2005) also highlighted that "interface between business model design and the external environmental is especially critical" and imitating business model gives a premise of reference to diagnose and solve many organizational issues (Winter and Szulanski, 2001). Accordingly the study explores,

H4a: The relationship between Business Model replication and Corporate Sustainability will be Stronger due to the effect of environmental dynamism.
H4b: The relationship between Business Model renewal and Corporate Sustainability will be stronger due to the effect of environmental dynamism.

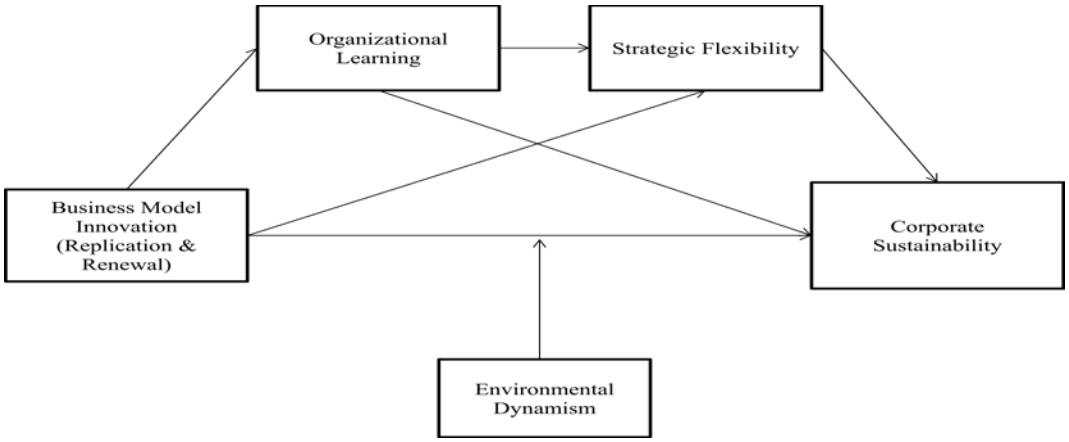


Fig 1: Theoretical Framework

4. RESEARCH METHODOLOGY

4.1 Sample and data collection

The data to test the conceptual model was collected via field based survey by administering a structured questionnaire. The study sample consists of 226 managerial workforce employed in various Indian pharmaceutical companies. The parameter of Annul net sales under Bombay Stock Exchange (BSE), India, was used as a reference index to select the high, medium and low performing pharmaceutical companies. 56. 42 % and 43.58 % occupies the share of large companies and small and medium sized companies respectively. Out of 226 respondents, 62.46% constitute male respondents and 37.54% constitute female respondents. 71.38% of the respondents are graduates 27.52% hold post graduate degrees and 1.1 % hold doctorate degrees. In terms of organizational hierarchy, 56.91 % belong to lower level management, 35.57% belong to middle level management and 7.52% occupies top level management. Data collection was performed through cross sectional research deign and simple random sampling technique was employed to select the respondents. Majority of the questionnaires were personally administered by a research assistant, soon after taking the necessary permission from the Human Resource Department of a respective organization.

S.no	Variable	Mean	S.D	1	2	3	4	5	6	7	8
1	Firm Size	1.82	0.28	-							
2	Firm Age	27.46	0.35	0.23**	-						
3	BMRE	5.34	0.41	0.18*	0.22**	**0.87**					
4	BMRP	5.08	0.76	0.14**	0.32*	0.46**	**0.72**				
5	CS	5.75	0.54	0.42*	0.28*	0.38*	0.64**	**0.94**			
6	OL	5.93	0.82	0.38**	0.26**	0.19**	0.27**	0.18**	**0.76**		
7	SF	5.42	0.66	0.51*	0.31**	0.26**	0.13**	0.29**	0.42**	**0.81**	

Table 1: Descriptive Statistics

8	ED	6.12	0.21	0.27*	0.48**	0.51**	0.28*	0.35**	0.38**	0.24**	**0.89**

Note: **p<0.05, *p<0.01

Out of a total of 354 questionnaires circulated across the select pharmaceutical companies, 248 were returned and 22 were discarded due to incompletely filled responses, resulting in a response rate of 68.84%. Table 1 represents the summary of the descriptive statistics such as mean, standard deviation and inter construct Pearson correlations. months ranging from July to October 2015. Every empirical study needs to control certain set of variables to be constant, in order to better understand the relationship between the central latent constructs. Firm size and firm age are included as control variables in this study. Larger firms have greater economies of scale and require higher levels of business model innovation (Mol and Birkinshaw, 2009). Firm size was computed by applying natural logarithm of full time employees and firm age by the number of years.

4.2 Measurement

A well-established multiple-item five-point Likert scale spanning from 1 ("strongly disagree") to 7 ("strongly agree") was used to measure the variables of the study. All the items are formulated at organization level. The descriptive statistics for all measurements are shown in Table 1.

4.2.1. Business Model Innovation (BMI)

In the present study, Business Model Innovation is classified into Business Model Replication (BMRP) and Business Model Renewal (BMRE). BMRP is measured using 3 items which are adapted from various scholars (Jaworski and Kohli, 1993; Collins and Smith, 2006; Jansen et al., 2005, Aspara et al., 2010). Some of the items include, "we continuously look for opportunities to leverage our existing knowledge", "and our organization often improves production & operational processes". BMRE is measured using 3 items, which are adapted from a group of research studies (Collins and Smith, 2006; Burgers et al., 2009; Aspara et al., 2010). Some of the items include, "we are very active with initiatives to create entirely new value for certain customers", "and we have acquired many companies in very different industries". The cronbach's alpha reliability coefficients of both BMRP and BMRE are 0.87 and 0.72 respectively.

4.2.2. Corporate Sustainability (CS)

The latent construct of Corporate Sustainability is measured by using the adapted items from Chow & Chen (2012). The authors advocated triple bottom line approach of corporate sustainability which comprises economic (6 items), social (6 items) and environmental (10 items) dimensions. The economic dimension deals with ways of

increasing a firm's revenue by reducing the input costs. The social dimension represents community health and safety along with local community initiatives. The environmental dimension envelopes the issue of operational emissions and waste towards the natural habitat. The cronbach's alpha reliability coefficient of the 22 item construct is found out to be 0.94.

4.2.3. Organizational Learning (OL)

Organizational learning can induce firm's capability to identify opportunities. This helps firms to initiate new investment decisions in an effective manner, continuously adapt to their environment. The mediating variable of organizational learning is measured by adapted seven items from Lloria & Moreno-Luzon (2014). The unit of analysis is restricted to organizational level. The items measure the presence of learning experiences through knowledge databases, manual standard booklets and learning encouragement. The cronbach's alpha reliability coefficient of the 7 item construct is found out to be 0.76.

4.2.4. Strategic Flexibility (SF)

Strategic Flexibility is typically a firm's proactive or reactive response to the threats and opportunities posed by the market. The mediating variable of strategic flexibility is measured using three items, which are adapted from Lee et al., (1999). The items measure attention, response and anticipation of the firm towards the external changes. The cronbach's alpha reliability coefficient of the three item construct is found out to be 0.81.

4.2.5 Environmental Dynamism (EA)

In the present study, the external environment related factor of Environmental Dynamism acts a moderating variable. The latent construct of ED is measured by adapting 5 items from Jansen et al., (2006). The items measure the intensity of environmental changes towards the market. The reliability of ED was found out to be 0.89. Above all the cronbach's alpha reliability coefficients of all the central latent constructs are well above the acceptable limits 0.7, as suggested by Hair et al., (2006).

4.3. Research Method

The present study uses the widely acknowledged multivariate causal modeling technique named as two stage approach, suggested by Anderson and Gerbing (1998). The two stages are Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) respectively. CFA confirms the extracted relationships by comparing the variance co variance matrix from both the sample and model. It just validates the model's measurement. Both the structure model and measurement model are used to build the second stage SEM, which is a combination of CFA, multiple regression and Path

Analysis (Hussey & Eagan, 2007). The mediation analysis was conducted by using Process macro developed by Hayes (2003) and the moderation analysis was conducted by Regression modeling.

5. ANALYSIS AND RESULTS

5.1 Measurement Model Results

Each item of a respective construct is needed to have a greater loading compared to the other constructs and the square root of the AVE values ought to be larger than the inter construct correlations (Fornell and Larcker, 1981). The corresponding values are represented in table 3. Convergent validity is the second type of testing for the construct validity, which is measured solely by the Average Variance Extracted (AVE) values. An AVE value above or equal to 0.5 indicates that the items of a construct are converged, i.e. on an average all the constructs in the proposed research model at least explain more than or equal to 50% of its items (Hair et al., 2006). By table 2, it can be observed that that the values of Average Variance Extracted (AVE) are more than or equal to 0.5 for all the six corresponding latent constructs. Thus, the measurement has adequate convergent validity. Furthermore, the square root of the AVE values of all constructs is found to be more than 0.8, which indicates that the measurement has a good Discriminant validity. Table 2 represents the summary of the results obtained from the Confirmatory Factor Analysis (CFA). Thus the response set of the present study shows good reliability and validity characteristics.

Table 2: Results of Confirmatory Factor Analysis

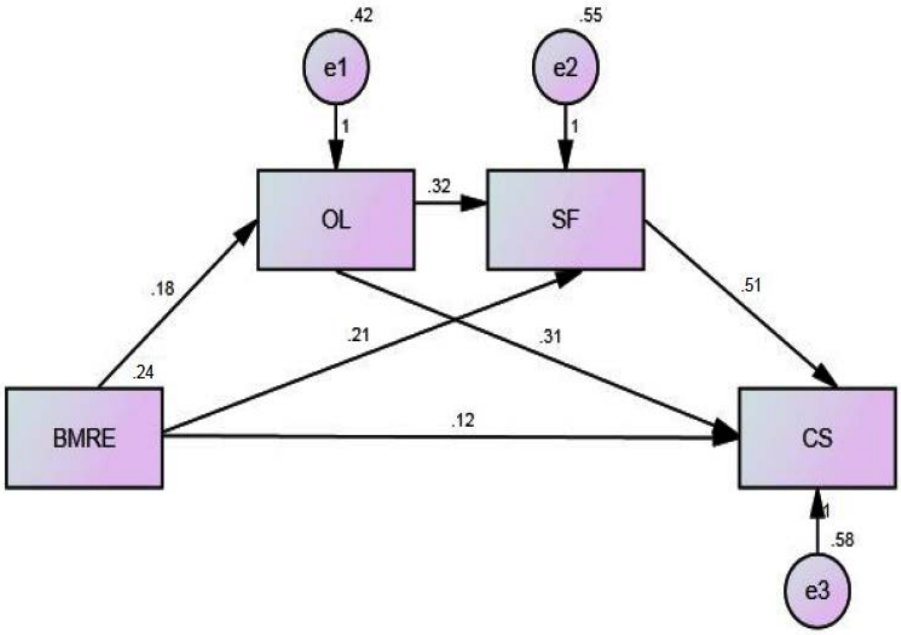
Latent Constructs	Indicators	Loadings	C.R	AVE	AVE Square Root
Business Model Replication	BMRP1	0.76	0.84	0.65	0.80
	BMRP2	0.81			
	BMRP3	0.84			
Business Model Renewal	BMRE1	0.77	0.84	0.63	0.79
	BMRE2	0.88			
	BMRE3	0.74			
Strategic Flexibility	SF1	0.69	0.82	0.77	0.87
	SF2	0.78			
	SF3	0.86			
Environmental Dynamism	ED1	0.93	0.91	0.69	0.83
	ED2	0.82			
	ED3	0.89			
	ED4	0.65			
	ED5	0.84			
Organizational Learning	OL1	0.76	0.92	0.63	0.79

	OL2	0.87			
	OL3	0.83			
	OL4	0.82			
	OL5	0.71			
	OL6	0.73			
	OL7	0.84			
Corporate Sustainability	ECS1	0.81	0.97	0.68	0.82
	ECS2	0.75			
	ECS3	0.83			
	ECS4	0.92			
	ECS5	0.83			
	ECS6	0.78			
	SS1	0.89			
	SS2	0.76			
	SS3	0.84			
	SS4	0.95			
	SS5	0.88			
	SS6	0.71			
	ENS1	0.82			
	ENS2	0.75			
	ENS3	0.68			
	ENS4	0.72			
	ENS5	0.84			
	ENS6	0.87			
	ENS7	0.92			
	ENS8	0.81			
	ENS9	0.88			
	ENS10	0.93			

Maximum Shared Variance (MSV) is measured by the calculating the amount of covariance shared by a respective latent construct with other construct. Average Shared Variance (ASV) is the mean of the shared covariance by a latent construct with all the other constructs of the research model. The value of CR should be greater than AVE and the value of AVE should be greater than both MSV and ASV (Hair et al., 2006). Table no 3 represents, values of all the mentioned parameters to be within their respective acceptable limits. Thus, the Discriminant validity of the measurement was confirmed to be reliable and valid (Hair et al., 2006). And all the AVE values are greater than the desired limit of 0.5 and thus the response set supports convergent validity.

Table 3: Validity Measurement

	C.R.	AVE	MSV	ASV	BMRE	BMRP	CS	OL	SF	ED
BMRE	0.84	0.65	0.52	0.41	**0.80**					
BMRP	0.84	0.63	0.46	0.37	0.46	**0.79**				
CS	0.68	0.68	0.41	0.32	0.38	0.64	**0.82**			
OL	0.63	0.63	0.42	0.39	0.19	0.27	0.18	**0.79**		

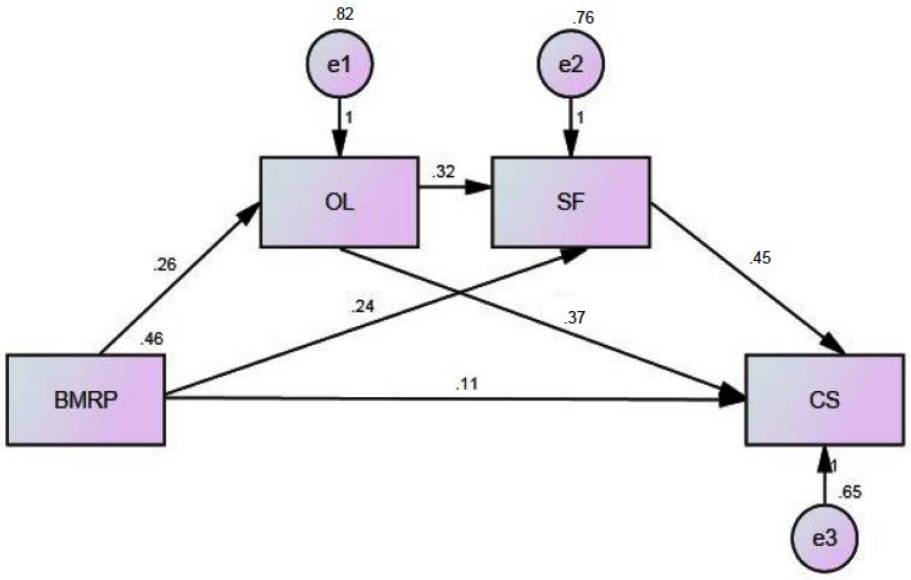


SF	0.82	0.77	0.59	0.34	0.26	0.13	0.29	0.42	**0.87**	
ED	0.69	0.69	0.32	0.26	0.51	0.28	0.35	0.38	0.24	**0.83**

5.2. Structural Model Results

The absolute and incremental fit indices of the structural model are GFI, NFI, NNFI, AGFI and RMR are 0.91, 0.86, 0.88, 0.76 and 0.072 respectively. The results showcase that all the fit indices are in the acceptable limit (Bagozzi and Yi, 1988).

Fig 2:



Structural Model of Business model replication and Corporate Sustainability

Fig 3: Structural model of business model renewal and corporate sustainability

Table 4: Parameter Estimates of the Structural Model

Path	Standardized Estimates	Standard Errors	Critical Ratio	p-value
BMRE --> OL	0.18	0.063	2.85	***
BMRE --> CS	0.12	0.097	1.23	***
BMRE -->SF	0.21	0.075	2.80	***
OL --> CS	0.31	0.081	3.82	**
OL --> SF	0.32	0.052	6.15	**
SF --> CS	0.51	0.027	18.88	***

Note: **p<0.05, *p<0.01

5.3. Test of Mediation Analysis

The results of two-tailed significance test illustrated a significant indirect effect (SOBEL Z = 2.05, p < 0.05). Bootstrapping which is basically sampling of the samples was conducted at the rate of 1000 samples and 95% confidence interval in order to confirm the results around the indirect effect and the results indicated a non-zero upper and lower limit confidence interval at (0.1628, 0.1207) respectively. The sequential meditation of organizational learning and strategic flexibility between business model replication and corporate sustainability is also positively significant (β = 0.03, SE= 0.017, t= 2.04; *p*<0.05). Thus supporting the claim of hypotheses H3a, H3c and H3e and it can be concluded that organizational learning acts as a partial mediator between business model replication and corporate sustainability, strategic flexibility acts as a partial mediator between business model replication and corporate sustainability, organizational learning and strategic flexibility acts as sequential mediators between business model replication and corporate sustainability.

Table 5: Mediation Analysis-a

Effect	Variable Linkage	β	SE	t-value	p-value
Total Effect	BMRP --> CS	0.48	0.092	4.72	0.0000
Indirect Effect a1	BMRP --> OL	0.23	0.081	3.61	0.0000
Indirect Effect a2	BMRP --> SF	0.21	0.064	3.08	0.0248
Indirect Effect b1	OL --> CS	0.34	0.057	4.46	0.0162
Indirect Effect b2	SF --> CS	0.46	0.095	7.11	0.0000
Direct Effect	BMRP --> CS	0.13	0.086	2.74	0.0000

The path coefficient of the direct effect was found to be positive (β = 0.12, SE= 0.079, t = 3.61, $p < 0.001$), the total effect of Business model renewal on Corporate Sustainability is positively significant with (β = 0.45, SE= 0.065, t = 6.87, $p < 0.001$) and the path coefficient of the total indirect effect (which is the difference between total effect and total direct effect) is significant with (β = 0.33, SE= 0.084, t= 3.05, $p < 0.001$)

respectively. The results of two-tailed significance test illustrated a significant indirect effect (SOBEL Z = 7.73, p < 0.001). Thus supporting the claim of hypotheses H3b, H3d and H3f and it can be concluded that organizational learning acts as a partial mediator between business model renewal and corporate sustainability, strategic flexibility acts as a partial mediator between business model renewal and corporate sustainability, organizational learning and strategic flexibility acts as sequential mediators between business model renewal and corporate sustainability.

Table: Mediation Analysis-b

Effect	Variable Linkage	β	SE	t-value	p-value
Total Effect	BMRE --> CS	0.45	0.065	6.87	0.0000
Indirect Effect a1	BMRE --> OL	0.16	0.031	4.55	0.0000
Indirect Effect a2	BMRE --> SF	0.22	0.052	3.31	0.0000
Indirect Effect b1	OL --> CS	0.35	0.055	5.29	0.0000
Indirect Effect b2	SF --> CS	0.53	0.065	6.94	0.0138
Direct Effect	BMRE --> CS	0.12	0.079	3.61	0.0246

5.4. Test of Moderation Analysis

The moderating effect of environmental dynamism between business model replication, business model renewal towards corporate sustainability was performed using moderated regression models, which were proposed by Aiken and West (1991) and Baron and Kenny (1986). Fig 4 and fig 5 represent that environmental dynamism strengthens the relationship business model renewal and replication towards corporate sustainability. Thus, supporting the hypotheses of H4a and H4b.

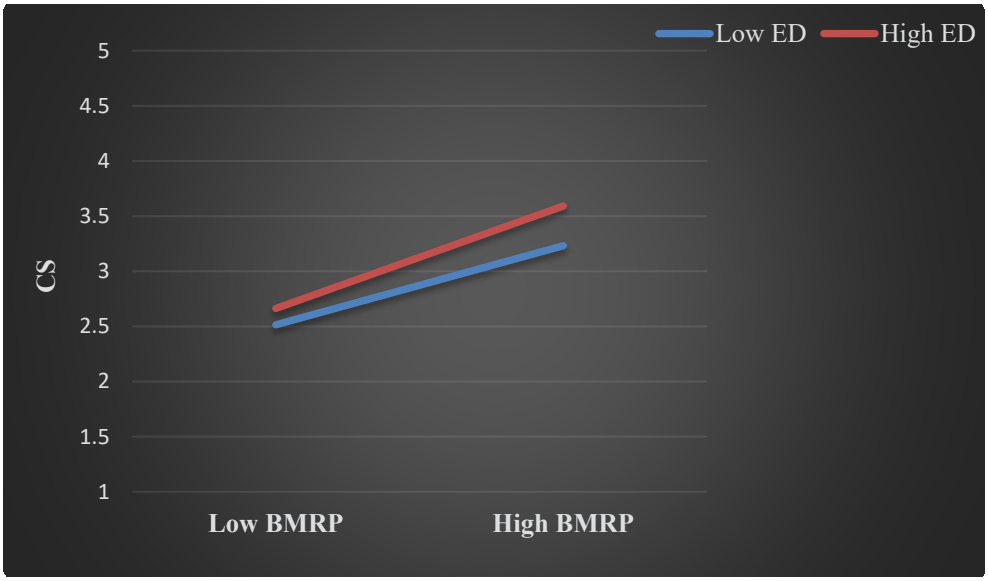


Fig 4: Moderating effect of ED on BMRP and CS

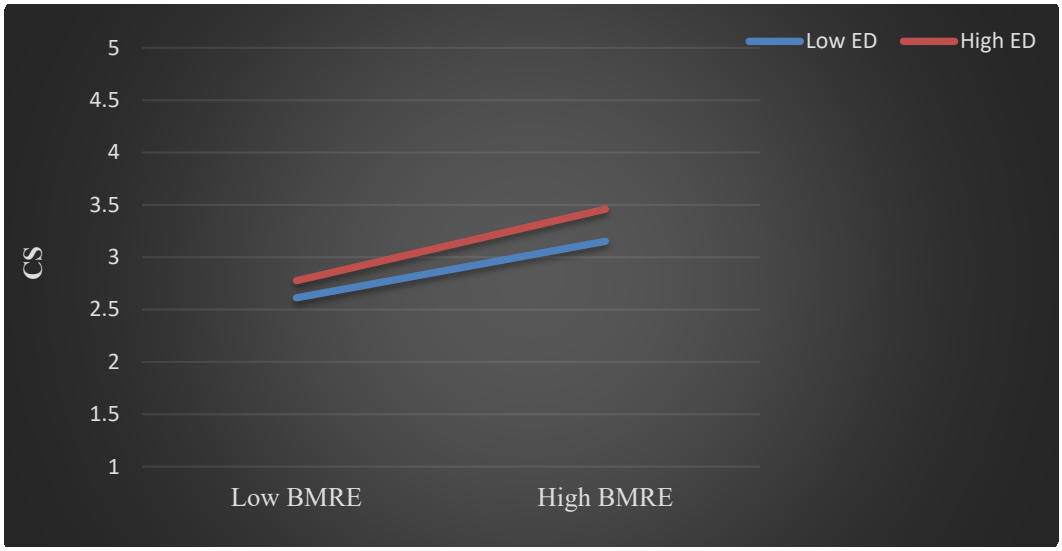


Fig 4: Moderating effect of ED on BMRE and CS

6. DISCUSSION AND IMPLICATIONS

The study adds to our understanding regarding the influence of the two elements of business model innovation on corporate sustainability practices. We thereby contribute to escalating our understanding of the role of organizational learning and strategic flexibility as mediating variables and environmental dynamism as moderating variable. The results indicate all the formulated hypotheses are supported by the data. There are no contradictory findings to the existing literature that has been identified. Previous research has also underlined the importance of the change in business models to improve firm performance (Gambardella and McGahan, 2010, p. 263; Amit and Zott, 2010). Very few studies tried to explore the association between corporate sustainability and business model innovation (DuBose, 2000; Lovins et al. 1999) and is referred as business case for sustainability and business case for sustainability. The knowledge that organization imbibes out of learning from the external environment is the key to select the element of business model innovation. Thus, the finding of the association between business model innovation and organizational learning is significant (Lumpkin and Lichtenstein, 2005; Zhao et al., 2014). In line with this, Morris et al., (2005) also highlighted that the interface between business model design and the external environmental is especially critical Imitating business model gives a premise of reference to diagnose and solve issues (Winter and Szulanski, 2001). This evidence supports the study finding of environmental dynamism enhances the relationship between the elements of business model innovation and corporate sustainability. Strategic flexibility refers to firms' ability to alter the plans and strategies in order to adapt to internal and external environmental changes (Combe and Greenley, 2004; Lei et al., 1996; Matusik and Hill, 1998; Sanchez,

1995) and react promptly to the developments (Shimizu and Hitt, 2004). Although the importance of strategic flexibility is acknowledged widely by the scholars, still the extent to which strategic flexibility affects and gets influenced by other factors are rarely analyzed in empirical sense (Combe et al., 2012; Santos-Vijande et al., 2012). Thus evidence supports the study finding of strategic flexibility being a mediator between the elements of business model innovation and corporate sustainability.

7. CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH AVENUES

The study provides future directions both at the conceptual and empirical level. The results of this study build on the current body of research by examining the direct and interactional effects of business model innovation on corporate sustainability practices. In doing so, this research demonstrates that the type and intensity of business model innovation perceptions by the employees at the organizational level among the select pharmaceutical companies in Indian. Like any other empirical study, the present study too suffers from few limitations. The use of cross sectional design would have hampered the evaluation of the causality among the dependent and independent variables. In order to overcome this limitation, longitudinal or preferably experimental designs can be used in the future studies to validate the proposed research model. Even though, the present had tested for the presence of face and content validity, the results might have got affected. The authors recommend the future researchers to develop the scales respect to specific country context and test it. Lastly, instead of corporate sustainability practices, corporate sustainability strategies can be adopted as the outcome variable and other elements of business models such as revenue model can be included as part of the future studies.

References

Aguinis, H., & Glavas, A. (2012). What we know and don't know about corporate social responsibility a review and research agenda. *Journal of management*, *38*(4), 932-968.

Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple regression: Testing and interpreting interactions*. Sage.

Alt R, Zimmerman HD. Introduction to special section on business models. Electron Mark 2001;11(1):3 – 9. and realized absorptive capacity: How do organizational antecedents matter?.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological bulletin*, *103*(3), 411.

Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of marketing research*, 396-402.

Aspara, J., Hietanen, J., & Tikkanen, H. (2010). Business model innovation vs replication: financial performance implications of strategic emphases. *Journal of Strategic Marketing*, *18*(1), 39-56.

Baden-Fuller, C., & Haefliger, S. (2013). Business models and technological innovation. *Long Range Planning*, *46*(6), 419-426.

Bocken, N. M. P., Rana, P., & Short, S. W. (2015). Value mapping for sustainable business thinking. *Journal of Industrial and Production Engineering*, *32*(1), 67-81.

Bocken, N. M. P., Short, S. W., Rana, P., & Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, *65*, 42-56.

Boons, F., & Lüdeke-Freund, F. (2013). Business models for sustainable innovation: state-of-the-art and steps towards a research agenda. *Journal of Cleaner Production*, *45*, 9-19.

Burgers, J.H., Jansen, J.J.P., Van Den Bosch, F.A.J., & Volberda, H.W. (2009). Structural differentiation and corporate venturing: The moderating role of formal and informal integration mechanisms. *Journal of Business Venturing*, *24*, 206-220.

Grewal, R. and Tansuhaj, P. (2001). 'Building organizational capabilities for managing economic crisis: the role of market orientation and strategic flexibility'. Journal of Marketing, 65, 67–80.

Grewal, R., & Tansuhaj, P. (2001). Building organizational capabilities for managing economic crisis: The role of market orientation and strategic flexibility. *Journal of marketing*, *65*(2), 67-80.

Hult, G. T. M., Hurley, R. F., Giunipero, L. C., & Nichols, E. L. (2000). Organizational Learning in Global Purchasing: A Model and Test of Internal Users and Corporate Buyers*. *Decision sciences*, *31*(2), 293-325.

Huber, G. P. 1991. Organization Learning: The Contributing Processes and the Literatures. *Organization Science*, 2(l): 88–115.

Nadkarni, S., & Herrmann, P. O. L. (2010). CEO personality, strategic flexibility, and firm performance: The case of the Indian business process outsourcing industry. *Academy of Management Journal*, *53*(5), 1050-1073.

Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of management*, *12*(4), 531-544.

Polit, D. F., & Beck, C. T. (2004). *Nursing research: Principles and methods*. Lippincott Williams & Wilkins.

Sirmon, D. G., Hitt, M. A., Ireland, R. D., & Gilbert, B. A. (2011). Resource orchestration to create competitive advantage breadth, depth, and life cycle effects. *Journal of Management*, *37*(5), 1390-1412.

Sommer, A. (2012). *Managing green business model transformations*. Berlin, Germany: Springer.

Schaltegger, S., Lüdeke-Freund, F., & Hansen, E. (2012). Business cases for sustainability: The role of business model innovation for corporate sustainability. *International Journal of Innovation & Sustainable Development*, *6*, 95-119

Slater, S. F., & Mohr, J. J. (2006). Successful development and commercialization of technological innovation: Insights based on strategy type. *Journal of Product Innovation Management*, *23*(1), 26-33.

Smith, P. A., & Sharicz, C. (2011). The shift needed for sustainability. *The Learning Organization*, *18*(1), 73-86.
Spieth, P., Schneckenberg, D., & Ricart, J. E. (2014). Business model innovation–state of the art and future challenges for the field. *R&D Management*, *44*(3), 237-247.

Winter, S. G., & Szulanski, G. (2001). Replication as strategy. *Organization science*, *12*(6), 730-743.

Wirtz, B. W., Pistoia, A., Ullrich, S., & Göttel, V. (2015). Business Models: Origin, Development and Future Research Perspectives. *Long Range Planning*.

Zhao, J., Wang, M., Zhu, L., & Ding, J. (2014). Corporate Social Capital and Business Model Innovation: The Mediating Role of Organizational Learning.*Frontiers of Business Research in China*, *8*(4), 500-528.

Zott, C., Amit, R., & Massa, L. (2011). The business model: recent developments and future research. *Journal of management*, *37*(4), 1019-1042.

The Impact of Safety Climate and Co-Worker Support on Intention of Using Near-Miss Incident Reporting System

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ABSTRACT

Near-misses management has drawn the attention of safety specialists to reduce the likelihood of future catastrophe for improving employee safety and process reliability. Though near miss reporting systems could be implemented successfully from a technical perspective, success may depend on employees being willing to use the delivered system. This paper examined the impact of safety climate as well as co-worker support on near miss reporting intention. A model of near miss reporting system usage intention by incorporating safety climate, co-worker support with extended technology acceptance model (TAM2), was proposed. 313 samples from several departments of a manufacturing company were valid for analyses. We found out that (1) Behavioral intention to use a near miss incident reporting system was affected indirectly by safety climate and self-efficacy. And computer self-efficacy had less impact on intention than safety climate. (2)The behavioral intention was directly influenced by subjective norm, perceived usefulness and perceived ease-of use. Subjective norm exerted almost the same impact on intentions as perceived usefulness did. (3) Safety climate had effect on both subjective norm and co-worker support. (4) Safety climate indirectly influence perceived usefulness via subjective norm as well as co-worker support. The usage of incident reporting system was mainly affected by human factors more than practical factors in our findings. Managerial implications were then discussed.

Keyword: Safety Climate, Extended Technology Acceptance Model, Social Support

1. Introduction

Near-miss incident was defined as a incident having potential to, but do not, result in property loss or human hurt. According to well-known safety pyramid (Bird & Germain, 1996), accidents at the pyramid pinnacle result in injury loss and significant disruption of production process that usually draw the attention of the management. But much larger number of near-miss incidents comprise the lower portion of pyramid, despite their limited impact, near-miss incidents provide insight into accidents that could happen (Phimister et al., 2003). Therefore, it has been recognized that increasing near-miss incident reporting rate corresponded to lost work time injuries reduction (Jones et al., 1999).

A recognized near-miss incident has only limited value, unless it is reported and analyzed with appropriate measurements to prevent its recurrence (Oktem, 2003；March et al., 1991). To reduce the likelihood of future catastrophe for improving employee safety and process reliability, managers need to seek and utilize near-miss incidents (March et al., 1991). Near-misses management has drawn the attention of

safety specialists, and many companies have built up near-miss reporting information system for collecting near-misses report. However, even a near-miss incident is recognized, there is no assurance that it will be reported. Employees may be reluctant to report near-misses due to potential recriminations. The results included peer pressure, investigation, and unintended disciplinary actions (Phimister et al., 2003). Though near miss reporting systems could be implemented successfully from a technical perspective, success may depend on employees being willing to use the delivered system. Social support from co-woker might eliminate recriminations and facilitate system implementation. The current paper examined the impact of safety climate and social support on near miss reporting intention.

We defined a model of near miss reporting system usage intention by incorporating safety climate and co-woker' support with behavior intention theory, including theory of reasoned action (TRA) (Fishbein and Ajzen, 1975) and extended technology acceptance model (TAM2) (Venkatesh and Davis, 2000).

2. Conceptual Model And Research Hypothesis

2.1 Behavioral intention of information technology (IT) usage.

Theory of reasoned action (TRA) proposed by Fishbein and Ajzen (1975) is a model to predict and explain human behavior. According to TRA, a person's specified behavior is determined by his or her behavioral intention to perform the behavior, which is jointly determined by the person's attitude and subjective norm (SN) concerned the behavior in question. Subjective norm refers to the person's perception that most people that are important to him/her think he/she should or should not perform the behavior in question. Davis (1989) proposed a technology acceptance model (TAM) derived from TRA, It posits that behavioral intentions to use IT are determined by an individual's attitude toward using the IT, as well as beliefs the user holds about its perceived usefulness (PU). Attitude, in turn, is determined by PU and perceived ease-of-use (EOU). *PU* is defined as the degree to which a person believes that use of a system would improve his or her performance (Davis, 1989), and thus taps into the instrumental outcomes a user associates with technology use. *EOU* refers to the degree to which a person believes that using a particular system would be effortless (Davis 1989). Even though both PU and EOU are significantly correlated with intentions, Davis' findings suggest that PU mediate the effect of EOU on behavioral intentions.

Venkatesh and Davis (2000) extended the original TAM model to explain perceived usefulness and usage intentions in terms of social influence and cognitive instrumental processes. The extended model, referred to as TAM2, was tested in both voluntary and mandatory settings. Subjective norm (SN), which was defined as an individual's perception of social normative pressures or relevant others' beliefs that he or she should or should not perform the behavior, played the role of both direct impact on BI and indirect impact on BI by mediation of PU in model TAM2. Based on the foregoing discussion and the previous studies, the following hypotheses were proposed.

H1a: Subjective norm (SN) has a direct effect on behavioral intention (BI) to use the information system.

H1b: Subjective norm (SN) has an indirect effect on behavioral intention (BI) through perceived usefulness PU.

H2: Perceived usefulness (PU) has a direct effect on behavioral intention (BI) to use the information system.

H3a: Perceived ease-of-use (EOU) has a direct effect on perceived usefulness (PU).

H3b: Perceived ease-of-use (EOU) has a direct effect on behavioral intention (BI) to use the information system.

2.2 Safety Climate

Safety climate reflected employees' perception of the organization's safety efforts, Zohar defined safety climate as employees' perception of the priority that organization and supervisors placed on safety (Zohar & Luria, 2005; Johnson, 2007). Safety climate was derived from the temporal state measure of safety culture, refers to the perceived state of safety in a particular place at a particular time, and subject to change depending on the features of the current environment or prevailing conditions (Zhang et al., 2002; Lin et al., 2008). Flin et al. (2000) found that management commitment was the prime theme of safety climate, appearing in 13 out of the 18 research scales. Safety climate perceptions involve a process of social exchange (Cole et al., 2002; Eisenberger et al., 1986), that predicts if employees perceived organization concerned for their well-being, then they will develop an implicit obligation to reciprocate by carrying out citizenship activities to benefit the organization (Tsui et al., 1997).

Safety participation describes safety citizenship behaviors that do not directly contribute to an individual's personal safety but that do help to develop an environment that supports safety. These behaviors include activities such as participating in voluntary safety activities, helping coworkers with safety-related issues and attending safety meetings (Neal & Griffin, 2006). Reporting near miss incidents is part of safety participation intrinsically. Some researchers suggested safety climate was the antecedent of safety participation (Neal and Griffin, 2006; Hedlund et al.,2010), that implies safety climate may affect employees' motivation to report near miss incidents. Positive safety climate was found to maintain involvement in safety participation (Neal *et al.*, 2000), that implied organizations with good safety climate tend to have good subjectve norm of encouraging employee to concern more about others' safety. Based on the foregoing discussion, the following hypotheis was proposed.

H4: Safety climate has a direct effect on subjective norm (SN).

2.3 Computer Self-Efficacy

A key element in social learning theory is the concept of self-efficacy (SE), which refers to an individual's belief in his or her capability to perform a specific task (Bandura 1986). Self-efficacy is a dynamic construct that reflects more than just an ability assessment. An individual's judgment of SE reflects an orchestration or mobilization component that includes both motivational and integrative aspects (Gist and Mitchell 1992, Wood and Bandura 1989). In other words, SE reflects not only an

individual's perception of his or her ability to perform a particular task based on past performance or experience but also forms a critical influence on future intentions (Marakas et al. 1998).

Prior research consistently indicates that computer self-efficacy (CSE) is positively correlated with an individual's willingness to choose and participate in computer-related activities, expectations of success in such activities, and persistence or effective coping behaviors when faced with computer-related difficulties (Compeau & Higgins, 1995).

A study conducted by Igbaria and Iivari (1995) on impact of computer self-efficacy on computer use found that computer self-efficacy has a strong direct effect on PEU, but only an indirect effect on perceived usefulness through perceived ease-of-use. They also found that computer self-efficacy has no direct effect on computer usage.

H5: Computer self-efficacy (SEF) has a direct effect on perceived ease-of-use (EOU).

2.4 Co-woker Support

The acceptance and usage of new ITs is affected by social influence. Taylor and Todd (1995b) observed a key role played by other people's opinion, superior influence, and peer influence on social influence. The study of online professional services indicated that perceived usefulness is positively related to four major variables: perceived ease-of-use, social influences, individual differences(Kostopoulos et.al.,2012). Accordingly, peer influences which were part of social influences could exert positive effects on perceived usefulness of information system. Peer influences include the co-worker support. Job control and co-worker support were positively related to job performance(Nagami et al.,2010).The study revealed that it was worthwhile to enhance employees' job control and provided a mutually supportive environment to ensure positive employee job performance. Previous study proved that social influence enhances perceived usefulness; and computer self-efficacy and technology facility influence the perceived ease-of-use (Nath et al.,2013). A supportive environment facilitated co-worker support while applying information system. Therefore the following hypotheses were provided.

H6: The safety climate has a direct effect on co-worker support.

H7: The co-worker support has a direct effect on perceived usefulness.

2.5 Research model

To explore how safety climate affected an individual's intention of using near miss reporting system, we developed a model based on psychological antecedents and consequences relationship as previous discussion. The research model is shown in figure 1.

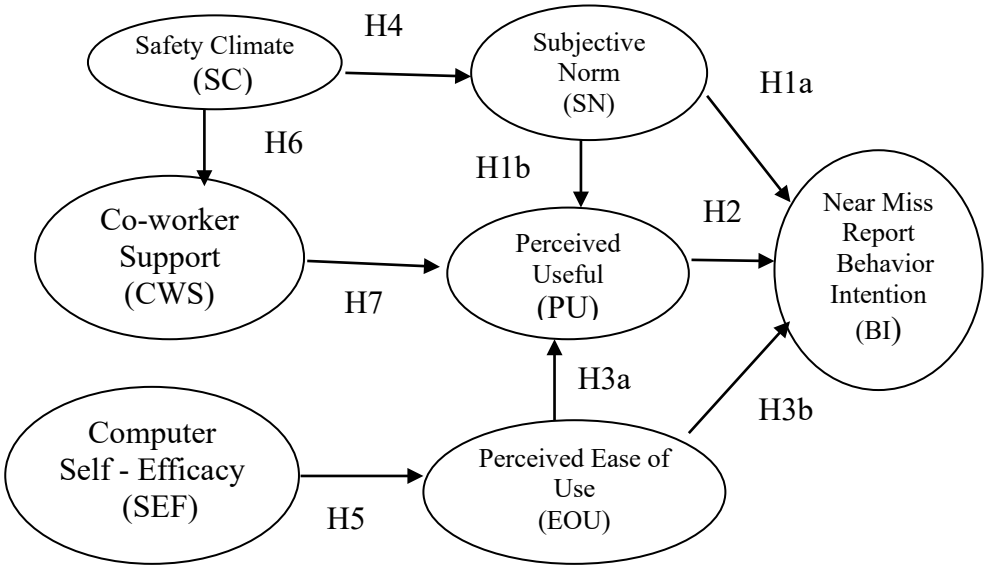


Figure 1 、 Hypothesized Relationships Among

3. Research Method

3.1 Instrument Development

The survey items used to measure the constructs in our study were adapted from previous studies, each survey item was reviewed by research team consisting of scholars and safety specialists to check its face validity, and then refined after pilot test.

Survey questionnaire contained 27 items, all question items were measured using five point Likert-type scale ranging from “Strongly Disagree” (1) to “Strongly Agree’ (5). As the survey items were gathered at the same time and by the same person, risk of common method variance might bias the result, three extra survey items were designed in reverse scoring to reduce the effect as proposed by Podsakoff et al. (2003).

Survey items are adapted from previous researches. Six items adapted from Zohar & Luria (2005) are for safety climate. Four items adapted from Conner& Sparks (2005) are for subjective norm. Four items adapted from Davis (1989) are for perceived usefulness. Three items adapted from Davis (1989) are for ease-of-use. Three items adapted from Veskatech & Davis (1996) are for computer self-efficacy. Four items modified from Veskatech & Davis (1996) are for behavioral intention. Three items were designed for co-worker support.

3.2 Sample Characteristic

Cooper and Phillips (2004) recommended that an organization's functional department is the appropriate level of analysis and aggregation of individual response to safety climate, so this research chose a manufacturing company with several departments for sampling. Four hundred employees having reported near-miss incidents were sampled for questionnaires, and 313 valid responds were received, yielding a valid sampling rate of 78.25%. Demographics of the study sample are shown in table 1.

Table 1 、Demographics of study sample

Variable	Item	Number	%
Tenure	<5 y	87	27.8
	5-10 y	35	11.2
	10-15 y	25	8
	15y <	166	53.0
Position	Operators	69	22.0
	Supervisors	79	25.2
	Engineers	145	46.3
	Managers	20	6.4
Education	High School	61	19.5
	College	62	19.8
	University	92	29.4
	Graduate School	98	31.3
Work Type	Maintenance	111	35.5
	Production	154	49.2
	Administration	9	2.9
	QC & RD	39	12.5
Cases of near miss reporting	1	26	8.3
	2~4	184	58.8
	5~10	77	24.6
	10~20	21	6.7
	21~	5	1.6

4. Data Analysis and Result

4.1 Estimation of Measurement Model

Measurement data were analyzed in two-step methodology by statistics programs AMOS . First checked the measurement model to investigate the relationships between the observed items and the latent constructs they measure then checked

structure model that described the relationships among theoretical constructs. Through this procedure, the model has been adjusted to create the best measurement model, and then structure equation model was analyzed. In this study, the model effectiveness was examined by seven common model fit measurement indices and their desired values were: normed-χ^2 (<3.0), goodness-of-fit index GFI (>0.90), comparative fit index CFI (>0.9), normal fit index NFI (>.0.9), incremental fit index IFI (>0.9), root mean square error of approximation RMSEA (<0.05).

4.2 Confirmatory Factor Analysis (CFA)

The reliability study indicated the degree of internal consistency between the multiple variables that make up the scale, and represented the extent to which the indicators or items of the scale are measuring the same concepts (Churchill, 1979). Cronbach's α greater than 0.7 was considered to be adequate reliability of measurement items toward the latent construct (Nunnally, 1978). Cronbach's α of all constructs in table 2 exceeded acceptable thresholds, and thus implied adequate reliability of measurements.

