Towards a Better Understanding of Intellectual Capital in Small and Medium Enterprises (SMEs) Operating in Service Sector

Muhammad Khalique[1] , Muhammad Tahir Ali Shah[2] and Khushbakht Hina[3]

Abstract

The aim of this paper is to investigate the influence of intellectual capital on the organizational performance of electronics SMEs operating in service sector. A valid research questionnaire was utilized to conduct this empirical study. A total of 400 individuals from electrical and electronics manufacturing sector were involved. Integrated Intellectual Capital Model was used to examine the role of intellectual capital in SMEs. Six research hypotheses were constructed to test the influence of intellectual capital on the organizational performance of SMEs. Multiple Regression analysis was used to test the proposed research hypotheses. The empirical results showed that all seven hypotheses were supported. The findings of this study provide valuable insights on the generalizability of intellectual capital in SMEs in electronics sector in Malaysia. This study is cross sectional, therefore the findings of this study has limited scope. Intellectual capital is a prime strategic asset for the success of organizations. The findings of this study will highlight the concept and applications of intellectual capital in SMEs. Currently this research is among a few to investigate the influence of intellectual capital in Malaysian electronics SMEs operating service sector.

Keywords: Intellectual Capital, Human Capital, Customer Capital, Structural Capital, Social Capital, Technological Capital, Spiritual Capital, SMEs, Performance, Malaysia

1. Introduction

Intellectual capital is a most critical ingredient for organizations to achieve a business success in a knowledge based economy. Nowadays, most of the enterprises tend to embed intellectual capital in their organizations to boost their financial and non-financial performance and to encounter the global challenges. In knowledge based economy, industry 4.0 emerges with big challenges and therefore intellectual capital (IC) is recognized as a vital source. IC mainly based on intangible assets such as knowledge, skills, education, professional expertise etc. In industry 4.0 most of the organization's managers have strong desire to maximize their turnover and to protect the interest of their stakeholders. It can only possible with the help of management of intellectual capital. In traditional economy organizations were depending more on physical assets and considered them as their foremost sources of wealth to improve their performance. These tangible belongings may include land, production equipments, buildings, labors and others natural resources. In industry 4.0 the flora of the assets has been changed and now the most important assets are intangible assets which are collectively known as intellectual capital.

To transforming from production based economy into a knowledge-based economy, many organizations have keen desire to reconcile their monetary resources and tangible assets with intellectual assets due to the swift variation of technological progression, extended product lines and changes in the global economies (N. Kamukama, A. Ahiauzu, & J.M. Ntayi, 2010). These forces are compelling organizations to generate new benefits and competitive edge. Moreover, at the same time period make an effort to deteriorate the competitors' strategic lead progressively. In industry 4.0, intellectual capital has been considered as the most important strategic resource and a vital ingredient to enhance the organizational sustainability and competitive advantage (Khalique, 2012). Intellectual capital is a more complex asset as compare to tangible assets to measure the influence to the organization. Particularly for smart organizations it is very important to understand the contemporary challenges and to capitalize their intellectual capital more swiftly.

Small and Medium Enterprises (SMEs) has secured significant acknowledgement from many developed and developing countries equally. There is no doubt that the role of SMEs in the development

1 Director, Business School Mirpur University of Science and Technology (MUST) AJ&K. drmkhalique@gmail.com
2 Director Academic , Higher Education Commission, Islamabad, tshah@hec.gov.pk
3 Assistant Professor, National University of Modern Languages Islamabad. kbhina@numl.edu.pk

of economy is highly recognized. Hashim, Ahmad, and Zakaria (2010) argued that SMEs contribute in various sectors such as improving revenue generation, export share, support to large companies, and cut down unemployment. Malaysian economy is mainly based on SMEs and it considered as backbone of the national economy. Based on Malaysia SMEs annual report 2011/12, SMEs accounted for 645,136 or 97.3% of the total establishment of 662,939 in manufacturing, services and agricultural sectors respectively. In 2012, it had contributed 32% of Gross Domestic Product (GDP), 56% of total workforce and approximately 19 % of exports (Wong & Teo, 2013). These evidences showed that SMEs play remarkable contribution in the development and growth of national economy. To keep this momentum and enhance the contribution of SMEs in various sectors there is a great need to promote the concept and applications of intellectual in SMEs. During related literature review it was found that a few studies have been conducted in SMEs sector in Malaysia. Therefore for Malaysian SMEs intellectual capital is quite new and unclear. There is a great need to promote the concept and applications of intellectual capital in SMEs more specifically in high-tech sector.

2. Intellectual Capital

In 1969 John Kenneth Galbraith first time introduced the term intellectual capital. He narrated that IC is a very important for the success of organizations and it base on intellect which help to create value added products and services. Stewart (1997) argued that IC is a "packaged of useful knowledge and information". Organizations can generate value added products, services and efficiency with help of IC. Many researchers such as (Huang and Wu 2010, Hormiga, Batista-Canino, and Sánchez-Medina 2011) argued that intelletcual capital is summing up all collective knolwdge of worksers and organzations. This can be utilized to enhance the performance of organizations. Moreover, Hormiga, Batista-Canino, and Sánchez-Medina (2011) illustrated that intellectual capital can be created by the workers of organizations, in shape of information systems, financial relations and social networks both inside and outside of the organization. Khalique (2012) stated that intellectual capital refers to the accumulation of all intangible assets of the organization. These assets play significant positive role to enhance the productivity and the performance of the organizations.

2.1 Breaking Intellectual Capital to its Sub-Components

Intellectual capital is a multidisciplinary nature subject and therefore it is difficult to quantify accurately. To understand the concept of intellectual capital accurately and precisely we need to know its composition. In this connection, researchers proposed different components of intellectual capital for example Stewart (1997) proposed three components namely human capital, customer capital and structural capital. Bontis, Keow, and Richardson (2000) applied this model in Malaysian context and conclude that intellectual capital is playing a significant positive role to enhance the business performance. Ismail (2005) argued that intellectual capital is based on human capital, customer capital, structural capital and spiritual capital. After one year Bueno, Salmador, Rodríguez, and De Castro (2006) stipulated that intellectual capital is accumulation of human capital, organizational capital, social capital, business capital and technological capital. Khalique, Shaari, and Isa (2011) proposed an