Table 2. Results of CFA data

Dimension	Variable	Loading λ	Cronbach's Alpha	CR	AVE
Safety Climate (SC)	SC-1	0.801	0.897	0.895	0.630
	SC-2	0.713			
	SC-4	0.802			
	SC-5	0.809			
	SC-6	0.838			
Subjective norm (SN)	SN-1	0.723	0.765	0.763	0.518
	SN-3	0.675			
	SN-4	0.758			
Perceived useful (PU)	PU-1	0.803	0.910	0.900	0.693
	PU-2	0.819			
	PU-3	0.865			
	PU-4	0.842			
Co-Worker Support (CWS)	CWS-1	0.746	0.806	0.835	0.630
	CWS-2	0.749			
	CWS-3	0.878			
Perceived ease-of-use (EOU)	EOU-1	0.792	0.890	0.894	0.739
	EOU-2	0.843			
	EOU-3	0.937			
Computer Self-Efficacy (SEF):	SEF-1	0.700	0.790	0.777	0.838
	SEF-2	0.775			
	SEF-3	0.724			
Behavioral intention (BI)	BI-1	0.738	0.750	0.784	0.547
	BI-3	0.760			
	BI-4	0.721			

Convergent validity was assessed using factor loading (λ), composite reliability index (CR) and average variance extracted (AVE) to determine the relation between the measurement variable to the corresponding latent variable (Anderson & Gerbing,

1988). Factor loading exceeded 0.7, composite reliability index exceeded 0.7 and AVE exceeded 0.5 were supporting criterion for convergent validity (Fornell and Larcker, 1981). In table 2, standardized factor loading of item SN-3(0.67) is slightly less than 0.7, all the rest factor loadings are greater than 0.7. Composite reliability indices of the items in the measurement model were greater than 0.7, and AVEs were greater than 0.5, therefore construct convergent validity are adequate. Discriminate validity indicated the extent to which two conceptually similar concepts differ, and was investigated by estimating the 95% confidence interval of the correlation coefficient between constructs, with the aim being to ensure that no interval contains 1.0, then we can say discriminant validity was supported (Torkzadeh et al. 2003). In table 3, no any confidence interval of the correlation coefficient contained 1.0, implied adequate discriminate validity between constructs. As correlation factors of BI-SN , BI-PU, BI-CWS and CWS-SN were greater than squared root of AVE of BI,AVE of CWS, discriminate validity was further verified by assuming the correlation factor to be 1.0 then compared the significant model difference to original correlation factor (Anderson & Gerbing, 1988). The result of comparison is shown in table 4, discrimination validity of BI-SN , BI-PU, BI-CWS and CWS-SN were verified.

Table 3、 Correlation between each two constructs

	SC	SN	CWS	PU	SEF	EOU	BI
SC	0.794						
SN	0.518 (0.377-0.639)	0.720					
CWS	0.356 (0.232-0.478)	***0.823*** *(0.717-0.931)*	0.794				
PU	0.326 (0.175-0.471)	0.643 (0.522-0.752)	0.696 (0.579-0.789)	0.832			
SEF	0.362 (0.195-0.492)	0.468 (0.282-0.619)	0.367 (0.217-0.517)	0.439 (0.305-0.567)	0.733		
EOU	0.303 (0.164-0.430)	0.483 (0.331-0.608)	0.498 (0.340-0.621)	0.554 (0.425-0.677)	0.460 (0.319-0.592)	0.860	
BI	0.370 (0.213-0.515)	***0.874*** *(0.808-0.948)*	***0.807*** *(0.734-0.879)*	***0.873*** *(0.797-0.935)*	0.356 (0.192-0.523)	0.599 (0.466-0.716)	0.740

Correlations were in 95% confidence interval; Diagonal is squared root of AVE

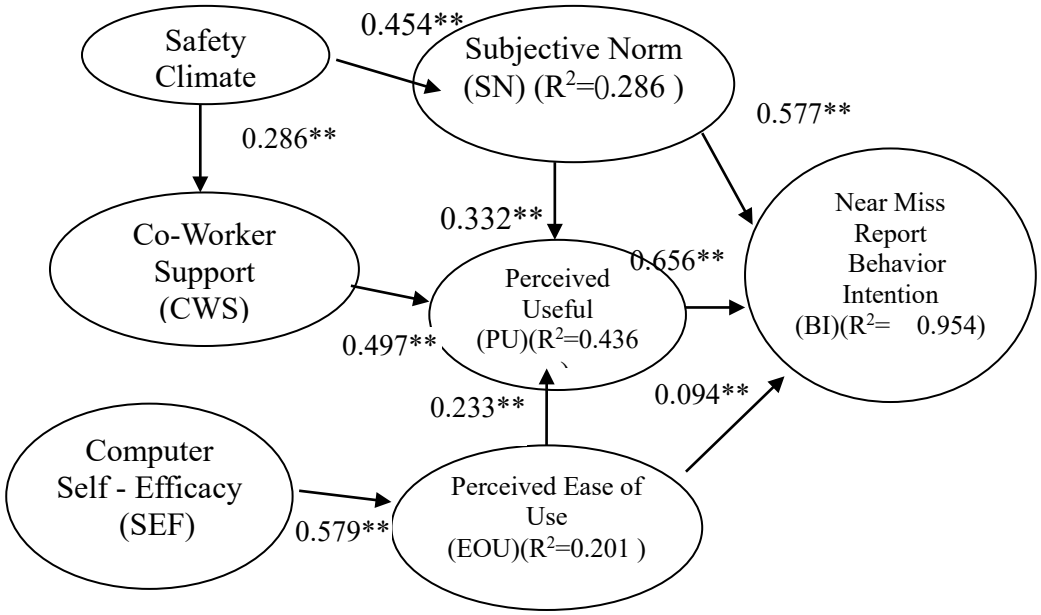
Table 4、 Verification data of BI-PU, BI-SN BI-CWS and CWS-SN discriminate validity

	Model	Corr.	DF	CMIN	CMIN/DF	Delta (DF)	Delta (CMIN)	p	Model difference
CWS vs SN	unconstrained	0.823	7	25.05	3.58	1	120.1	0.000<0.05	Significant
	constrained	1.0	8	145.45	18.14				
BI vs CWS	unconstrained	0.807	6	7.98	1.33	1	117.13	0.000<0.05	Significant
	constrained	1.0	7	125.11	17.87				
BI vs PU	unconstrained	0.873	11	28.23	2.57	1	107.37	0.000<0.05	Significant
	constrained	1.0	12	135.62	11.3				
BI vs SN	unconstrained	0.868	7	12.31	1.76	1	119.05	0.000<0.05	Significant
	constrained	1.0	8	131.36	16.42				

Measurement model was examined by confirmatory factor analysis, and measurement models were revised by removing items that had large standardized residues with other items, one at a time. After dropping items with Cronbach's α less than 0.7, the measurement models exhibited overall good fit. The model fit results χ^2 (212) =337.271, Normed-χ^2 = 1.591, RMSEA=0.044, GFI =0.920, CFI =0.972, TLI =0.964, IFI=0.973, all criteria were fitted.

4.3 Structure Model

The structure model was examined using the cleansed measurement model, overall model fit indices are normed-χ^2= 2.431, RMSEA=0.068, GFI =0.882, CFI =0.936, IFI =0.937, NFI =0.897. Except RMSEA is slightly greater than 0.05, all other model fit indices are greater than 0.9, the results suggested the structure model fit the data adequately. The standardized path coefficients are shown in figure 2. Hypotheses H1a, H1b, H2, H3a, H3b, H4, H5, H6 and H7 are supported.



χ^2 (205) =498.306, Normed-χ^2 =2.431, RMSEA=0.068, GFI =0.882, CFI =0.936, IFI=0.937, NFI=0.897, TLI =0.913

Figure 2、: Structural Model l from SEM Analysis

5. Discussion and Implication

5.1 Findings and Limitations

In our analysis, we found that behavioral intention to use a near-miss incident reporting system was affected indirectly by safety climate, which also influenced the PU and SN of using the system. It was also observed that safety climate played an important role by identifying the explained variances. Subjective norm, co-worker support and perceived ease-of-use accounted for 43% of the variance in PU, safety climate explained 28% of the variance in SN and computer self-efficacy explained 20% of the variance in EOU. Moreover, SN, PU and EOU had significant positive effects on the usage intention of near-miss reporting systems. They accounted for 95% of the variance of behavioral intentions.

Co-worker support had the greatest effect (=.497) on perceived usefulness among safety, co-worker support and computer self-efficacy. The subjective norm showed the greatest effect (=.787) on behavioral intention among itself, perceived usefulness and perceived ease-of-use. These results were list on table 5. Support from co-worker and support from the employee's norm would result in usage intention of near-miss reporting system. It is the human support that counts more than system usefulness while implementing the incident reporting system.

Table 5、 The direct, indirect, and total effects of each construct												
	SN			PU			PEOU			BI		
	Dir.	Ind.	total	Dir.	Ind	total	Dir.	Ind	total	Dir.	Ind	total
SC	.454				.150	.150					.261	.261
CWS				.497		**.497**					.320	.320
CSF					.134	.134	.579		.579		.05	.05
SN				.33		.33				.577	.21	**.787**
PU										.656		.656
PEOU				.233		.233				.094	.152	.264

This study has limitations that circumscribe the interpretation of its findings. First, measures of all constructs were gathered at the same time and through the same instrument. Consequently, common method variance exists. Due to the cross-sectional and retrospective nature of this study, causality could only be inferred via theory: a longitudinal approach needs to be considered.

5.2. Implications

From a theoretical perspective, our study developed an integrated framework that provides a rich understanding of IT implementation. From the practical perspective, our findings shed light on managers to pay attention to the role of safety climate as well as co-worker support in promoting near miss incident reporting system implementation. Therefore, our findings emphasized the importance of managers' safety attitudes which also affected the co-worker supporting attitude. If employees perceived organization concerned for their workplace safety, then they will be more likely to reciprocate by carrying near-miss reporting to benefit the organization.

In our analysis, we found that behavioral intention to use a near-miss incident reporting system was affected indirectly by safety climate, which also influenced the co-worker supporting attitude and subjective norm of using the system. It was also observed that co-worker support significantly affected the perceived usefulness of the system. Perceived usefulness still showed the most significant factor in using the reporting system. The result was consistent with most studies of information system implementation. Though perceived ease-of-use had significant effect on behavioral intentions, the significance it exerted was the least one among the three, subjective norm, perceived usefulness and perceived ease-of-use. The interface and friendliness of the system was less influential than the usefulness of the system regarding user intention. In our other studies we also found implementation of near miss reporting system will strengthen the employee’s safety awareness of their workplace that will improve the safety performance for the whole organization.

From a theoretical perspective, our study developed an integrated framework that provides a rich understanding of IT implementation. From the practical perspective, our findings shed light on managers to pay attention to the role of safety climate which had influences both on subjective norm of safety reporting and co-worker support in promoting near miss incident reporting system implementation. If managers put emphases on building strong safety climate, the usefulness of the near-miss reporting system would then be promoted and the usage intention would higher.

6. Conclusion

As near miss incidents reporting played a very important role of improving organization safety performance, and has been one of the key aspects of incident prevention activities, our research high-lighted the impact of organization safety climate toward the workers' intention to report near miss incident, and also through the process of reporting near miss incidents, workers perceive the hazards of workplace. From a theoretical perspective, our study developed an integrated framework that provides a rich understanding of IT implementation. Our findings shed light on management practices. Managers need to pay attention to the role of safety climate in promoting near-miss incident reporting system implementation. Co-worker support and subjective safety norm will be strengthened in good safety climate. Our findings emphasized the importance of managers' safety attitudes. If employees perceived that the organization concerned for their workplace safety, they will be more likely to reciprocate by carrying near-miss reporting to benefit the organization.

REFERENCES

Anderson, J.C. and Gerbing, D.W. 1988. Structural Equation Modeling in Practice: A Review and Recommend Two-Step Approach. *Psychological Bulletin*, 103(3), 411-423.

Antecedents of online Professional Services' Perceived Usefulness: An Empirical Research, *International Journal of Management Cases*, 14(4), 73-81.

Bird, F.E. and Germain, G.L. 1996. Practical Loss Control Leadership, Loganville, GA:Det Norske Verita.

Churchill, G.A. 1979. A Paradigm for Developing Better Measures for Marketing Constructs. *Journal of Marketing Research,* 16(1), 64-73.

Cole, M.S., Schaninger, W.S. and Harris, S.G. 2002. The Workplace Social Exchange Network: A Multilevel, Conceptual Examination, *Group and Organization Management*, 27 (1), 142-167.

Compeau, D. R. and Higgins, C. A. 1995. Computer Self-Efficacy: Development of A Measure and Initial Test. *MIS Quarterly*, 19(1), 189-211.

Conner, M., and Sparks, P. 2005. Theory of Planned Behaviour and Health Behaviour. in M. Conner and P. Sparks (Eds.), *Predicting health behaviour: Research and practice with social cognition models 2nd edition,* 170-222, Mainhead: Open University Press.

Cooper, M.D., and Phillips, R.A. 2004. Exploratory Analysis of The Safety Climate and Safety Behavior Relationship. *Journal of Safety Research,* 35(5), 497-512.

Davis, F. D. 1989. Perceived Usefulness, Perceived ease-of-use, and User Acceptance of Information Technology, *MIS Quarterly, 13*(3), 319-340.

Eisenberger, R., Huntington, R., Hutchison, S., and Sowa, D. 1986. Perceived Organizational Support. *Journal of Applied Psychology, 71,* 500–507.

Fishbein, M., and Ajzen, I. 1975. Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research. Reading, MA:Addison-Wesley.

Flin, R., Mearns, K., O'Connor, P., Bryden, R. 2000. Measuring Safety Climate: Identifying The Common Features. *Safety Science*, 34(1-3), 177-192.

Fornell, C., and Larcker, D. F. 1981. Evaluating Structural Equation Models With Unobservable and Measurement Errors. *Journal of Marketing Research*, 18(1), 39-50.

Gist, M. E., and Mitchell, T. R. 1992. Self-Efficacy: A Theoretical Analysis of Its

Determinants and Malleability, *Academy of Management Review*, 17, 183-211.

Hedlund, A., Ateg, M., Andersson, I., Rosen, G. 2010, Assessing Motivation For Work Environments: Internal Consistency, Reliability and Factorial Structure, *Journal of Safety Research*, 41, 145-151

Igbaria, M. and Iivari,, J. 1995. The effects of self-efficacy on computer usage. OMEGA International Journal of Management Science, 23, 587-605.

Job Control and Coworker Support Improve Employee Job Performance, *Industrial health*, 48(6),845-851

Johnson, S.E. 2007. The Predictive Validity of Safety Climate. *Journal of Safety Research*, 38(5), 511-521.

Jones, S., Kirchsteiger, C. and Bjerke, W. 1999. The Importance of Near Miss Reporting to Further Improve Safety Performance, *Journal of Loss Prevention in the Process Industries*, 12, 59-67

Kostopoulos, G., Rizomyliotis, I. and Konstantoulaki, K.2012. Antecedents of Online Professional Services' Perceived Usefulness: An Empirical Research, *International Journal of Management Cases*, 14(4), 73-81

Lin, S.H., Tang, W.J., Miao, J.Y., Wang, Z.M., and Wang, P.X. 2008. Safety Climate Measurement At Workplace in China: A Validity and Reliability Assessment. *Safety Science*, 46(7), 1037-1046.

Marakas, G. M., Mun, Y. Y. and Johnson, R.D. 1998. The Multilevel and Multifaceted Character of Computer Self-Efficacy: Toward Clarification of the Construct and an Integrative Framework for Research, *Information Systems Research*, 9, 126-163.

March, J.G., Sproull, L.S. and Tamuz, M.1991. Learning From Samples of One or Fewer, *Organization Science*, 2, 1-13.

Nagami, M., Tsutsumi, A., Tsuchiya, M. and Morimoto, K. 2010. Job control and coworker support improve employee job performance, *Industrial health*, 48(6), 845-51

Nath, R., Bhal, K.T., Kapoor, G.T. 2013. Factors Influencing IT Adoption by Bank Employees: An Extended TAM Approach, Vikalpa: *The Journal for Decision Makers*, 38(4),83-96

Neal, A., and Griffin, M.A. 2006. A Study of the Lagged Relationships Among Safety Climate, Safety Motivation, Safety Behavior, and Accidents at the Individual and Group Levels, *Journal of Applied Psychology*, 91(4), 946–953

Neal, A., Griffin, M. A., and Hart, P. M. (2000). The impact of organizational climate on safety climate and individual behavior. *Safety Science, 34,* 99–109.

Nunnally, J.C. 1978. Psychometric Theory. New York, NY: McGraw-Hill.

Oktem, U.G. 2003. Near Miss-A Tool for Integrated Safety, Health, Environmental and Security Management, *37th annual AlchE loss prevention Symposium* "Integration of Safety and Environmental Concepts", March 30 - April 3, 2003

Phimister, J. R. , Oktem, U., Kleindorfer, P. R. and Kunreuther., H. 2003. Near-Miss Incident Management in the Chemical Process Industry, *Risk Analysis*, 23(3), 445-59

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., and Padsakoff, N. P. 2003. Common Method Biases in Behavioral Research: A Critical Review of The Literature and Recommended Remedies. *Journal of Applied Psychology*, 88(5), 879-903

Taylor, S. and Todd, P.A. 1995b. Understanding Information Technology Usage: A Test of Competing Models. *Information Systems Research*, 6(2), 144-76

Teo,T.2011. Modeling The Determinants of Pre-Service Teachers' Perceived Usefulness of E-Learning,*Campus-Wide Information Systems*,28(2), 124-140

Torkzadeh, G., Koufteros, X. and Pflughoeft, K. 2003. Confirmatory Analysis of Computer Self-Efficacy. *Structural Equation Modeling*, 10(2), 263-275.

Tsui, A. S., Pearce, J. L., Porter, L., and Tripoli, A. M. 1997. Alternative Approaches to The Employee-Organization Relationship: Does Investment in Employees Pay off? *Academy of Management Journal, 40,* 1089–1121.

Venkatesh, V. and Davis, F. D. 1996. A Model of The Antecedents of Perceived Ease-Of-Use: Development and Test. *Decision Science.* **27**(3) 451–481.

Wood, R. E. and and A. Bandura 1989. Impact of Conceptions of Ability on Self-Regulatory Mechanisms and Complex Decision-Making, *Personality and Social Psychology*, 56, 407-415

Zhang, H., Wiegmann, D.A., Thaden, T.L., Sharma, G., Mitchell, A.A. 2002. Safety culture: A concept in chaos? *Processing of 46th Annual Meeting of the Human Factors and Ergonomics Society*. Santa Monica, Human Factors and Ergonomics Society.

Zohar, D., and Luria, G. 2005. A Multilevel Model of Safety Climate: Cross-Level Relationships Between Organization and Group-Level Climates. *Journal of Applied Psychology*, 90, 616-628

The Antecedents of The Islamic Bank Socialization Model are Viewed from Reference Groups (Islamic Scholar, Islamic Religious Education Teachers, and Community Leaders) in Indonesia

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ABSTRACT

The purpose of this study to analyze the factors of socialization of Islamic banks in terms of reference groups. The location of the research was conducted in Banyumas Regency, Indonesia. This research uses two stages of research. The first stage interviewed 9 informants from the elements are Islamic scholars, Islamic religious education teachers, and community leaders. The results of the interviews found 18 indicators then made a questionnaire. The results of collecting data collected as much as 226 data. The second stage, analyzing 226 data by using factor analysis (exploratory factor analysis). KMO (Kaiser-Meyer-Olkin) test results are eligible for all indicators above 0.50 as well as Bartlett's test of sphericity is also significant at 0.05. Furthermore, 18 indicators analyzed turns computer extraction results into 6 factors (eigen value > 1 to factor). Factors 1-6 explain 30.65%; 9.24%; 8.66%; 6.53%; 6.00%; 5.77%, respectively. The overall factor could explain 66.86% variation. The matrix component results show the grouping of indicators into 6 variables. The first variable consists of indicator X15, X16, X17, and X18 named business institutions. The second variable consists of indicator X9, X10 and X11 named Formal Education. The third variable consists of X1, X2, and X3 named Islamic Scholar. The fourth variable consists of X7, X12, X13, and X14 named Synergize. The fifth variable consists of X5 and X6 named Proactive, and six variables consisting of X4 and X8 are named Higher Education.

Keywords: Islamic Bank Socialization, Reference Groups, Antecedents,

1. Introduction

The country of Indonesia has the largest Muslim population in the world (Lugo, 2009). The country of Indonesia has the largest Muslim population in the world. This condition is very strategic for the development of sharia/ Islamic banks in Indonesia compared with other countries. However, the reality shows that the development of Islamic banks viewed from assets is not encouraging. The existence of Islamic banks in Indonesia in 1993 or about twenty-three years, the total assets of Islamic banks in Indonesia are under five percent of the total assets of conventional banks. This shows that the development of Islamic banks is not optimal (OJK, 2017b, OJK, 2017c).

Islamic banks are a relatively new banking system in Indonesia even in the world when compared to conventional banking systems that have existed and operated for a long time. Conventional Bank has ATM (Automatic Teller Machine) and branch network that already exist everywhere in the territory of Indonesia. This becomes an advantage for conventional banks in their operations. Based on the

MUI fatwa (Majelis Ulama Indonesia) in 2004 (MUI, 2004) states that the interest is haram. Islamic economics directs human beings "towards the achievement and actualization of justice (*'adl*) in human relations" through a set of regularizations "known as *halal* and *haram*, that is, what is permitted and what is forbidden" (Ahmed, 2000).

Next two years later Muhammadiyah Islamic Society through Fatwa Assembly Tarjih[1] and Tajdid[2], Muhammadiyah Central Executive (Muhammadiyah, 2006) which one of its decision appealed to all organization members and citizens of Muhammadiyah and Muslims in general to muamalat/ activity in the world in accordance with the principle of sharia.

The fatwa MUI in year 2004 about bank interest called haram in conventional banks (MUI, 2017), initially as theoretically make a positive impact on increasing the number of Indonesian people who switch from conventional banks to Islamic banks. This happens because majority of Indonesian people are Muslim. Unfortunately, the fact that occurred in 2016, the development of Islamic bank assets declined from five percent in the previous year to four percent. A survey of the financial services authorities or OJK (Otoritas Jasa Keuangan) of 2013 found that only 22 per cent of Indonesia's population understands banking services and 57 per cent of the population are already using banking services. Therefore, OJK makes the seven directions of the policy of Indonesian Islamic Banking Roadmap 2015-2019 is 1. strengthening policy synergy between authority with government and other stakeholders; 2). Strengthen capital and business scale and improve efficiency with work program; 3). Improve the structure of funds and support the expansion of the financing segment; 4). Improve service quality and product diversity; 5). Improving the quantity and quality of human resources and information technology and another infrastructure; 6). Increase community literacy and preference; 7). Strengthening and harmonizing arrangements and supervision (OJK, 2017a). Islamic bank socialization program is in the direction of program number six (Increase community literacy and preference).

Islamic bank as a relatively new banking organization desperately needs a proper targeted and effective socialization strategy so that the existence of Islamic bank can be better known and used as the main banking system when conducting banking transactions in Indonesia.

2. Literature Review

a. Current Socialization

Socialization of Islamic banks has been done by the government and community organizations, but the results were not optimal (Santoso, 2015). Indicators of the development of Islamic bank assets are still small compared with conventional banks. This is one of the important points of the need for a better socialization of Islamic banking. How socialization of Islamic banking in Indonesia can compete with the conventional bank system which for two centuries ago have been familiar with conventional banking system.

[1] Tarjih is the analytical process to establish the law by establishing stronger propositions, more precise analogy and stronger virtues.
[2] Tajdid is renewal which has two meanings, namely purification and development.

The reference groups

a. Islamic Scholar

Islamic scholar is the people who are experts in the matter or in Islamic religious knowledge (KBBI, 2017). There are many Islamic scholar in Indonesia. Islamic scholars usually have the ability not only in Islamic knowledge, but also have the ability to practice their knowledge in everyday life. This caused many followers of Islam to be astonished and respectful to the scholars of Islam. In general, Islamic scholar can be called as Kyai. Dhofier (2014) found that Kyai as a leader of pesantren (Islamic Boarding School), he is a creative leader who has directed the pesantren tradition into ever new dimension and the enormously multi-faceted panorama of pesantren life would not be what it is today without his creative genius.

Therefore, the great influence of the Islamic Scholar to the followers is enormous. Moreover, some Islamic sholas in remote areas or in remote villages are sometimes too much in compliance with the Islamic Scholar or Kyai. For example, some traditional Muslims in the villages will always hold the traditions that Kyai commands, although sometimes there is no source from the Quran and Hadith of the Prophet Muhammad, such as the seven-monthly ceremony for the pregnant woman "*Mitoni*", the seven- Day for the newly deceased family "*Selamatan*". It can be concluded that Islamic scholar has the potential to influence its followers to transact in Islamic banks.

b. Islamic religious Education Teachers

Indonesia has six recognized religions, Islam, Buddhists, Hindus, Protestant Christians, and Konghuchu. Religious lessons at school every week there are 2 hours. The material given in the study of religion depends on the religion of each student. Islam gathered with Islamic students and taught by Islamic religious teachers, Christians gathered with Christian students and taught by Christian religious teachers. Lukens-Bull (2017) found that Religious education, in any faith, has as a central goal the teaching of tradition, however invented, and the creation young men and women who will uphold that tradition in settings that may be antagonistic towards it.

Islamic religious education teachers also have a great influence on the students at school. Teachers in Indonesia are seen as a clever person and can enlighten their students. Especially as an Islamic religious education teacher who intellectually and religiously have more capability in these two things. Therefore, the behavior of Muslim religious teachers also has a big effect on their students

c. Community leaders

Community leaders is prominent people (in politics, culture, etc.). He is a key figure in the community. Deggs and Miller (2013) said that a level of consistency between community college leaders and community leaders is necessary to demonstrate behaviors, actions, and beliefs that shape, represent, and support expected community values. Likewise, communities, which are collectives of suborganizations, play an important role in aiding individual development, especially related to educational attainment. Therefore, community leaders to be an example that is always imitated by the surrounding community can encourage people to use Islamic banks

Usman et al (2017) found that religious norms variables in the context of religious role influence consumer decisions to use sharia banking services. The degree of religiosity affects customer decisions in traditional groups, but does not affect the contemporary group. Furthermore, it was found that the decision on the use of Islamic banks through the intervention of trust variables and sources of information is indirectly influenced by religiosity.

Meanwhile, Houjeir et al (2017) said that the development of trusting relationships between bankers and clients is affected by the cultural origins of the relationship partners. Strongly held religious beliefs, and loyalty to family, tribe and nation, lead to strong affect-based trust between bankers and clients from Arab culture. Cognitive-based trust is more characteristic of United Arab Emirates (UAE) banker/client relationships that involve partners from outside the Arab world.

Al-zu'bi (2016) found in his research that high and low beliefs tend to influence the communication patterns of Jordanian Muslim parents. The most degree of indirect influences is associated with Muslims' belief.

3. Methodology

a. Research design

This study was designed by two steps. The first step, data colected by interview which conducted to three reference groups (Islamic Scholar, Islamic religious Education Teachers, and Community leaders). The result of interview will be summarized become indicators of questionnaires. The second step, questionnaire distributed to individual that knowing or ever transaction with Islamic bank.

b. Data Collection

Interview was conducted in each reference groups from 10 January to 15 February 2017. The questionnaire was distributed since 2 March until 17 April 2017.

c. Data Analysis

The analysis was carried out through factor analysis using SPSS (statistical package for social sciences) version 23. According Ghozali (2016), the main purpose of factor analysis is to define the structure of a matrix data and to analyze the structure of interrelations (correlation) between the number of variables (test score, test items, answer questionnaire) by defining a set of commonalities of variables or dimensions and is often called a factor or component.

By factor analysis, the researchers identify the dimensions of a structure and then determine how far each variable can be explained by each dimension.

Interviews are conducted to generate indicators. The resulting indicators are used to generate a list of questions distributed to qualified respondents. The results of the questionnaire were analyzed using exploratory factor analysis (EFA). From these analyzes, found new groupings of the indicators into variables.

Basically, the purposes of factor analysis are:

1. Data Summarization, which identifies the relationship between variables by conducting a correlation test. Factor analysis requires that the data matrix must have sufficient correlation to allow for factor analysis. There are two ways to determine the factor analysis assumptions:
   a. Kaiser Meyer Olkin Measure of Sampling (KMO)

KMO is the comparison index of the distance between the correlation coefficient with partial correlation coefficient. If the sum of squares of partial correlation coefficients among all pairs of variables is small when compared to the sum of squares of correlation coefficients, then it will produce KMO values close to 1.
KMO values are considered sufficient if more than 0.5.

b. Bartlett Test of Sphericity
Bartlett Test of Sphericity is to test whether there is correlation between variables. If the result is significant, the correlation matrix has significant correlation with several variables.
Bartlett Test of Sphericity meets the requirements for significance below 0.05 (5%).

2. Data Reduction
After a correlation, the process of creating a new set of variables called factor to replace a certain number of variables.
a. Extraction Communalities
Extraction Communalities estimate the variance of each variable described by the component formed. The value of large communalities (> 0.5), this can be interpreted that the whole variable used has a strong relationship with the factors that are formed.
b. Total Variance Explained
Total Variance Explained shows the magnitude of the percentage of total diversity that can be explained by the diversity of factors formed. To determine how many components / factors are used in order to explain the total diversity then seen from the large eigenvalue value, the component with eigenvalue> 1 is the component used. The 'cumulative%' column shows the cumulative percentage of variance that can be explained by the factor.
c. Factor Rotation
The purpose of the factor rotation is to clarify the variable that goes into a certain factor. In each component, factor grouping is done by looking at the loading factor above 0.50.

3. Interpretation of factors that have been formed, giving the name of a predetermined factor, which is considered to represent the member variables of the factor.

4. Result and discussion

The results of interviews with nine informants of three reference groups (Islamic Scholar, Islamic religious Education Teachers, and Community leaders) produced 18 indicators.

Table 1. Summaries of interview results

Initials	Indicators
X1	Public understanding of the fatwa of the National Sharia Council relating to Islamic banks
X2	The speech of the Islamic scholars contains about the fatwa of the National Sharia Council relating to Islamic banks
X3	Islamic Scholar equipped with complete material about the importance of Islamic banks for the ummah
X4	Islamic banks socialize Islamic banking products to the public
X5	The government socialized Islamic banks to the public
X6	Islamic banking proactively approaches to Islamic scholars
X7	Media for socialization of Islamic banks using existing media (TV, newspapers, radio, etc.)
X8	Socialization of Islamic banking in synergy with educational institutions at the level of Higher Education.
X9	Socialization of Islamic banking in synergy with educational institutions at senior/ vocational high schools
X10	Socialization of Islamic banking in synergy with educational institutions at junior high school
X11	Socialization of Islamic banking in synergy with educational institutions at elementary school
X12	Socialization of Islamic banks in synergy with community leaders
X13	Socialization of Islamic banks in synergy with Islamic scholar
X14	Socialization of Islamic banks in synergy with teacher/ lecturer/educator
X15	The socialization model is done by incorporating the Islamic banking system in the subjects of Islamic Religious Education in schools / madrasah / pesantren
X16	The model of socialization is done in schools / colleges with the exemplary practice of educators using Islamic banking products
X17	Islamic education institutions require the use of banking financial transactions using Islamic banks
X18	Islamic Business Institutions require the use of banking financial transactions using Islamic banks

18 indicators were made a list of statements. Furthermore, the list of statements is distributed to respondents 230 respondents, however, questionnaires that can be analyzed only 226 respondents. The response rate was 98%. There were 101 males and 125 female respondents.

The factor analysis assumptions

Based on table 2, The results of the KMO (Kaiser-Meyer-Olkin) analysis found 0.830, the results are eligible to be continued into factor analysis as greater than 0.50

Table 2. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.830
Bartlett's Test of Sphericity	Approx. Chi-Square	1350.103
	df	153
	Sig.	.000

According to table 2, found Bartlett's test of sphericity test is significant with a value of 0.000. This means the correlation matrix has a significant correlation with several variables.

Data Reduction

a. Extraction Communalities

According to table 3, the results of value of large communalities (> 0.5), this can be interpreted that the whole variable used has a strong relationship with the factors that are formed

Table 3. Communalities

Communalities

	Initial	Extraction
X1	1.000	.589
X2	1.000	.699
X3	1.000	.660
X4	1.000	.633
X5	1.000	.697
X6	1.000	.830
X7	1.000	.655
X8	1.000	.670
X9	1.000	.683
X10	1.000	.823
X11	1.000	.796
X12	1.000	.588
X13	1.000	.692
X14	1.000	.636
X15	1.000	.436
X16	1.000	.621
X17	1.000	.636
X18	1.000	.690

Extraction Method: Principal Component Analysis.

b. Total Variance Explained

18 indicators analyzed turns computer extraction results into 6 factors (eigen value > 1 to factor), see table 4.

Table 4. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.518	30.654	30.654	5.518	30.654	30.654	2.560	14.222	14.222
2	1.664	9.245	39.900	1.664	9.245	39.900	2.332	12.954	27.176
3	1.558	8.658	48.558	1.558	8.658	48.558	2.315	12.862	40.038
4	1.176	6.531	55.089	1.176	6.531	55.089	1.864	10.354	50.393
5	1.080	6.001	61.090	1.080	6.001	61.090	1.515	8.415	58.808
6	1.038	5.765	66.855	1.038	5.765	66.855	1.448	8.047	66.855
7	.825	4.583	71.438						
8	.760	4.223	75.661						
9	.608	3.377	79.038						
10	.560	3.111	82.149						
11	.537	2.983	85.133						
12	.487	2.706	87.839						
13	.472	2.623	90.462						
14	.447	2.483	92.945						
15	.393	2.184	95.129						
16	.354	1.968	97.097						
17	.305	1.695	98.792						
18	.217	1.208	100.000						

Extraction Method: Principal Component Analysis.

Factors 1-6 explain 30.65%; 9.24%; 8.66%; 6.53%; 6.00%; 5.77%, respectively. The overall factor could explain 66.86% variation.

c. Factor Rotation

Refer to table 5, It can be seen that the result of rotated component matrix. There are six component. All component factor grouping is done by looking at the loading factor above 0.50.

Table 5. Rotated Component Matrix[a]

	Component					
	1	2	3	4	5	6
X1	.292	.003	**.690**	.112	.120	.008
X2	.180	.119	**.793**	-.020	.152	.009
X3	.074	.126	**.761**	.211	.065	.105
X4	-.056	.085	.369	.137	-.036	**.683**
X5	.051	.183	.378	-.182	**.618**	.320
X6	.150	.060	.100	.196	**.869**	-.013
X7	-.158	.097	.128	**.675**	.037	.385
X8	.248	.109	-.173	.158	.136	**.723**
X9	.263	**.692**	.052	.109	.193	.288
X10	.142	**.867**	.150	.109	.099	.083
X11	.231	**.842**	.066	.167	-.028	-.021
X12	.193	.357	.230	**.545**	.222	-.155
X13	.283	.182	.261	**.582**	.403	-.097
X14	.261	.094	-.017	**.711**	-.080	.216
X15	**.536**	.200	.252	.170	.059	.116
X16	**.711**	.202	.242	.057	.015	.112
X17	**.742**	.191	.001	.073	.210	.005
X18	**.806**	.096	.154	.078	.033	-.009

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.[a]

a. Rotation converged in 9 iterations.

The matrix component results show the grouping of indicators into 6 variables (see table 5). The first variable consists of indicator X15, X16, X17, and X18 named **Business Institutions** with loading factor more than 0.50 and the highest factor on factor X18.

The second variable consists of indicator X9, X10 and X11 named **Formal Education** and the highest factor on factor X11. The third variable consists of X1, X2, and X3 named **Islamic Scholar**, and the highest factor on factor X2. The fourth variable consists of X7, X12, X13, and X14 named **Synergize**, and the highest factor on factor X14. The fifth variable consists of X5 and X6 named **Proactive**, the highest factor on factor X6. Lastly, the six variables consisting of X4 and X8 are named **Higher Education**, the highest factor on factor X8.

5. Conclusion

The condition of the development of Islamic banking in Indonesia is not in line with expectations of the people of Indonesia which has the largest number of Muslims in the world (Majority). The condition of the development of Islamic bank assets has decreased in 2013-2014, it encourages OJK to make seven policy directions in the Islamic Bank's roadmap 2015-2019. One of them is about the importance of socialization program of Islamic banks.

The reference group of Islamic scholars, Islamic religious education teachers, and community leaders after the interview, was summed up to eighteen indicators. Questionnaires were made using eighteen indicators and addressed to selected respondents who had already done transactions in Islamic banks.

The questionnaire obtained is 230 and that can be processed by 226. The data is processed by factor analysis from SPSS version 23 and found six variables from eighteen indicators. KMO (Kaiser-Meyer-Olkin) test results are eligible for all indicators above 0.50 as well as Bartlett's test of sphericity is also significant at 0.05. The overall factor could explain 66.86% variation. Furthermore, in more detail as follows: factor 1 explain 30.65%; factor 2 explain 9.24%; factor 3 explain 8.66%; factor 4 explain 6.53%; factor 5 explain 6.00%; and factor 6 explain 5.77%. 18 indicators analyzed turns computer extraction results into 6 factors (eigen value > 1 to factor).

The matrix component results show the grouping of indicators into 6 variables. The first variable consists of indicator X15, X16, X17, and X18 named business institutions. The second variable consists of indicator X9, X10 and X11 named Formal Education. The third variable consists of X1, X2, and X3 named Islamic Scholar. The fourth variable consists of X7, X12, X13, and X14 named Synergize. The fifth variable consists of X5 and X6 named Proactive, and six variables consisting of X4 and X8 are named Higher Education.

Limited Finding

This research is only at the stage of finding the factors that can be done to maximize socialization on Islamic banks based on the reference group. Future research can be done by testing the relationship and influence of six independent variables on customer decisions to transact in Islamic banks.

Reference:

Ahmed, K. (2000). Islamic Economics Based on Human Value. (Siddiqi, A., Ed.) *Anthology of Islamic Banking.* Institute of Islamic Banking and Insurance.

Al-Zu'bi, A. (2016). The direct and indirect influences of locus of control on Jordanian parents' communication patterns: Consumer socialization and cultural perspectives. *Journal of Islamic Marketing*, *7*(2), 167-186.

Deggs, D. M., and Miller, M. T. (2013). Community College and Community Leader Expectations of the "Village". *Community College Journal of Research and Practice*, *37*(6), 424-432.

Dhofier, Z. (2014). The Pesantren Tradition: A Study of the Role of the Kyai in the Maintenance of the Traditional Ideology of Islam in Java. Thesis The Australian National University. Canberra. Australia.

Ghozali, Imam. 2016. Aplikasi Analisis Multivariete dengan Program IBM SPSS 23 or Application of Multivariate Analysis with IBM SPSS 23 Program. Badan Penerbit Universitas Diponegoro or Diponegoro University Publishing (In Bahasa Indonesia).

Houjeir, R., Houjeir, R., Brennan, R., and Brennan, R. (2017). The influence of culture on trust in B2B banking relationships. *International Journal of Bank Marketing*, *35*(3), 495-515.

KBBI, 2017. Kamus Besar Bahasa Indonesia or Indonesia Dictionary. Retrieved on June 10, http://kbbi.web.id/ulama.

Lugo, Luis. 2009. Mapping the Global Muslim Population: A Report on the Size and Distribution of the World's Muslim Population. Pew Rerearch Centre. Washington, D.C. Retrieved on June 1 on http://allafrica.com/download/resource/main/main/idatcs/00011909:cbf45d797f6515d212cec2ec5ef6fb5f.pdf.

Lukens-Bull, R. A. (2017). Teaching morality: Javanese Islamic education in a globalizing era. *Journal of Arabic and Islamic Studies*, *3*, 26-47.

Muhammadiyah. 2006. Fatwa Majelis Tarjih dan Tajdid Pimpinan Pusat Muhammadiyah tentang Bunga Bank or Fatwa from Tarjih and Tajdid Board from Muhammadiyah Leader about Bank Interest is Haram.

MUI (Majelis Ulama Indonesia: Council of Indonesia Ulama) (2017). Fatwa Majelis Ulama Indonesia No. 1 Tahun 2004 Tentang Bunga Bank. [Fatwa of Indonesian Ulema Council. No. 1 in 2004 on Bank Interest.] Retrieved on May 21, 2017 from http://istayn.staff.uns.ac.id/files/2012/09/perbankansyariah_pkes_secure1.pdf. (In Indonesian)

OJK (Otoritas Jasa Keuangan), 2017a. Otoritas Jasa Keuangan (OJK) or Financial Services Authority. Roadmap of Islamic Banking Indonesia 2015-2019. Retrieved on June 3, from http://www.ojk.go.id/id/kanal/syariah/berita-dan-kegiatan/publikasi/Pages/Roadmap-Perbankan-Syariah-Indonesia-2015-2019.aspx

OJK (Otoritas Jasa Keuangan), 2017b. Statistik Perbankan Syariah Juli. Vol 14. No.8. http://www.ojk.go.id/id/kanal/syariah/data-dan-statistik/statistik-perbankan-syariah/Documents/Pages/Statistik-Perbankan-Syariah---Juli-2016/SPS%20Juli%202016.pdf.

OJK (Otoritas Jasa Keuangan), 2016c. Statistik Perbankan Indonesia Juli. Vol. 14. No.8. http://www.ojk.go.id/id/kanal/perbankan/data-dan-statistik/statistik-perbankan-indonesia/Documents/Pages/Statistik-Perbankan-Indonesia---Juli-2016/SPI%20Juli%202016.pdf.

Usman, H., Tjiptoherijanto, P., Balqiah, T. E., & Agung, I. G. N. (2017). The role of religious norms, trust, importance of attributes, and information sources in the relationship between religiosity and selection of the Islamic bank. *Journal of Islamic Marketing*, *8*(2).

Exploring the Influential Factors of Cluster Cooperation in Taiwan's Biotechnology Industry

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ABSTRACT

In this study, the influential factors of cooperation in Taiwain's biotechnology industry are discussed from the perspectives of cluster cooperation and interaction. Using the approach of analytic hierarchy process (AHP) and quantitative results obtained from in-depth expert interview questionnaires. The results indicate that "enterprise innovation ability" is the most critical. The factors of secondary importance include business management ability and government resource utilization, suggesting that the realization of principal activities associated with cluster cooperation in the overall biotechnology industry mainly relies on an enterprise's business management ability.

Key words: biotechnology industry, cluster cooperation, Taiwan, analytic hierarchy process (AHP)

1. Introduction

1.1 Motivation

In order to investigate the structure of biotechnology industry development, the characteristics of the biotechnology industry that are different from the general industries are considered, including the long developing processes and severe challenges in business management from early R&D to product launch. In addition, the influential factors are discussed from the perspectives of demand and supply of the industry's cluster cooperation.

1.2 Research gap

A limited number of studies have discussed the relationship between biotechnology industry development and its relevant factors, based on the topic of biotechnology industry cluster cooperation. This research is expected to explore the correlation, importance, and problems that impact the development of the biotechnology industry, for the purpose of providing a reference for decision-making by relevant organizations using quantitative data.

2. Biotechnology industry cluster cooperation

From the early stage of R&D topic determination, enterprises within the biotechnology industry need to communicate with research institutes and R&D organizations to ensure accuracy and feasibility of technological R&D standards. In the clinical tests stage, enterprises need to conduct cluster cooperation with medical and inspection institutions, in order to guarantee the efficiency of developed products. Subsequently, at the product launch stage, business management necessitates the introduction of financial, tax, and legal support, and intellectual property protection and marketing, in order to meet the requirements of business development in different stages. Cluster cooperation is generally presented in a diversified manner, involving research institutes, government agencies, medical institutions, and business management units.

3. Research methods

The objectives of this study are to investigate the influential factors of cluster cooperation of Taiwan's biotechnology industry, to analyze the mutual impacts of the factors using the AHP approach, and to find the critical factors as a reference to the government's decision-making. The research methods include in-depth expert interviews and AHP expert questionnaire analysis.

4. Research results

The results find that the influential factors of cluster cooperation in Taiwan's biotechnology industry are enterprise innovation ability, government resource utilization, business management ability, mutual trust. Using the AHP and quantitative results obtained from in-depth expert interview questionnaires, weights of various influential factors are investigated and analyzed, which could provide reference for future research and resource allocations. The influential factors of cluster cooperation in Taiwan's biotechnology industry can be categorized into four major factors and sixteen sub-factors.

5. Conclusions

In this study, the influential factors of cluster cooperation in Taiwan's biotechnology industry are discussed. The research results make the content of enterprise cluster cooperation more transparent and the energy required in cluster cooperation more specific, promoting government resource utilization to be better managed and mutual trust between the government, enterprises, universities, and research institutes to be more valued.

Comparative Study of Fashion-Oriented Impulse Buying Online and Offline Purchases On Teenagers in Indonesia

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ABSTRACT
The purpose of this study was analyzed the comparison positive emotion, fashion involvement, and sales promotion on fashion-oriented impulse buying offline and online on teenagers. Questionnaire was used as data gathering instrument. Purposive sampling method was used to pick 188 sample members with some criteria that has been settled. Data were analyzed in two separate but sequentially related stages using structural equation modeling with partial least squares approach. Investigation of research revealed that positive emotion and also sales promotion have positive and signifficant effect on both offline and online fashion-oriented impulse buying. Fashion involvement has a positive and significant effect directly on offline fashion-oriented impulse buying, however, did not have a significant effect on online fashion-oriented impulse buying indirectly through positive emotion but has a positive effect tendency.

Keywords: *Impulse buying, positive emotion, fashion involvement, sales promotion*

INTRODUCTION

Impulsive buying has become an important phenomenon in the world of marketing and is considered one of the main aspects of consumer behavior not only in traditional markets or offline stores but also affects online stores because in the contemporary world, online shopping trend is also increasing. day by day. According to Lukito and Tulipa (2016) Impulse buying is the desire to buy a product at sudden, the desire to buy without any prior planning, the desire to buy merely based on emotion. This purchase model occurs when a customer sees a product in a store and an inner feeling strongly urges customers to buy and bring it to ownership. In addition, impulsive buying behavior is a puzzle in the marketing world, because here is a behavior that literature and consumers alike are normal, but that accounts for a large number of items sold annually across different product categories. (Bellenger et al., 1967; Cobb and Hoyer, 1986; Han et al., 1991; Kollat and Willet, 1967; Rook and Fisher, 1995; Weinberg and Gotwald, 1982). Apparel and textile are among the World's largest industries, operating in a rapidly changing environment (Chun et al., 2014). It is therefore hardly surprising that fashion industry has attracted the attention of several researchers investigating various issues of impulse buying in the fashion context (e.g. Han et al., 1991; Liapati et al,. 2015; Tirmizi, 2009; Park, 2006).

Many researchers have examined that impulse buying behavior related to positive emotion, fashion involvement, and sales promotion. Park (2006) and Dewi (2015) found out that positive emotion had positive effects on consumers' fashion-oriented impulse buying, Park (2006) on the same research also found that fashion involvement had an important role on fashion-oriented impulse buying behavior and Han et al. (1991) Vazifehdost (2014) Liapati et al. (2015) also found out that fashion involvement had a positive effects on impulse buying. On the other research Kchaou and Amara (2014) and Temaja et al. (2015) found out that sales promotion has positive effects on impulse buying behavior. However no research has

yet investigated the comparative study between fashion impulse buying behavior of offline and online shop. Therefore, the aim of our study is to compare the fashion impulse buying behavior of offline and online shop.

LITERATURE REVIEW

Impulse Buying Behavior

Impulse buying is usually described as a sudden, compelling, hedonic complex purchasing behavior without deliberate consideration of all information and choice alternative (Rook, 1987). An impulse purchase by definition is unplanned but it is more, too---it involves experiencing an urge to buy. This urge is felt suddenly and strongly and is often irresistible (Beatty, 1998). Impulse purchase is usually accompanied with strong emotional responses like strong need to purchase or feeling of excitement and pleasure feeling. Impulse buying often happens without realization and the product that purchased impulsively is usually the product that has a strong bargaining power for the consumer to buy the product at the moment.

Many researchers have already examining the factors that can triggered the impulse buying behavior. There are two factors that can impact the impulse buying behavior it is the internal and external factor. First, internal factor is what's coming from the inside of the person that can affect the decision he made. Consumer impulse buying is an important concept along with product involvement as they are involved with a specific product (Jones et al, 2003). For clothing, fashion-oriented impulse buying refers to a person's awareness or perception of fashionability atributed to an innovative design or style (Park, 2006). Han et al. (1991) has examined strong evidence of fashion-oriented impulse buying for college students majoring in the textiles and clothing compared to students in other majors. Their findings suggested that fashion-oriented impulse buying might be related more significantly to students with majors having high fashion involvement. Lots of studies have reported that consumers are likely to be motivated to impulse purchase by high involvement and emotional of the product. Second, external factor is the urge from the outside of the person.

In this research we would like to find out the factors that can affect the fashion impulse buying behavior in general people without a limitation of only the people with high involvement of fashion and not limited only by the internal factor of the person but also the external factor that come from the outside of the person.

Fashion Involvement

Involvement is a helpful metric for explaining consumer behavior and segmenting consumer markets (Kapferer and Laurent, 1985; Kim, 2005; Martin, 1998). In general, involvement is conceptualized by the interaction between an individual (consumer) and an object (product) (Park, 2006). In fashion marketing, fashion involvement refers to the extent of interest with the fashion product category (e.g. apparel)

Fashion involvement refers to the extent to which an individual is caught up in a number of fashion-related concepts, including awareness, knowledge, interest, and reactions. Fashion involvement used as a measurement of customer involvement to the fashion product to find the relationship between the consumer's fashion involvement to the fashion impulse buying behavior.

Many researchers have examined that fashion involvement has a positve influence on fashion impulse buying behavior. Park (2006) found out that consumers with high fashion involvement were more likely to experience positive emotion during shopping which can be positive affect on fashion impulse buying behavior. The findings of Han et al. (1991) quoted in response to fashion involvement of consumers, that it might enhance fashion-oriented

impulse buying behaviors among those who habitually wear fashion outfits. Fairhurst et al. (1989) and Seo et al. (2001) found a direct association among fashion involvement and apparels purchase and their findings suggested consumers with high fashion involvement were more likely to be apparel buyers.

The previous findings lead to the following hypothesis:
H1A: Fashion Involvement has a postive effect on offline impulse buying
H1B: Fashion Involvement has a postive effect on online impulse buying

Positive Emotion

Emotion that can affect someone's mood and behavior is an important factor in consumer behavior making. Positive emotions are defined as affects and moods, which determine intensity of consumer decision-making (Watson and Tellegen, 1985). Hausman (2000) defines positive emotion as an anteccedent that strongly influences a number of actions including impulse buying in decision making.

Beatty and Ferrel (1998) found that positive feelings of purchasers have positive correlations with their motivation for purchase. Consumers with high fashion involvement more likely to have a positive emotion which can lead to do the fashion-oriented impulse buying. Vazifehdoost et al., (2014) found that fashion involvement had a positive effect on positive feeling. Park (2006) also found that Fashion involvement had a positive causal effect on positive emotion. Consumers with high fashion involvement were more likely to experience positive emotion (e.g. excited, satisfied) during shopping and suggested consumers' fashion involvement can increase emotional experiences while shopping. Also, positive emotion while shopping can be a significant mediator in encouraging impulse buying (Beatty and Ferrell, 1998; Sherma et al., 1997).

Based on the previous findings, the following hypothesis was proposed:
H2A: Fashion Involvement has a positive effect on offline Positve emotion
H2A: Fashion Involvement has a positive effect on online Positve emotion

Watson and Tellegen classified emotion into two orthogonal dimension (e.g. positive and negative). Emotion represents a critical factor in defining consumption experiences and consumer reactions (Babin et al., 1998). Rook (1987) reported that consumers felt uplifted or energized after a shopping experience. Consumer' positive emotion may leads to positive shopping mood that can leads to impulse purchasing. Consumer who has positive emotion after impulse purchase tend to use simple processes for making purchase decision (Isen, 1984). Ko (1993) reported that positive emotions may result into fashion related impulse purchase.
Hausman (2000) and Park (2006) also found that positve emotion has influence on consumer buying behavior which leads to consumer impulse buying. Beatty and Ferrell (1998) found consumer's positive emotion was associated with the urge to buy impulsively. This supports earlier findings that impulse buyers are more emotional compared to buyers who make pre-planned purchases (Weinberg and Gottwald, 1982). Because impulse buyers exhibit greater positive feelings (e.g. pleasure, excitement, joy), they often over spend when shopping (Donovan and Rossiter, 1982).

Based on the previous findings, the following hypothesis was proposed:
H3A: Positve emotion has a positive effect on offline impulse buying

H3A: Positve emotion has a positive effect on online impulse buying

Sales Promotion

Sales promotion is the core substance in promotion campaign, consisting the collection of intensive tools, mostly short-term, which design to stimulate faster or bigger amount of purchases of certain product or services (Keller and Kotler). Advertisement offers reasons to purchase while sales promotion offers intensive. Seller used intensive kind of promotion to attracts new buyer, value loyal consumer, and raised the re-purchases amount from the consumer who rarely do the purchases. Sales promotion can also stimulate the impulse purchase behavior because of the value and the benefits from the sales promotion which can stimulate consumer to purchase things without prior planning.

Sales promotion normally used as marketing tool by manufacturers as well as retailers. Manufacturers use them to increase sales to retailers (trade promotions) and to consumers (consumer promotions). Retail promotions are, used by retailers to increase sales to consumers such as temporary price reductions, features, and displays. Such activities enhance the value of product either by reducing cost or adding benefits.

Sales promotion influences buying decisions of customers and simply exists to have a direct impact on their behavior. Sales promotion techniques are classified as price and non-price based on the nature (Nagadeepa, et al., 2015)

Cuizon (2009) reported that sales promotion techniques used by the marketer are not only effective in attaining short-term sales but are also more cost effective than advertising. Banks & Moorthy (1999) also reported that sales promotion led to sudden increase of sales experienced by retailers due to price-consciousness of consumers.

The findings of Weerathunga and Pathmini (2016) shows that sales promotion has a significant effect on consumers' impulse buying behavior. Nagadeepa et al., (2015) and Temaja et al., (2015) also found that sales promotion has a significant effect on consumers' impulse buying behavior towards apparel.

Based on previous findings, the following hypothesis was proposed:
H4A: Sales promotion has a positive effect on offline impulse buying
H4A: Sales promotion has a positive effect on online impulse buying

DATA AND METHODOLOGY

Research Design

This study was designed to test the associations among fashion involvement, positive emotion, sales promotion and impulse buying behavior as well as to examine is there any effect of fashion involvement, positive emotion, and sales promotion on consumers' impulse buying behavior towards fashion product.

Research was conducted mostly at one university (University of Muhammadiyah Purwokerto) and around one city (Purwokerto) in Indonesia. Questionnaires were distributed to teenagers who have done impulse buying before.

Operational Definitions of Research Variables and Indicators:

Conceptualization of fashion involvement: the definition of fashion involvement basically relates to apparel associated with fashionable outfits (Tirmizi et at., 2009)

Operationalization of fashion involvement: fashion involvement was defined as someone's involvement to fashion which relates to apparel associated with fashionable outfits that can effect the impulse buying behavior on fashion product. This study used I usually have one or more outfits of the very latest style, an important part of my life and activities is dressing smartly, and I usually dress for fashion, not comfort, if I must choose between two as indicators in this regard.

Conceptualization of positive emotion: Watson and Tellegen (1985) defined positive emotions as affects and moods, which determine intensity of consumer decision-making.
Operationalization of positive emotion: positive emotion was defined as someone's affects and mood which can impact consumer's decision on impulse buying. This study used happy, energetic, excited and relaxed as the indicator of positive emotions.

Conceptualization of sales promotion: Sales promotion is the core substance in promotion campaign, consisting the collection of intensive tools, mostly short-term, which design to stimulate faster or bigger amount of purchases of certain product or services (Kotler & Keller, 2009)
Operationalization of sales promotion: sales promotion was defined as the collection of intensive tools which can stimulate purchase behavior including impulse purchase behavior. This study used member card, discounted price, buy 2 get 1 promotion, and shopping voucher as indicators in this regard.

Conceptualization of impulse buying: Rook (1987) described impulse buying as a sudden, compelling, hedonically complex purchasing behavior without deliberate consideration of all information and choice alternatives.
Operationalization of impulse buying : impulse buying was defined as a sudden purchasing behavior without considering of all information and choice alternative and occurs without prior planning. This study used I often buy things spontaneously, ``Buy now, think about it later'' Sometimes I feel like buying things on the spur of the moment, and If I see something I want, I buy it as indicators in this regard.

Data Collection
The population of this research are the students in Universitas Muhammadiyah Purwokerto and the teenagers in Purwokerto, Indonesia. The criteria to be repondents is those who aged 19-21 years, and have done impulse buying on fashion product before.
We collected data through questionnaires to those who had the criteria. In total, 200 questionnaire sets were distributed. However, only 188 were completed and returned to the researcher. Five respondents did not complete all questions, and seven did not return their questionnaires.

Data Analysis
Data were analyzed in two separate but sequentially related stages using structural equation modeling (SEM) with a partial least squares (Smart PLS 2.0) approach. First, we must designed the measurement model (outer model) to determine the validity and reliability of the indicators of the latent variables. Second, the structural model was tested by designing the inner model. Once the model was judged to meet the criteria, the next outer model was tested. During this stage, the relationships among the latent variables were addressed based on the theoretical assumptions of the study. The structural model of the relationships among the latent variables was based on the formulation of the research problem or hypothesis. Structural equation modeling (SEM) involves generalizations and extensions of first-

generation procedures, such as principal component analysis, factor analysis, discriminant analysis, and multiple regressions. The application of certain constraints or assumptions in SEM allows for more flexibility (Chin, 1998).

Measurement model (outer model)

In designing the measurement model (outer Model), there are several measures that are used, first, convergent validity. Correlation can be said to be valid if it has a value > 0.7. A load of 0.5 or 0.6 is acceptable if research is still in the early stages of developing a Scales measurement (Chin, 2010). Second, assessed and compared the discriminant and quadratic validity. The root of the extracted average variance (AVE). Recommended is value > 0.5 (Fornell and Larcker, 1981). The next evaluation is composite reliability. A value > 0.6 indicates that the construction is reliable (Bagozzi and Yi, 1988). Reliability tests were assessed using Cronbach's, which assessed goods consistency; Its value acceptable if > 0.5.

Designing the structural model (inner model)

After taking measurements at the outer models, new structural models were tested. Figure 1 shows the structural equation modeling with PLS of impulse buying from the perspective of fashion involvement, positive emotion and selling promotion.

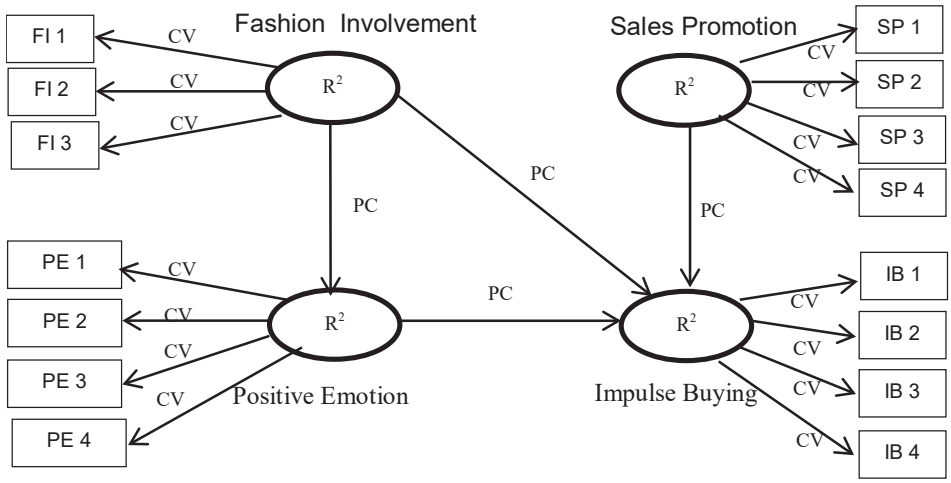


Figure 1. Model of Impulse Buying through Fashion Involvement, Positive Emotion, and Selling Promotion.
FI: Fashion Involvement; PE: Positive Emotion; SP: Sales Promotion; IB: Impulse Buying. R2: R square of the variables; CV: convergent validity (loading factor); PC: path coefficient.

RESULT AND DISCUSSION

Results

The population of this research is the students in Universitas Muhammadiyah Purwokerto and the teenagers in Purwokerto, Indonesia. The criteria to be repondents is those who aged 19-21 years, and have done impulse buying on fashion product before.

We collected data through questionnaires to those who had the criteria. In total, 200 questionnaire sets were distributed. However, only 188 were completed and returned to the researcher. Five respondents did not complete all questions, and seven did not return their questionnaires.

Data regarding sex, age and purchasing ways were obtained. In terms of age, the largest group of respondents consisted of those aged 19–21 years and the smallest group consisted of those aged younger than 19 years and older than 21 years. There were 43 male respondents and 145 female respondents. In terms of purchasing ways, there were 117 offline shoppers respondents and 71 online shoppers respondents.

Outer model

Table 1. Convergent validity (Loading Factor) for Offline and Online fashion-oriented impulse buying.

Indicators	Offline		Online	
	Loading factors	Result	Loading factors	Result
FI1	0.905	Accepted	0.803	Accepted
FI2	**0.345**	**Rejected**	0.620	Accepted
FI3	0.706	Accepted	0.738	Accepted
PE1	0.809	Accepted	0.768	Accepted
PE2	0.772	Accepted	0.806	Accepted
PE3	0.875	Accepted	0.807	Accepted
PE4	0.785	Accepted	0.672	Accepted
SP1	0.567	Accepted	0.732	Accepted
SP2	0.843	Accepted	0.828	Accepted
SP3	0.864	Accepted	0.896	Accepted
SP4	0.883	Accepted	0.662	Accepted
IB1	0.782	Accepted	0.731	Accepted
IB2	0.756	Accepted	0.813	Accepted
IB3	**0.465**	**Rejected**	**0.368**	**Rejected**
IB4	0.730	Accepted	0.788	Accepted

Table 1 shows convergent validity (loading factor) for offline and online fashion-oriented impulse buying. Refer table below, convergent validity. Refer table above, convergent validity for all indicators more than 0.50 both fashion-oriented impulse buying except FI2 and IB3 of Offline and also IB3 of Online purchases. Therefore, FI2 and IB3 are not continued in analyzing offline fashion-oriented impulse buying. Likewise IB3 is rejected in analyzing online fashion-oriented impulse buying.

Table 2. Discriminant validity (AVE), composite reliability, and Cronbach's α for Offline fashion-oriented impulse buying.

Discriminant validity (AVE), composite reliability, Cronbach's α	Fashion Involvement	Positive Emotion	Sales Promotion	Impulse Baying
AVE	0.677	0.658	0.639	0.598
Composite reliability	0.805	0.885	0.874	0.817
Cronbach's α	0.552	0.827	0.804	0.668

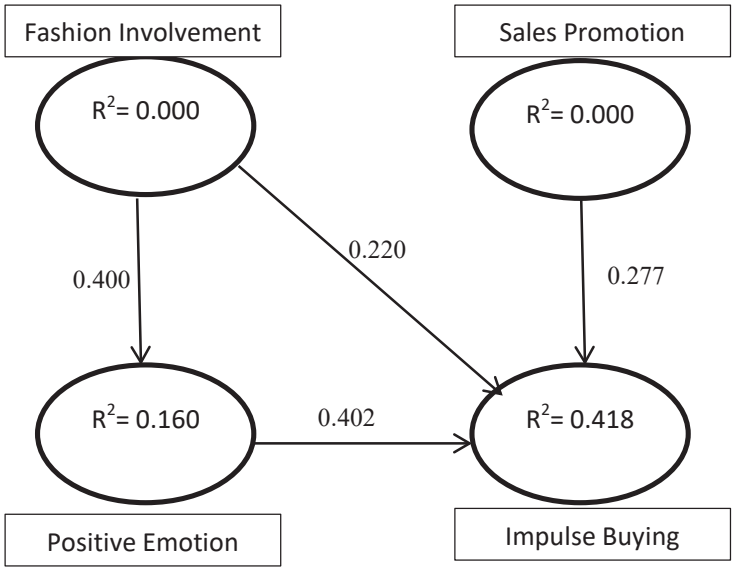
Based on table 2 above and table 3, It can be seen that a model of impulse buying based on mode of offline and online fashion- oriented meet all the criteria.

Table 3. Discriminant validity (AVE), composite reliability, and Cronbach's a for online fashion-oriented impulse buying

Discriminant validity (AVE), composite reliability, Cronbach's α	Fashion Involvement	Positive Emotion	Sales Promotion	Impulse Baying
AVE	0.525	0.584	0.613	0.621
Composite reliability	0.765	0.848	0.812	0.830
Cronbach's α	0.542	0.764	0.791	0.695

Inner Model

Figure 2 shows the result of structural equation modeling with PLS of impulse buying from the perspective of fashion involvement, positive emotion and selling promotion for Offline fashion-oriented impulse buying.



According to figure 2, it can be seen that the evaluation goodness of fit (R^2) of positive emotion and impulse buying are 0.160 and 0.418, respectively. The R^2 value of 0.160 indicates that 16% of the variability in the positive emotion construct was explained by fashion involvement. The R^2 value of 0.418 indicates that 41.8% of the variability in the impulse buying construct was explained by fashion involvement, positive emotion and sales promotion.

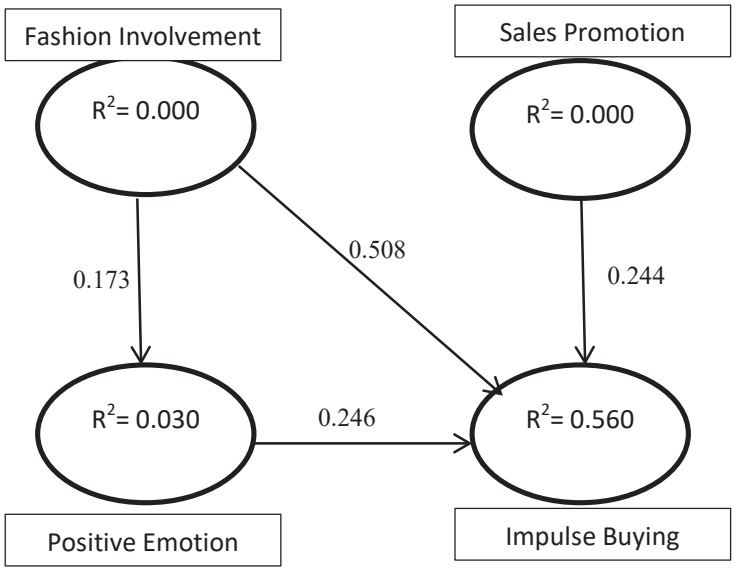
Table 4. Path Coefficients, t Statistics and Results for Offline fashion-oriented impulse buying

Relationships	Path Coefficients	t Statistics	Hipothesis	Results
Fashion Involvement ➔Impulse Buying	0.220	2.920	1A	Accepted
Fashion Involvement ➔Positive Emotion	0.400	5.158	2A	Accepted
Positive Emotion ➔ Impulse Buying	0.402	5.476	3A	Accepted
Sales Promotion ➔ Impulse Buying	0.277	3.604	4A	Accepted

Based on Table 4, all relationships have positive direction (see path coefficients), indicates that if fashion involvement increases rises will cause the impulse buying also to rise. So also for relationships that have a positive direction. Table 4 also provides information that all

relationships have a significant effect. It can be seen from the comparison between t statistics and t table. All relationships are positively significant because all t statistics > 1.658.

Figure 3 shows the result of structural equation modeling with PLS of impulse buying from the perspective of fashion involvement, positive emotion and sales promotion for Online fashion-oriented impulse buying.



Based on figure 3, we can see that the evaluation goodness of fit (R^2) of positive emotion and impulse buying are 0.030 and 0.560, in sequence. The R^2 value of 0.030 shows that 3% of the variability in the positive emotion construct was explained by fashion involvement. The R^2 value of 0.560 shows that 56% of the variability in the impulse buying construct was explained by fashion involvement, positive emotion and sales promotion.

Table 5. Path Coefficients, t Statistics and Results for Offline fashion-oriented impulse buying

Relationships	Path Coefficients	t Statistics	Hipothesis	Results
Fashion Involvement ➔Impulse Buying	0.508	7.165	1B	Accepted
Fashion Involvement ➔Positive Emotion	0.173	1.308	2B	Rejected
Positive Emotion ➔ Impulse Buying	0.248	2.116	3B	Accepted
Sales Promotion ➔ Impulse Buying	0.244	3.109	4B	Accepted

The results in Table 5 above conclude that fashion involvement, positive emotion and sales promotion have a positive direction. This indicates that if all three independent variables increase, they will cause an increase in impulse buying for online purchases. The three variables also influence impulse buying significantly because t statistics > t table (1.667). However, the influence test between fashion involvement toward positive emotion has no significant effect because t statistics < t table, although the direction of its influence is positive.

Discussion

Teenager as respondents in this study were those aged 19-21 years. There were 43 male respondents and 145 female respondents. In terms of purchasing ways, there were 117 offline shoppers respondents and 71 online shoppers respondents.

A positive relationship of fashion involvement with the impulse buying behavior of the consumers was reported by Park (2006). Where as, in our study, we also found that fashion involvement has a positive and signifficant effect on impulse offline and also online impulse buying behavior. involvement to fashion which relates to apparel associated with fashionable outfits that can effect the impulse buying behavior on fashion product. This study used research indikator: I usually have one or more outfits of the very latest style, an important part of my life and activities is dressing smartly, and I usually dress for fashion, not comfort, if I must choose between two as indicators in this regard. All indicators effect to impulse buying just for offline purchases, while the indicator of "an important part of my life and activities is dressing smartly" cannot be used in analysis of online impulse buying behavior because not meets the criteria convergent validity.

We found a positive and signifficant relationship between fashion involvement and positive emotion both on offline but not for online impulse buying behavior. This finding is related with the prior study by Park (2006) who found that fashion involvement had a positive causal effect on positive emotion. Fashion involvement that basically relates to apparel associated with fashionable outfits effect toward positive emotion that affects and moods, which determine intensity of consumer decision-making for teenager shoppers. However, this research only effect for teenager offline shoppers.

We have examined that positive emotion has a positive and signifficent effect on both offline and online impulse buying behavior. This finding is supported by the study of Hausman (2000) and Park (2006) who found that positve emotion has influence on consumer buying behavior which leads to consumer impulse buying. Teenager shoppers have positive emotion as affects and moods, which determine intensity of consumer decision-making which can impact consumer's decision on impulse buying. All indicators of positive emotion influence impulse buying for both teenager shoppers group (offline and online purchases). There are happy, energetic, excited and relaxed.

We found that sales promotion has a positive and signifficant effect on both offline and online impulse buying behavior. This finding is supported by prior study of Weerathunga and Pathmini (2016) who showed that sales promotion has a significant effect on consumers' impulse buying behavior and also supported by the study of Nagadeepa et al., (2015) and Temaja et al., (2015) who also found that sales promotion has a significant effect on consumers' impulse buying behavior towards apparel.

Limited Finding

We have several limitations of this study. First, the data were collected only in one city, Purwokerto which limits generalizations. Another limitation was using only three variables (fashion involvement, positive emotion, and sales promotion) related to fashion-oriented impulse buying. Furthermore, the study is limited only for general fashion product and not based on types or brand.

For the further research are advised to first, use more representative samples that include broader geographic locations and cross-national comparisons. Second, develop model and support results using other variables which influence on impulsive buying of customers like enough time accessibility, social factors, and the availability of money. Third, emphasize impulse buying of specific typer or brands and what these brands mean to the impulse buying consumers.

CONCLUSION

Research investigations reveal that positive emotion and sales promotion have a positive and significant impact directly on offline and online fashion impulse buying. Fashion involvement has a positive and significant effect directly on fashion-oriented impulse buying but no significant effect to positive emotion on online purchase. Teenager shoppers create impulse buying was influenced directly by fashion involvement and positive emotions, fashion involvement cannot influence impulse buying if through positive emotions for online purchase.

References

A.K ,Weerathunga. and M.G.S, Pathmini. (2015), "Impact Of Sales Promotion On Consumer's Impulse Buying Behaviour (Ibb); Study In Supermarkets In Anuradhapura City", International Research Symposium Rajarata University of Sri Lanka IRSyRUSl.

Babin, B. J., Darden, W. R., Babin, L. A. (1998), Negative Emotions in Marketing Research: Affect or Artifact?. *Journal of Business Research, 42*(3), 271-285.

Bagozzi RP and Yi Y. (1988). On the evaluation of structural equation models. J Acad Market Sci; 16(1): 74–94.

Banks, J., &Moorthy, S. (1999), A Model of Price Promotion. International Journal of Industrial Organization, 17, 371-398.

Beatty, S.E. and Ferrell, M.E. (1998), "Impulse buying: modeling its precursors", Journal of Retailing, Vol. 74 No. 2, pp. 169-91.

Bellenger, D.N., Robertson, D.H. and Hirschman, E.C. (1978), ``Impulse buying varies by product'', Journal of Advertising Research, Vol. 18, pp. 15-18.

Chin, WW. (1998), "Commentary: Issues and opinion on structural equation modeling", MIS; pp. vii–xvi.

Chin W. (2010). How to write up and report PLS analyses. In: Esposito Vinzi V, Chin WW, Henseler J and Wang H (eds) Handbook of partial least squares. Berlin: Springer, pp.655–690.

Chun, E., Song, S., and Ko, E. (2014), "A decision model development for crowdsourcing in the fashion industry.", Journal of Global Scholars of Marketing Science, 24, 411–425. doi: 10.1080/ 21639159.2014.949366.

Cobb, J.C. and Hoyer, W.D. (1986), "Planned versus impulse purchase behaviour", Journal of Retailing, Vol. 62 No. 4, pp. 384-409.

Cuizon, G. (2009), "The Measurable Effects of Sales Promotions in Strategic Business Planning" Retrieved from http://strategicbusinessplanning.suite101.com/article.cfm/the_measurable_effects_of_sales_promotions, (August 27, 2009).

Dewi, Kadek Trisna., dan Giantari, I Gusti Ayu Ketut. (2015), "Peran Emosi Positif dalam Memediasi Store Atmosphere Terhadap Pembelian Impulsif (Studi Pada Konsumen Matahari Department Store Duta Plaza Denpasar)", E-Jurnal Manajemen Unud, Vol.14. No.12 hal 4419-4448. (in Bahasa Indonesia)

Donovan, R.J. and Rossiter, J.R. (1982), "Store atmosphere: an environmental psychology approach", Journal of Retailing, Vol. 58 No. 1, pp. 34-57.

Fairhurst, A.E., Good, L.K. and Gentry, J.W. (1989), "Fashion involvement: an instrument validation procedure", Clothing and Textiles Research Journal, Vol. 7 No. 3, pp. 10-14

Fornell C and Larcker DF. (1981), "Evaluating structural equation models with unobservable variables and measurement error", J Market Res; 18(1): 39–50.

Han, Y.K., Morgan, G.A., Kotsiopulos, A. and Kang-Park, J. (1991), "Impulse buying behaviour of apparel purchasers", Clothing and Textiles Research Journal, Vol. 9 No. 3, pp. 15-21.

Hausman, A. (2000), "A multi-method investigation of consumer motivations in impulse buying behavior", Journal of Consumer Marketing, Vol. 17 No. 15, pp. 403-19.

Isen, A. (1984), "The influence of positive affect on decision-making and cognitive organization", Advances in Consumer Research, Vol. 11, pp. 534-7.

Jones, M.A., Reynolds, K.E., Weun, S. and Beatty, S.E. (2003), "The-product-specific nature impulse buying tendency", Journal of Business Research, Vol. 56 No. 7, pp. 505-11.

Kapferer, J.N. and Laurent, G. (1985), "Measuring consumer involvement profile", Journal of Marketing, Vol. 22 No. 1, pp. 41-53.

Kchaou, Abir Sahroui. And Amara, Rim Ben. (2014), "The role of sales promotion in inducing impulse purchases", International Journal of Management Exellence, Vol.3 No.1.

Kim, H. (2005), "Consumer profiles of apparel product involvement and values", Journal of Fashion Marketing and Management, Vol. 9 No. 2, pp. 207-20.

Ko, S. (1993), "The study of impulse buying of clothing products", unpublished Master's thesis, Seoul National University, Seoul.

Kollat, D.T. and Willett, R.P. (1967), ``Consumer impulse purchasing behavior'', Journal of Marketing Research, Vol. 4, February, pp. 21-31.

Liapati, Georgia., Assiouras, Ioannis., and Decaudin Jean-Marc. (2015), "The role of fashion involvement, brand love and hedonic consumption tendency in fashion impulse purchasing", Journal of Global Fashion Marketing, Vol.6 No.4, pp. 251-264.

Lukito, Robertus Sigit Haribowo., and Tulipa, Diyah, (2016) "Impulse Buying Behavior On Consumer Retail Fashion In Surabaya – Indonesia", I J A B E R, Vol. 14, No. 11, (2016): 8071-8086

Martin, C. (1998), “Relationship marketing: a high-involvement product attribute approach”, Journal of Product & Brand Management, Vol. 7 No. 1, pp. 6-26.

Nagadeepa, C., Selvi, J. T. & Pushpa., A, (2015), “Impact Of Sale Promotıon Technıques On Consumers’ Impulse Buyıng Behavıour Towards Apparels At Bangalore”, Asian Journal Of Management Sciences & Education, P. Vol. 4(1) 117.

Park, E. J., Kim, E. Y., & Forney, J. C. (2006), “A structural model of fashion-oriented impulse buying behavior”, Journal of Fashion Marketing and Management: An International Journal, 10, 433–446. doi:10.1108/13612020610701965

Rook, D. W. (1987), “The buying impulse”, Journal of Consumer Research, 14, 189–199.

Rook, D.W. and Fisher, R.J. (1995), ``Trait and normative aspects of impulsive buying behavior", Journal of Consumer Research, Vol. 22 No. 3, pp. 305-13.

Seo, J., Hathcote, J.M. and Sweaney, A.L. (2001), “Casualwear shopping behavior of college men in Georgia,USA”, Journal of Fashion Marketing and Management,Vol.5No.3, pp. 208-22.

Temaja, I Km Wisnu Bayu., Rahanatha, Gede Bayu., and Yasa, Ni Nyoman Kerti. (2015), “Pengaruh Fashion Involvement, Atmosfer Toko, dan Promosi Penjualan Terhadap Impulse Buying Pada Matahari Department Store di Kota Denpasar”, E-Jurnal Manajemen Unud, Vol.4 No.6, pp. 1466-1482. (in Bahasa Indonesia)

Tirmizi, Muhammad Ali., Rehman, Kashif-Ur., and Saif, M.Iqbal. (2009), “An Empirical Study of Consumer Impulse Buying Behavior in Local Markets”, European Journal of Scientific Research ISSN 1450-216X Vol.28 No.4 (2009), pp.522-532.

Vazifehdoost, Hossein., Rahnama, Afshin., and Mousavian, Seyed Javad. (2014), “Evaluation of the influence of fashion involvement, personality charasteristics, tendency to hedonic consumption and store environment on fashion-oriented impulse buying”, Mediterranean Journal of Social Sciences, Vol.5 No.16.

Watson, D. and Tellegen, A. (1985), “Toward a consensus structure of mood”, Psychological Bulletin, Vol. 98 No. 2, pp. 219-35.

Weinberg, P. and Gottwald, W. (1982), “Impulsive consumer buying as a result of emotions", Journal of Business Research, Vol. 10, pp. 43-57.

The Impact of Motivations for Using Facebook on Response of Messages

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ABSTRACT

Internet has changed people's lives. Especially, the social network site (SNS) as a new social media expands the way of people's interaction and communication. Facebook is one of the largest and most populated SNS in Taiwan. Our study is to explore that motivations for using Facebook affect the extent of users' responding to the posts such as clicking the Like, Commend, and Share button. Data were collected from online questionnaires. 221 respondents filled out the questionnaires. The results revealed that network extension and passing time positively affected clicking the Like button. Relationship maintenance, network extension, and venting emotion were positively associated with clicking the Share button. In addition, network extension and venting emotion were positively related to clicking the Commend button.

Keyword: Social Network Site, Motivations, Facebook, Messages, Responses

Teaching Business Law for Better Consumer Behaviorism and Financial Responsibility for Adult Leaners

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ABSTRACT

In many countries, the mismanagement of finances for individuals, both in their personal and professional lives has become a key point of study by researchers in many different disciplines. In particular, many adults may not have had any previous financial/business education training, which has result in poor decision-making choices, as well as the development poor consumer behaviorism. In fact, many business and management programs of study are starting to include this segment of concern into courses, such as business law and finance. The purpose of this paper is to look at ways of better educating adult learners about cause and effects of personal and professional business and financial decisions, and how to understand the law if poor choices may happen. Specifically, this paper deals with an overview of the number of increasing levels of bankruptcy in the United States, as well as financial crises on both personal and business levels on a global scale. Then it will address how a traditional approach to consumer behaviorism and fiduciary responsibility, coupled with an understanding of business law, can help enable individuals to look at their current financial situation, as well as look at their previous financial record, as they plan for future financial decisions and planning in general. Consequently, this paper will aim at show how this area has been lacking in educational institutions and why today's academic community has a corporate social responsibility to help today's generation with a better financial toolkit to help enable them to make better legal and financial decisions.

Keyword: Business Law, Consumer Behaviorism, Financial Responsibility, Adult Learning, Online Learning.

How Social Media Boost a Flipped Classroom: A Case Study of Computer Programming Course

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ABSTRACT

At the present day, the flipped classroom concept has grown in popularity because it is the effective blended learning model, which utilized both in class hours and out of class hours. This concept can fill the gap lies between students practice and instructors teaching approach. This paper looks at social media as a set of tools and how such platforms can help in Computer Engineering course. Specifically, the paper will assess how social media tools assists in enhancing engagements among students in flipped classroom. The engineering students in the digital age are technology native most of them have different personal learning styles so the formal Learning Management System cannot persuade them to engage with the course. The students typically use social media and digital technologies to develop their own Personal Learning Environment. Social tools can facilitate sharing of ideas between the students and the instructors, as well as among the students themselves. All in all, the study found that the social media have become the important learning platforms that influence overall learning outcomes in flipped classroom environment.

Keyword: Social Media, Flipped Classroom, Personal Learning Environment.

1. Introduction

Higher education institutions are increasingly using online platforms to organize and facilitate classes for enhancing academic performance. The 04-060-101 Computer Programming was one of the courses that blended with LMS and also adopted the flipped classroom concept. This course had been compulsory for undergraduate engineering students at Rajamangala University of Technology Isan, so there are a large number of students enrolled every semester. Computer Programming is one of the tough areas of teaching in engineering. Basically, because it is something that requires the student a set of cognitive skills which includes creativity, abstraction, and problem-solving as well as the investment loads of quantity of time in self-studying and practice to be able to understand the different theoretical and practical structures related to this area (Barkley, 2009). Since the beginning of Web 2.0 technology in the late 1990s, the range regarding online social media has endured increasing. Now Social media has become a vital tool in business and education engagements in the modern contemporary society. The core purpose of this paper is to explore the significance of social media tools for enhancing student interactions in computer programming course which all engineering students are required to undertake. The study reviewed a bunch of social network tools and technologies such as Facebook, Google+ Twitter and Line that are widely used in higher education.

2. Related Literatures

2.1 Flipped Classroom in Higher Education

The flipped or inverted classroom is a new pedagogical method, which employs asynchronous video lectures and practice problems as homework, and active group-based problem-solving activities in the classroom. This method is in direct contradistinction to the conventional, traditional classroom system. The flipped classroom represent a unique combination of learning theories once thought to be incompatible through the use of active based learning activities founded upon a constructivist ideology (Elazab & Alazab, 2015). The system constitutes a change of role between the instructor and student as it shifts the focus of learning from being instructed based on being student based. Bearing this in mind, it will suffice to say that flipped experience of classroom offers benefits over the conventional learning system, some of which include effective classroom time to present content and discuss complex topics while working with a student individually of in groups. The technique also employs the use of media technology such as recorded lectures and videos, online based content delivery and researchers among many others conforming to the scope of 21st-century activities. Generally, regarding course condition, the flipped teaching could cover more materials and case studies little wonder why the system has an overall approval of about 0.45 of 5 Likert scales with lower SD.

Recently, the flipped or inverted classroom became quite popular in engineering and education circles, many models have been adopted specifically for this purpose. However, the success of the system might depend on the custom and cultural background of the students. Hence, the appropriate implementation process for the different countries and culture might not be the same.

2.2 Social Media in Higher Education

Over the past few years the advancements of social media have resulted in the

transformation of different ways, in which internet is being used for the educational purposes. Therefore, the use of social media is clearly defined through the terms of creativity, conviviality, and collaboration (Selwyn, 2012). The importance of social media for higher education has apparently changed the student's nature, who are admitted to the university. The flexible and accelerated ways of learning among the university students extensively depend on the collective qualities of social media applications. However, the online courses in a university are designed and developed on the basis of specific design skills (Sandoval, 2016). The learning ability of an individual is connected to the information acquired from different internet sources. Therefore, attaining maximum knowledge is considered as ability of an individual to maintain and nurture the acquired knowledge (Chatti, Jarke, & Quix, 2010).

2.3 Personal Learning Environment and Social Media

Learning has since history been considered a social activity (Väljataga, Pata, & Tammets, 2011). The students do not only learn from the teachers and the textbooks, but also from a variety of agents including the media, peers as well as the entire society. Since the explosion of technology and the particularly the internet, the education sector has experienced significant opportunities as well as challenges. The improvements and changes that have been implemented in communication have established technological configurations that have rendered learning more flexible and has created new learning scenarios and approaches. One of the technological advancements that have had considerable impacts on learning is the social media. Of the different application of technology in education, PLE has attracted significantly high levels of interest from both researchers as well as scholars. With the ease of communication, social media has been regarded to one of the main approaches of enhancing personalized learning.

2.4 Defining Personal Learning Environment (PLE)

The aspect and idea of PLE are based upon the notion that learning is a continuous process and as such seeks to provide tools to foster this form of lifelong learning. PLE also takes into perspective the fact that learners have the opportunity of organizing their

processes of learning as well as set their own individual learning goals and objectives with the consideration of their own interests and priorities. The PLE concept integrates the social and cultural values, interactions and complex relationships among different environmental factors (Cameron & Anderson, 2006). Attwell (2007) explains that the basic principles in PLE include the ability to establish and share ideas, join together groups of learners and publish learning content that will be made available for other users to expand and increase their knowledge. Another important consideration in PLE is that the learning process often occur within different contexts and the materials of learning will need to be provide by a range of individuals. In this understanding, PLE can be described and defined as the set of tools, information content resources, communication channels and activities that individuals apply in the management of their own learning. PLE offer the learners with their own individual learning spaces under their control to establish and share ideas with other persons. In this understanding, PLE can be observed as having three main components for which the different tools available can be put into use. The first is reading or access to information which enables the learners to access information needed for learning purposes. The second activity is the ability of the learners to reflect on the knowledge that they have already gathered and their ability to create one's own knowledge. The image shown below demonstrates a demonstration of different social media systems for PLE.

2.5 Relation between Social Media and PLE

Numerous works of researchers have clearly demonstrated that the use of social media by students have significantly increased. The study conducted by Smith & Caruso (2010) showed that the use of social media by students steadily increased between the year 2007 and 2010 and that students were essentially integrating social media in their academic experiences both formally as well as informally. In addition to this explosion in the students' use of social media, there is a strong evidence that social media can

establish and facilitate the establishment of personal learning environments which assist the learners in aggregating and sharing the learning achievements, engage in the generation of collective knowledge for all as well as effective management of their own making of meaning of concepts and aspects (Smith & Caruso, 2010). Institutions of higher education have been observed to make use of social media sites such as Twitter for a variety of operations. According to (Palmer, 2013), while social media has previously been applied by institutions of higher learning for the purposes of student recruitment, marketing as well as social communication, these institutions are continuously perceiving social media as a significant tool for learning. (Evans, 2014) explains that social media websites such as Twitter have significant potential for use to expand both teaching and learning to beyond formal techniques. A number of researchers have explained of the many potential application of social media for learning purposes. However, the researchers have explained two main approaches to learning through the use of social media. On one side; Conole & Alevizou (2010) explains that there are learning tasks that are primarily based upon the exchange of opinions and content. On the other hand there are the activities that are based upon the collaborative innovating production of content such as storytelling. An important aspect of PLE is that it does not only assist the learners to enhance their knowledge and understanding, but also facilitates and enables the teachers and the instructors to increase their knowledge. In the work of research conducted by (Ayala Nevado, 2016), the researcher observed that there are considerable ways in which the PLE can assist the teachers in enhancing and facilitating their knowledge on the different topic. In general, there has been a conclusion on the positive perceptions and outcomes on the works of research regarding the applicability of social media to facilitate and enhance the application of PLE in the learning environments (Carpenter, 2014).

3. Computer Programming Course

The 04-060-101 Computer Programming has two lecture credits and one lab credit which represented five hours in class and five hours outside of class each week of the 16-week-long semester. The course description is "Study and practice about the introduction of computer system component, hardware/software interactive, EDP concepts, and program development that include flowcharts, data structure and variables, mathematical and logical operations, input/output, user interfacing, structured programming, decisions and repetitive loop structures, functions, structure type declarations, arrays, and file processing. The experiment focused on program design and implementation to solve case problems that related to the mentioned topics." This course is offered by the Department of Computer Engineering and had been

compulsory for undergraduate students, so all engineering students of RMUTI are required to undertake. Despite facing problems regarding huge workload due to a vast number of students enrolled, the varies information technology or computer skills of the students also caused time-consuming in the laboratory sessions.

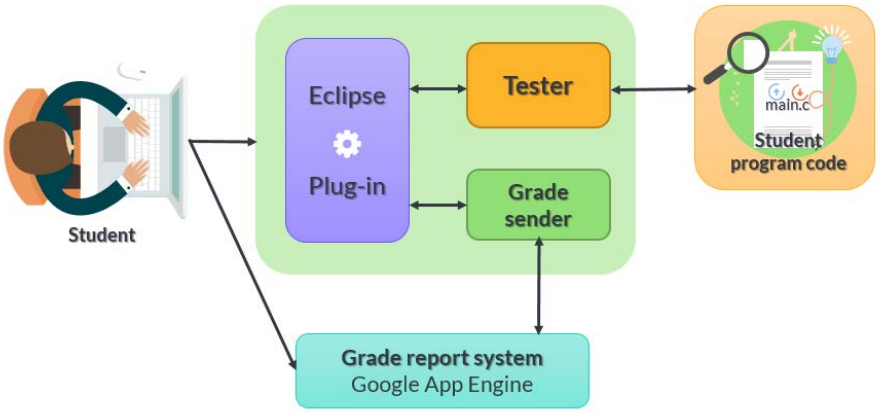

Figure 1. CLAB System

Back in 2013, The Department of Computer Engineering developed an Automated Programming Assessment Systems (APAS) called CLAB based on Eclipse plug-in environment in order to reduce teacher workloads. CLAB can provide readiness feedback when student submit each assignment, so the instructor does not have to execute and check the student's code one by one (Noyunsan, Tangkittipon, & Ngamwittanon, 2014).

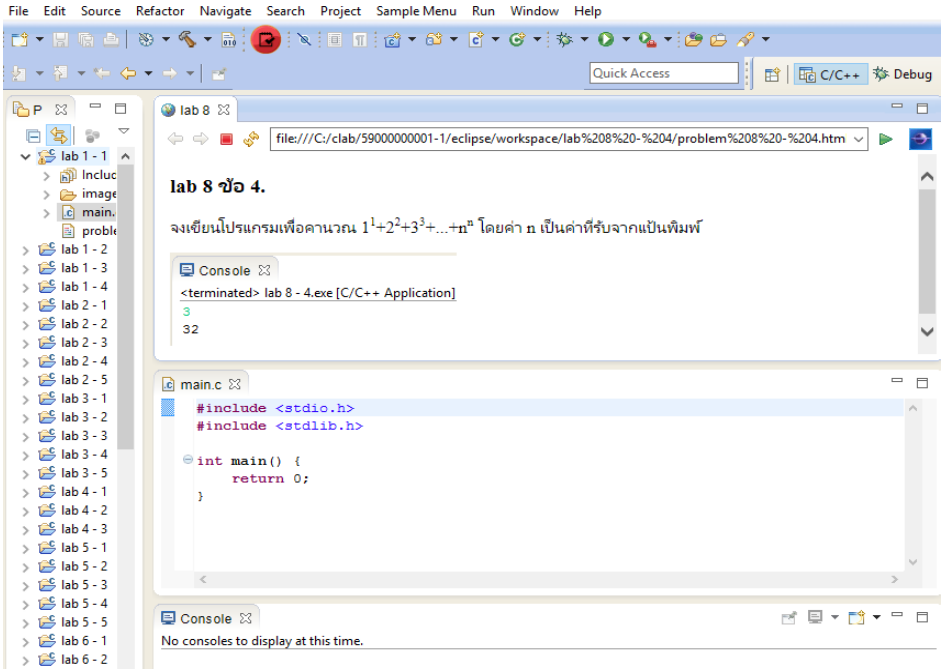

Figure 2. Example of computer programming assignment

While CLAB was using in laboratory session, the instructor still faced another problem

in lecture session which implemented blended learning. Some of the computer programming students never log-in to the Faculty's LMS; course interactions were very low. The flipped classroom concept started implementing at that point of time but did not solve the lack-of-engagement problem. The system logs showed increasing of only Learning Objects (LOs) which contained videos so applying PLE and Social Media might be the proper choice for this situation.

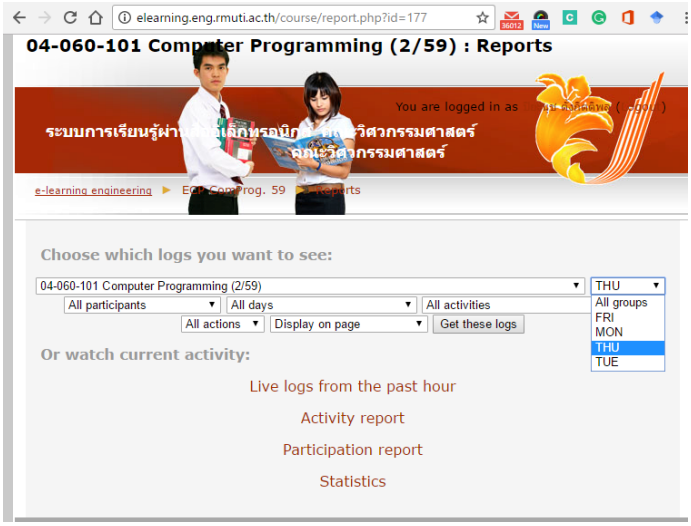

Figure 3. Web Interface for accessing activities reports in Faculty of Engineering eLearning System

3.1 Flipped Computer Programming Classroom

The researchers evaluated several different technologies that appropriate to use in creating course materials prepared for flipped model then decided to choose TechSmith SnagIt and TechSmith Camtasia for screen recording and footage editing. In the first stage video lectures of all units of the computer programming were created then uploaded to Faculty's LMS along with another class materials. Throughout semester 1/2016, The selected section of the Computer Engineering course was flipped. The instructors made the video lectures from the screen recordings that had been taken outside of scheduled class. The instructors did not record anything inside formal lecture session, but screen captured coding demonstrations using CLAB. The demonstrations have been narrated together with slide-based presentations and published on eLearning course every week. All engineering students were assigned to study before next class come. They can watch or rewind the video clips if they need. Class time changed into new structured such that the instructor started with delivering a short summary of the important thing points from the video of coding demonstrations, after that the students might work on their own on a CLAB programming exercises.

3.2 Classroom and Social Network

The social network is a term that describes the linkages and societal structures that emanate from the social integration of people. Social networks operate through relationships. In most cases, these relationships are built by individuals with common social bonds or objectives such as family members, friends, and people with common political and religious interests. In most of these relationships, social networks facilitate the exchange of ideas, sharing of knowledge, opinions, and experiences. This implies that the term social networks revolve around structures with some defined patterns of relationship among people in different social groupings. When the term social network is considered in the context of academics, it mainly describes the nodes and ties as described in the network theory.

Figure 4. Facebook group titled : ECP Computer Programming course interactions

In last year, the social media usage has been surged by approximately 20%; whereas, Facebook is considered as the most famous social platform since last decade. It has been revealed that about 2.8 billion people use social media all around the world at least once a month. Out of those 2.8 billion people, about 91% of them use social media through mobile phones. The average time spent in using use through tablet or PC is 8 hours and 49 minutes; whereas, the average time spent on mobile phone is decreased to 4 hours and 14 minutes. Moreover, the average daily use of internet and social media websites through any electronic device are approximately 2 hours and 48 minutes. On the other hand, average daily time spent in watching television is 2 hours and 26 minutes.

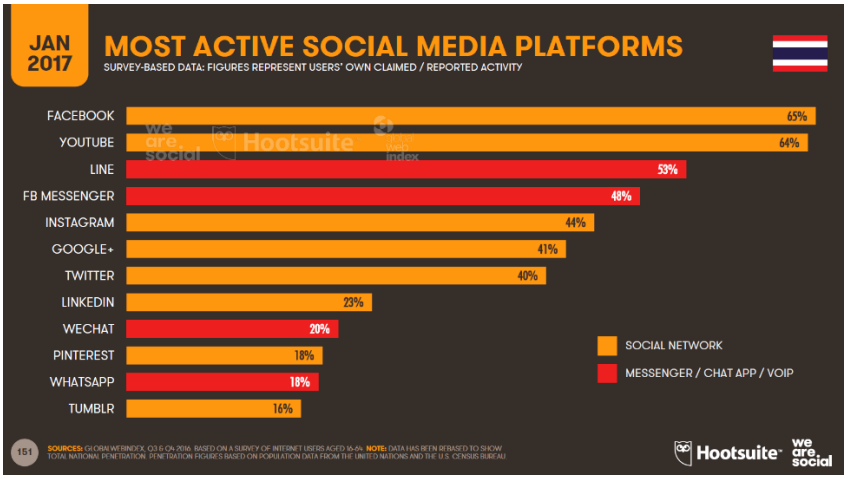

Figure 5. Thailand's Most Active Social Media Platform

The researchers investigated the set of tools preferences among popular social medias to support collaboration between class members based on Thailand's Most Active Social Media Platforms (We-Are-Social, 2017). From Figure 5, Facebook is notably the most popular social media in Thailand. Youtube, Line, FB Messenger, Instagram, and Google+ were also popular. The following is the result of the social media utilization as the personal tools survey from the computer programming students.

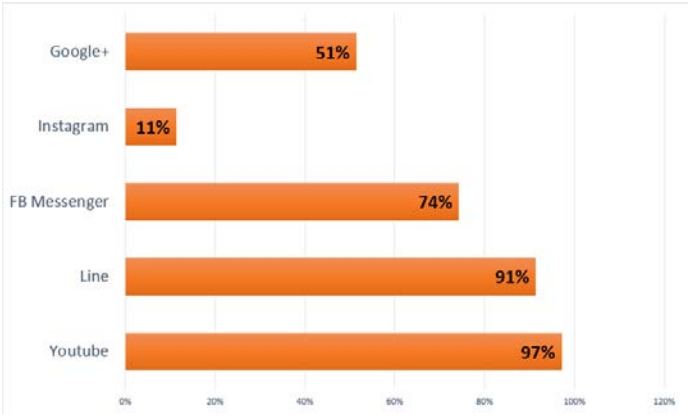

Figure 6. Social Media as PLE Tools of Computer Programming Student

4. Course Interactions

The researcher investigated interactions between students and various learning objects in Faculty's LMS which bulk linked with LDAP user accounts from campus registration system. All students' activities after log-in were recorded into faculty's database.

Phase I started in First four weeks of the semester which the Computer Programming course implemented Flipped Classroom without any Social Media integration and the interactions log shows in Table. 1.

Table 1. Phase I sWeekly Interactions

Activities	w1	w2	w3	w4	total	Avg
Assignment submit	21	24	28	31	104	26.00
Assignment view	26	28	32	33	119	29.75
Slide view	7	4	10	21	42	10.50
Lecture video view	26	52	68	82	228	57.00

After the midterm test, all 35 students answered the questionnaire about social media they had used as Personal Learning Tools. The information obtained from the students' answers on the survey showed as a graph in Fig.6, so Facebook and Line were our selected Social media tools to integrate into the Computer programming course.

Phase II began after the midterm test, the instructors created Facebook group titled 'ECP Computer Programming course' and created Line@ account titled 'ECP Com. Prog.' After that, the instructors invited all students who had such social media account to be the groups' members. During this phase, the instructor frequently posted and shared URL for accessing some latest updated class lecture slides, video, quizzes in the Facebook group and Line@ depending on the pedagogical approach. Sometimes students posted on the Facebook group and discussed several issues related to course assignments. Apart from the assignment and academic interactions, the students used the social sites to catch up and share social and other aspects of their lives. It was found through the social media experiments that online digital learning platforms enhance bonding and closer social ties among members. Such bonding generates a positive impact on the quality of learning experience among students. This is because the social engagements through the digital platforms enable students to understand the world view and general opinion of their colleagues regarding various practice issues in life such as family relationships, religion, politics and social engagements.

Table 2. Phase IIs Weekly Interactions

Activities	w1	w2	w3	w4	total	Avg

Assignment submit	34	35	35	35	139	34.75
Assignment view	42	45	54	52	193	48.25
Slide view	48	57	43	66	214	53.50
Lecture video view	52	41	77	101	271	67.75

The study also found that interactions through the social media make students be more prepared for forthcoming lectures, assignments, exams, and other learning exercises.

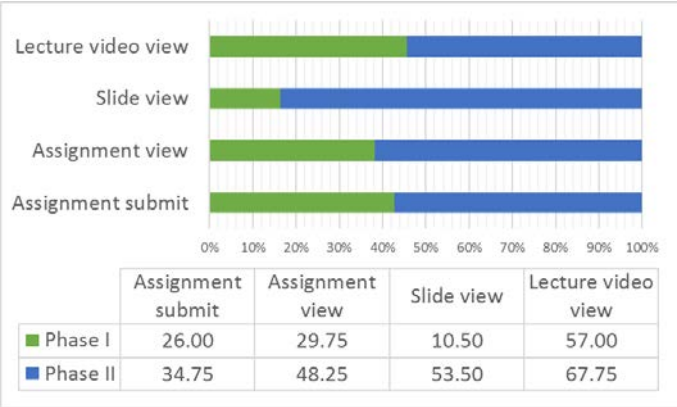

Figure 7. Average Interactions of two phases

5. Conclusion

For this preliminary study, the researchers would like to get a rough assessment of how social media as the students' personal learning tools has influenced class engagements towards the new approach, flipped classroom. This paper reviewed a few social media technologies that are adopted in Thailand higher education and presents an overview of how appropriate social media tools helps increasing course interactions in computer engineering eLearning course. The study found that online digital tools provides an important platform for valuable interactions between students and instructors, and also among students in the group. Apart from developing positive relationships, social media helped members to share ideas and to access information conveniently. Facebook, Line and other social media were found to be important platforms for communication and sharing of ideas. By freely discussing the activities during out of class hours, the flipped classroom's students can gauge themselves about how much they were prepared for the course exams or CLAB assignments.

REFERENCES

Attwell, G. 2007. Personal Learning Environments-the future of eLearning? ***Elearning papers***, 2(1): 1-8.

Ayala Nevado, L. 2016. How a personal learning environment can help primary english teachers to increase their knowledge.

Barkley, E. F. 2009. ***Student Engagement Techniques: A Handbook for College Faculty***: Wiley.

Cameron, D. & Anderson, T. 2006. Comparing weblogs to threaded discussion tools in online educational contexts.

Carpenter, J. P. 2014. Twitter's capacity to support collaborative learning. ***International Journal of Social Media and Interactive Learning Environments***, 2(2): 103-118.

Chatti, M. A., Jarke, M., & Quix, C. 2010. Connectivism: The network metaphor of learning. ***International Journal of Learning Technology***, 5(1): 80-99.

Conole, G. & Alevizou, P. 2010. A literature review of the use of Web 2.0 tools in Higher Education. ***A report commissioned by the Higher Education Academy***.

Elazab, S. & Alazab, M. 2015. The Effectiveness of the Flipped Classroom in Higher Education, ***e-Learning (econf), 2015 Fifth International Conference on***: 207-211: IEEE.

Evans, C. 2014. Twitter for teaching: Can social media be used to enhance the process

of learning? ***British Journal of Educational Technology***, 45(5): 902-915.

Noyunsan, C., Tangkittipon, P., & Ngamwittanon, N. 2014. Online Computer Programming Grading Report System using Eclipse Plug-In, ***The 6th International Conference on Science, Technology and Innovation for Sustainable Well-Being (STISWB VI)***: 229-234. Apsara Angkor Resort; Conference, Siem Reap, Kingdom of Cambodia.

Palmer, S. 2013. Characterisation of the use of Twitter by Australian Universities. ***Journal of Higher Education Policy and Management***, 35(4): 333-344.

Sandoval, Z. V. 2016. ***The development of an E-Learning usability scale for higher education***. The University of Texas Rio Grande Valley.

Selwyn, N. 2012. Social media in higher education. The Europa world of learning, 1–10.

Smith, S. D. & Caruso, J. B. 2010. ***The ECAR study of undergraduate students and information technology, 2010***: Educause Colorado.

Väljataga, T., Pata, K., & Tammets, K. 2011. Considering student's perspectives on personal and distributed learning environments in course design, ***Web***: 85-107.

We-Are-Social; Digital in 2017: Southeast Asia; https://www.slideshare.net/wearesocialsg/digital-in-2017-southeast-asia.

Applying the Business Ecosystem Perspective in Analyzing Tencent's Strategy on its Expansion of Internet Finance Service Industry

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ABSTRACT

The China's Internet finance industry has boomed in recent years, and Internet attackers are cited as key facilitators, fostering radical innovations and possessing a uniquely competitive landscape. To explore how and why such companies penetrate into the Internet finance industry, this study analyzes the evolutionary path of Tencent's business ecosystem during 2013 and 2015, discovering how Tencent positions and interact within the ecosystem. Current findings of this study reveal that Tencent seems to regard penetrating into Internet finance sectors as innovative and efficient means for building in-depth understanding and providing more comprehensive and friendly service offerings for its users. As a result, Tencent targets on payment sector, and penetrates into this sector through forming subsidiaries, and pays significant efforts in deposits and lending markets through investments. Meanwhile, Tencent positions the remaining Internet finance sectors as supportive services, thus initiating a series of trials though different levels and types of cooperation with traditional financial institutes. To ensure the sustainability and mutually beneficial relationships amongst the ecosystem, TenPay serves as the keystone player, whereas Tencent plays the role of physical dominator.

Keyword: Internet finance industry, Tencent, Business ecosystem, Case analysis.

1. Current Understanding on Internet Finance Service Industry

1.1 The Emerging Paradigm Driven by Internet

The Internet has engendered both evolutionary and revolutionary changes in the services and interactions of current business practices, leading to the change of business rules since 1990s. Moreover, owing to the fundamental changes caused by information technology (IT), the Internet+ era has been associated with fundamental IT–driven changes in both business and living environments and constant disruptive innovations, including the Internet financial industry. The concept finance technology

(or FinTech) has then brought disruptive impacts on current practices.

To help financial firms systematically capture the aforementioned patterns, the World Economic Forum (WEF) initiated a global research project in 2015. According to the findings, the core needs that those financial services fulfill remain the same. In other words, the six core functions that comprised financial services remain relevant and are highlighted and identified in the framework: payments, market provisioning, investment management, insurance, deposit and lending, and capital raising. Additionally, 11 clusters of innovations exerting pressure on traditional business models are identified: emerging payment rails, cashless initiatives, smarter and faster machines, new market platforms, process externalization, empowered investors, insurance disaggregation, connected insurance, alternative lending, shifting customer preferences, and crowdfunding (WEF, 2015). Meanwhile, the six high-level insights on the impact of Internet-enabled innovations in financial services are further synthesized. Thus, WEF(2015) argues that Internet-enabled, disruptive innovations will reshape the long-term structure of the financial service industry, spotlight platform-based data-driven service models, and push incumbent institutions to employ online coopetition strategies continuously (WEF, 2015).

1.2 The Growth Potential of China's Booming Internet Finance Sector

Owing to FinTech start-ups' and the third-party-payment-based applications' mushrooming growth, China is cited as one of the places with the most development in Internet finance sectors in recent years. In the end of 2015, the market size of China's online financial industry was more than USD 1.8 trillion. Matured e-commerce sector, latent demands for inclusive finance, as well as aggressive investments in innovative digital services are believed key factors driving this rapid growth in China (Ngai et al., 2016).

With regard to the key players of China's Internet finance industry, three identical firm types are identified. The first type is Internet attackers (or called "barbarians from outside"). In general, China has a uniquely competitive landscape that is dominated by a few digital companies that have established comprehensive multi-licensed financial ecosystems, which are differentiated by their target customers. Alibaba and Tencent are the leading Internet attackers. Alibaba utilizes its EC business as the foundation of its financial empire, with its emphasis on hundreds of millions of individuals and small- and medium-sized enterprises. In contrast to Alibaba's approach, Tencent expanded beyond the powerful social nature of WeChat platform to build a consumer-oriented financial network that taps into its huge user base (Ngai et al., 2016).

Traditional financial institutions are cited as the second type of market player.

They are usually considered industrial followers because of their strict regulations and relatively conservative mindsets; however, recently, they are accelerating their push into the emerging online financial sectors. Ping An Insurance Group, China Construction Bank, and the Industrial and Commercial Bank of China, which are all building their own ecosystems, are regarded as leading traditional financial institutions in this regard (Ngai et al., 2016).

Nonfinancial companies, the last type of player, represent a relatively small group that lacks experience in both the finance and Internet sectors. Retail companies such as Gome and Suning and real estate companies such as the Wanda Group, are now marrying extensive offline resources to design new financial products, which then threaten to undermine banks' control over key business customers (Ngai et al., 2016).

Nevertheless, Internet attackers appear to evoke and initiate the booming of China's online financial industry, thus creating a payment-dominated industry and shaping a differentiated development pattern to that of other leading nations. The relatives of a business and corresponding business models are, therefore, worthy of further investigation.

1.3 The Ecosystem Perspective Is Beneficial in Visualizing Business Evolution

Business ecosystems are a wonderland for companies in the Internet+ era, sustaining competition and innovation amongst enterprises (Fan and Liu, 2015). Moore (1993) is possibly one of the first authors highlighting the importance of business ecosystem perspective as he argued the new ecology of competition in the early 1990s. A business ecosystem, in general, is a concept analogized from biology. From its very nature, this perspective helps to provide not only an emerging landscape for business operations, but also a new perspective for repositioning a company's strategy in order to aggressively further its own interests and to promote its overall ecosystem health. A business ecosystem, therefore, moves beyond market positioning and industrial structure by having the following three major characteristics: symbiosis, platform, and co-evolution (Li, 2009).

Concerning the structural characteristics of a business ecosystem, Iansiti and Levin (2004) argue that interrelated enterprises occupy different ecological niches. They stated that keystone, physical and value dominators, and niche players are the major types of players and strategies. Keystone firms aim to improve the overall health of the ecosystem by providing a stable and predictable set of common assets that other firms use to build their own offering, thus playing a crucial role in creating value and ensuring the health of business ecosystems. Physical dominators aim to directly own and manage a large portion of a network through integration, and are

responsible for creating the value they capture and generally control of the ecosystem. Value dominators tend to extract as much value as they can within the ecosystem, although they create little value and have little direct control over the ecosystem. Finally, most players in business ecosystems position themselves as niche players and adopt niche strategies. They devote themselves to developing specialized capabilities that differentiate them from other firms in the business ecosystem, focusing on enhancing their narrow domains of expertise.

In order to explain how Cisco Systems has been so successful in utilizing its mergers and acquisitions (M&A) strategy for corporate growth, Li (2009) holds based on the business ecosystem viewpoint with supports of the technological perspective. Li is interested in capturing and explaining how Cisco developed scalable business models that enable the company to meet the challenges posed by its continued explosive growth. Consequently, Li depicts how Cisco shapes its technological roadmap by M&A strategy and creates business ecology around its own technology standards; the US patent data from 1993 to 2005 is applied as the analytical basis. The relationships of Cisco's ecosystem are drawn by the diversification of UPC; the numbers by the side of lines are the co-occurrence frequency among UPCs; whereas the numbers in the circles are the UPC that shows the technological domains.

1.4 Current Gaps and Research Focus

Although current studies have analyzed the potential development of the Internet financial service sectors, illustrated how specific innovative firms formed and operated successfully, and provided guidelines for depicting the future profile of Internet finance sector, little is paid to how leading Internet attackers have successfully established comprehensive financial business ecosystems or how they build uniquely competitive landscapes.

In order to help bridge the above-mentioned gap between practice and theory, this study analyzes how Tencent, one of the most representative Internet attackers in China's Internet finance industry, positioned and shaped its financial service ecosystem during 2013 and 2015; namely, how Tencent interacted with firms (including its subsidiaries) joining its financial ecosystem, why Tencent penetrated, as well as how Tencent benefited from the Internet financial industry.

2. Research Methods and Research Design

2.1 Research Methods and Case Selection

As mentioned above, as the development of Internet finance service indrustry is still in its early stages, the qualitative research method is considered suitable in depicting

the insight and implicit signals of this issue. Therefore, case-based analysis is taken as the research method.

Owing to the following reasons, Tencent is believed a representative case in this study: (1) Tencent began to form its social commerce services in 1998 (i.e., social community and online game) and later expanded to the variety of social applications, thus being cited as the leading social community giant in China; (2) the Tencent group has gradually constructed its social commerce oriented business ecosystem in the 2000s; (3) Tencent is quoted as the leading and most typical Internet attacker in China's online financial service sectors, leveraging its payment services for its business expansion (Ngai et al., 2016); (4) TenPay, the supportive online payment service formed in 2005, and was regarded as the key application fostering Tencent's social commerce business ecosystem; and (5) Tencent has been regarded as the most representative multi-sided platform in building innovative social commerce applications; particularly, unlike Ali, which has invested a lot in payment and e-commerce transaction services for a couple of years, Tencent has its reputation and leading position in social community area, with millions of online behaviors being recorded and observed. Therefore, the above mentioned features have made Tencent a research target of great interest in understanding how and why Internet attackers penetrate into the Internet financing industry.

2.2 Analytical Framework

Based on current literature, it is clear to see that although the importance of the business ecosystem perspective is highly recognized, and has then resulted in a series of studies in this field, how to efficient analyze or depict a business ecosystem is not an easy task so far, however.

Therefore, to provide a comparable outcome, this paper builds on its analytical framework, and the evolutionary paths of business scope coverage and corresponding expansion strategies are especially specified. First of all, with regard to the business scope (of Internet finance industry), the WEF's six core functions of financial services are adopted in our analytical framework.

Secondly, in terms of classification and relationship analysis, types of firms (i.e., self-owned or cooperative), the corresponding financial service category, as well as the relationships between firms (i.e., self-owned, M&A, investment or project-based cooperation) are depicted by referring to Li's (2009) approach. Meanwhile, to capture the dynamic changes, this study applies Kuo and Wu's (2016) approach in depicting the annually evolutionary patterns.

To sum up, this study focuses on the evolutionary period of the focal company's (i.e., Tencent) business ecosystem and considered niche firms secondarily. To

visualize the focal company's networking strategies and subsequent connections to its Internet finance service ecosystem, the strength of the relationships (or links) between the focal company and other players in the ecosystem are specifically illustrated. Specifically, to depict how the focal company penetrate and how it interact and cooperate with partners in the ecosystem, this study analyzes the possible role of each member by applying Iansiti and Levin's (2004) framework.

2.3 Data Collection

The study obtains relevant data mainly from online news, with supplementary supports from the literature. The link between two firms within Tencent's Internet financial ecosystem in a specific year is recorded based upon the cooperative news collected online. The data is then cross checked to ensure that each relation link is valid and current; once valid, the data is then converted into a table. Additionally, a blended analysis strategy is employed to ensure validity; time horizon-based pattern matching analysis is applied when using the case method.

With regard to the time period of analysis, owing to the fact that China officially announced its development of Internet finance industry in 2013, and that WeChatPay was also introduced in 2013, this study analyzes the evolutionary paths between 2013 and 2015. The birth and expansion stages of this ecosystem are explored in this study.

3. Analysis and Preliminary Findings

3.1 Analytical Outcomes

Figures 1, 2 and 3 depict the profile of Tencent's Internet finance service ecosystem at the end of 2013, 2014 and 2015, respectively. In 2013, except for online payment, Tencent had limited experience and capabilities in all the financial service sectors. To penetrate into the Internet finance industry based on its core competence (i.e., social community and online payment), Tencent initiated subsidiaries and cooperated with existing financial service providers during this period. Thus, as Figure 1 depicts, connections amongst players were relatively simple, whereas the differentiation amongst players remained limited. Based on an in-depth analysis of firm structure, 17 participants joined the ecosystem in 2013. Under this ecosystem, 11 firms were self-owned and initiated by the Tencent group, whereas only six players are partners. Regarding the business scope of the ecosystem, Tencent entered the online financial service sectors with its online payment platform, TenPay, in the 2000s and soon expanded its services include investment management and insurance services, targeting Tencent's existing customers. Additionally, in 2013, WeChatPay was announced, with its focus to provide supportive services of WeChat users. Meanwhile,

crowd-based funding for non-profit services was also formed in 2013. Therefore, it is argued that, during this stage, the relationships between players in this ecosystem were still weak and simple; both parties were trying to leverage each other to create niche markets. However, in the meantime, what is worth paying attention to is that a relative higher portion on building stronger relationships between Tencent and its partners from project-based cooperation toward investment since 2013.

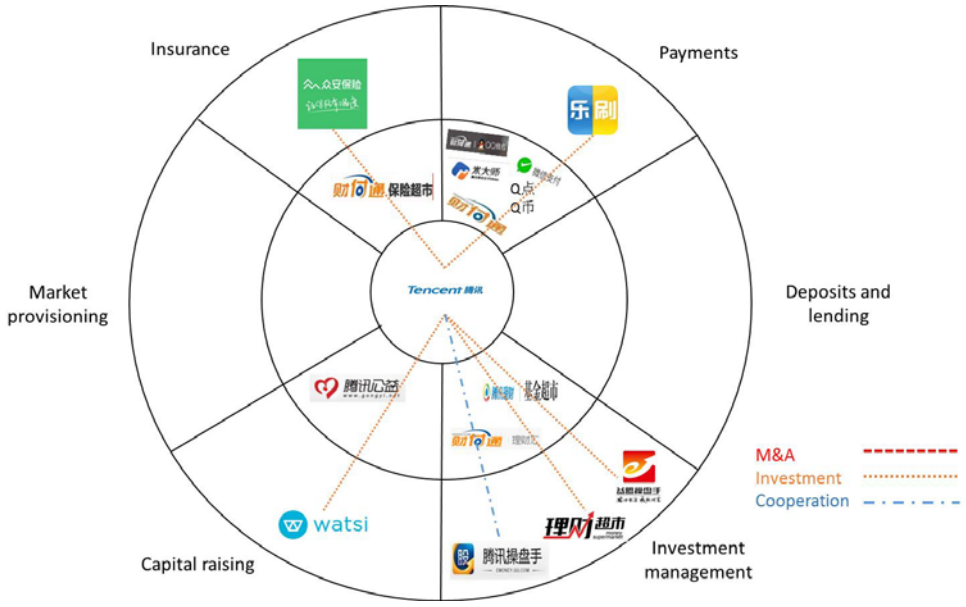

Figure 1 Tencent's Internet finance ecosystem in the end of 2013

In 2014, based on the core of third party payment, Tencent emphasized serving as the payment gateway for the whole Tencent business ecosystem, and tried to gather the behavioral information and patterns of all participants and customers in the meantime. Tencent continues its expansion of its service scope and variety particularly in domains of investment management service; as well, Tencent initiates its deposits and lending services in 2014 through the help of partners. Therefore, a variety of derived innovative financial services based on TenPay and WeChatPay were launched in 2014, including the well-known electronic red envelopment. Under this ecosystem, 14 firms were self-owned and initiated by the Tencent group, whereas another 14 players are partners.

In 2015, as seen in Figure 3, except for initiating WeChat Bank and the new business of personal credit evaluation, no significant change was found in this ecosystem. Although the Tencent's Internet finance service ecosystem has expanded into the six core function areas to build a more complete and robust service landscape, it is argued that Tencent's ecosystem is still in its expansion stage. More specifically, contrast to the strategy of business service scope extension, Tencent focused on deepening the impacts of current ecosystem and building possible links amongst

internal services. Besides, in this ecosystem, Internet-based firms are found less critical, in terms of both number of participants and that of impacts on this ecosystem. Furthermore and more critically, this current expansion of the Tencent is implemented with supplementary perspective for its social commerce ecosystem. Therefore, the Tencent group is believed to build their own platform for ensuring the continuous growth and sustainability of the ecosystem through fulfilling the unmet needs of Tencent's current users, rather by growing the membership of this ecosystem.

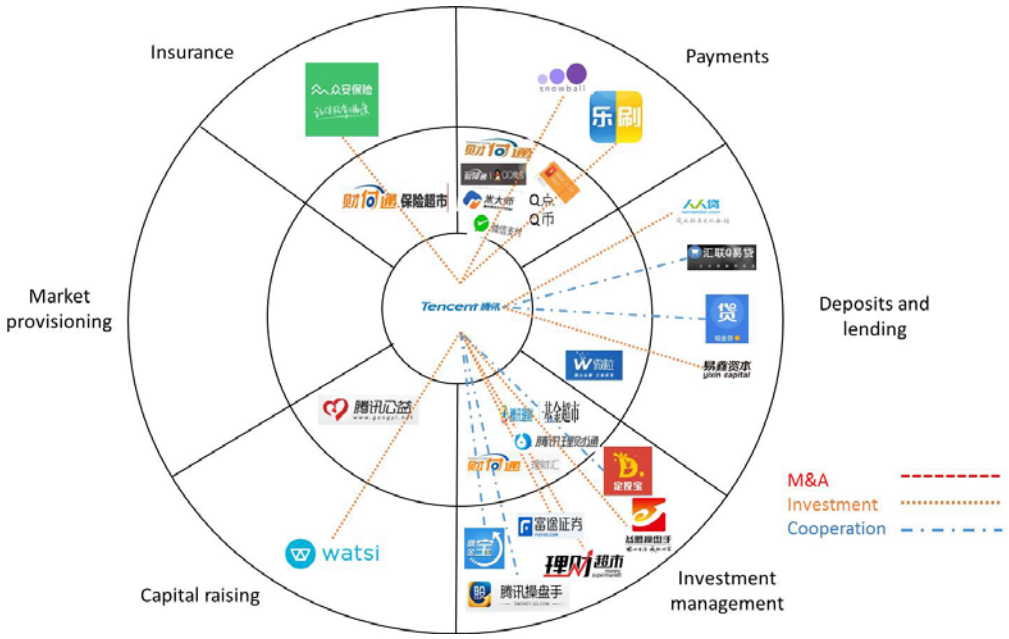

Figure 2 Tencent's Internet finance ecosystem in the end of 2014

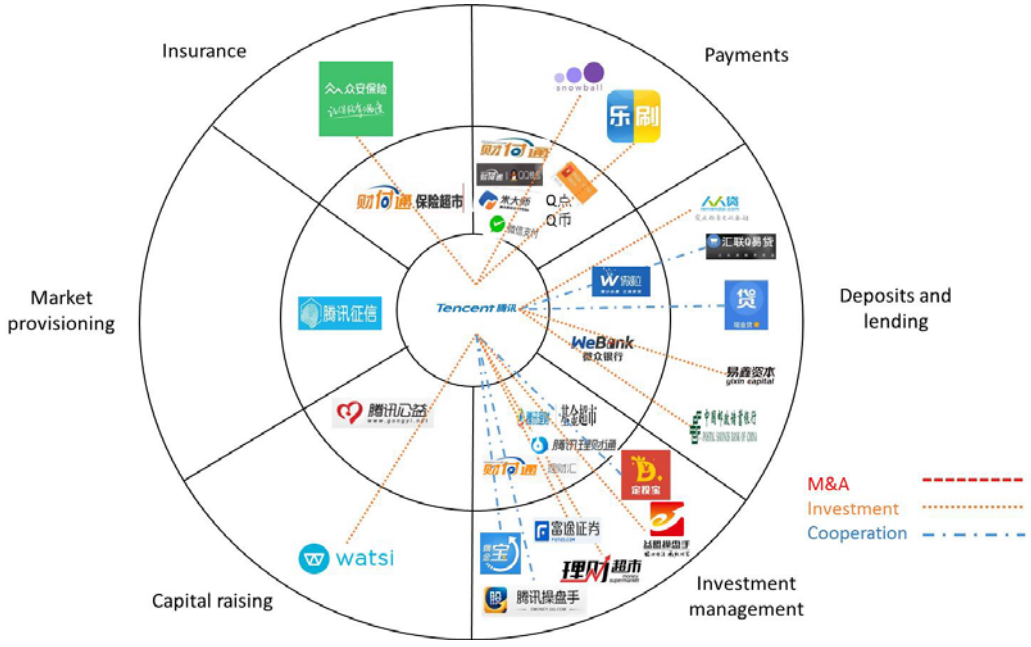

Figure 3 Tencent's Internet finance ecosystem in the end of 2015

3.2 Key findings and conclusions

The term Internet Financing is recently remarked as the new industrial paradigm of Internet+ Era. As an emerging business concept but with great potential, firms are eager to penetrate into this industry, trying to benefit from it. Similar pattern is also found in China. Because of the mushrooming of FinTech start-ups and the major contribution of Internet attackers (particularly Alibaba and Tencent), China, with its unique development pattern and competitive landscape, is considered one of the countries with the highest expansion in this industry in recent years, particularly after the success of Yu'ebao in 2013. More specifically, amongst the current players of Internet finance industry in China, the two leading e-commerce giants (i.e., Ali and Tencent) are regarded as those who have fostered revolutionary changes of current business rules of China's finance industry.

Although numerous studies have illustrated single innovative or successful cases and have provided guidelines for depicting the profile of the future industry, little attention is paid on the strategies and reasons by which leading Internet attackers establish comprehensive multi-licensed financial ecosystems, or how they have built uniquely competitive landscapes, however. Owing to the fact that current research provides limited clues in analyzing their evolutionary paths, this paper analyzes the evolutionary path of Tencent's ecosystem. Case study method is applied in analyzing Tencent's movement in Internet financing during 2013 to 2015, through gathering the secondary data, with its focus on the evolution and relationships of the business ecosystem.

Current findings of this study show that Tencent targets on three areas (i.e., payment, credit, banking), penetrating through forming subsidiaries. In addition, Tencent puts significant efforts in lending marketing through investment strategy. In the meantime, Tencent seems to position the remaining sub-domains of Internet finance as supportive services, and initiates trials through different levels and types of cooperation with partners, particularly with non-direct competitive, traditional financial institutes. Moreover, to ensure sustainable and mutually beneficial relationships amongst most Tencent's ecosystem players, TenPay is positioned as a keystone player, which further enabling Tencent to serve as the physical dominator in the ecosystem. Finally, in terms of the value proposition behind such penetration practices and strategies, the authors argue that the Tencent Group tend to regard penetrating into Internet finance service sectors as necessary, efficient and innovative means for building and providing more in-depth understanding, friendly, and comprehensive service offerings for its existing customers. Such approach, from its very nature, seems to reveal a significant different philosophy when comparing with that of Ali Group. This may be also applicable in explaining why the evolution paths,

the coverage scopes, trails, as well as portfolios of these two EC giants' Internet finance service ecosystem are significantly different.

3.3 Contributions and implications

Based on our findings, contributions and implications of this paper can be summarized as following. First of all, when theoretical contributions are considered, although current studies on business ecosystem, such as Moore (1993) and Iansiti and Levien (2004), have demonstrated how to depict the roles and goals of firms participating in the system, less is discussed on analytical techniques depicting the dynamics and relationships amongst the business ecosystem (Li, 2009). Therefore, this study contributes to capturing the dynamic changes by applying analytical techniques from the value net analysis. Through adding the cross-year comparison viewpoint and specifying the level of strengths of each link, this study is believed applicable in visualizing the evolutionary path and examining its robustness of this ecosystem, thus forming a possible new analytical perspective for future business ecosystem research.

With regard to the practical aspect, most of the hypotheses of WEF regarding the development of online financial service sectors are reflected in our analysis. Thanks to TenPay and WeChatPay's innovative business models and contributions, a typical platform-based model and ecosystem is then built. Moreover, as Tencent adopt a complementary but cooperative position in this ecosystem (i.e., TenPay is a keystone business, whereas Tencent adopts the physical dominator strategy), both traditional financial firms and Internet-based players are attracted to and proactively join this ecosystem, in order to leverage Tencent for their market expansion. Such strategic approaches differ from how traditional financial institutions operate and innovate. Moreover, the developmental path and strategy of Tencent's Internet financial service ecosystem reflects a customer-oriented, niche-based, evolutionary strategy, mirroring how Tencent succeeded in its social commerce landscape, which is consistent with the business ecosystem discussed.

Finally, based on the above analysis, the following three implications can be drawn: (1) online payment (including virtual money or so-called wildcat currency) service providers may serve as the role of either platforms or keystones in fostering Internet financial services; (2) the ultimate goal and benefits of why Interact attackers penetrate into the Internet financial service sectors may not lie on new market shaping but on providing extending unmet or unfilled needs of existing users (of Tencent) through a more comprehensive but in-depth understanding of interactive service delivery, offerings and design; and (3) such practice may be further taken as an ideal type in illustrating the theme of SSMED (i.e., service science, management,

engineering, and design).

REFERENCES

den Hertog. P. 2000. Knowledge-intensive business services as co-producers of innovation, *International Journal of Innovation Management*, 4(4). 491-528.

Iansiti, M., & Levien, R. 2004. Strategy as ecology, *Harvard Business Review*, 82(3), 68-81.

Kuo, C.L., and Wu, Q.Z. 2016. How do Alibaba penetrate into and benefit from the Internet finance sector successfully? An ecosystem perspective, *in the Proceedings of the 16th International Conference on Electronic Business (ICEB 2016)*.

Li, Y. R. 2009. The technological roadmap of Cisco's business ecosystem. *Technovation*, 29 (5), 379-386.

Moore, J. F. 1993. Predators and prey: A new ecology of competition, *Harvard Business Review*, 71(3), 75-83.

Ngai, J. L., Qu, J., & Zhou, N. 2016. *What's next for China's booming FinTech sector?* McKinsey & Company.

Tan, B., Pan, S. L., Lu, X., & Huang, L. 2015. The role of IS capabilities in the development of multi-sided platforms: The digital ecosystem strategy of Alibaba.com, *Journal of the Association for Information Systems*, 16 (4), 248-280.

World Economic Forum (WEF). 2015. *The future of financial services: How disruptive innovations are reshaping the way financial services are structured, provisioned and consumed*, Final report, June.

How the digital lifestyle influences mobile shopping behaviors

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Abstract

Although understanding and predicting consumer behavior is a vital aspect in marketing and is a necessary requirement for firms to be survival, profitable, and successful particularly in the rapid changing market, no academic research to date has used lifestyle to investigate mobile shoppers and non-shoppers. Not to say using Internet lifestyle, e-lifestyle or digital lifestyle. Therefore, this work first used a two-step cluster analysis to form clusters by minimizing dispersion within clusters. Cluster analysis, first used by Tryson, is an exploratory data analysis tool which aims to sort different objects into groups so that the degree of association between two objects is maximal if they belong to the same group and minimal if they do not. Consequently, this study employed an validated digital-lifestyle scale to cluster respondents and then profile each cluster based on their shopping behaviors, demographic characteristics, and digital-lifestyle dimensions. After executing analysis of variance (ANOVA) to examine the differences among clusters, some implications were derived and discussed.

Keywords: clustering, ANOVA, lifestyle, digital lifestyle, shopping behavior

The Role of Consumption Values in Evaluation on Shopping Mall Attributes: Comparison of On/Off-line Channel

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ABSTRACT

This study is to investigate the effects of consumption values of retailers on the importance of store attributes. and to determine the influence of the consumption values of consumers who shop at complex shopping malls on the empirical and functional attributes of those malls as well as the influence of on- and offline channels. With 344 surveyed questionnaires, this study was conducted using SPSS 22.0 to verify the reliability and validity of the measured variables and the structural equation model (SEM) was used as a statistical method for testing the hypotheses in this study. The results show that hedonic value has more influence on the empirical attribute importance than the functional attribute importance of shopping malls. In addition, practical value has more influence on functional attributes than the empirical properties of shopping malls. However, these relationships differed with on- and offline channels. For offline channels, consumers' consumption values were more influential on empirical attributes, while for online channels functional attributes were more important. This study analyzed the influence of consumption values on the importance of store attributes and the effects of each channel, and suggested practical implications.he guide aims to tell you the submission format for the Proceedings of International Conference. All submissions must be submitted on-line via the conference management system by the due date. The review decision notifications with an acceptance or rejection email will be sent to the corresponding author in two weeks after submission**.** After receiving the review result, the authors are encouraged to prepare the final camera-ready paper before the deadline shown in the website. Other information can also be found on the official conference website. If you have any questions, please do not hesitate to contact us. We look forward to your participation.

Keyword: Hedonic Value, Practical Value, Empirical Attribute, Functional Attribute, Moderating Role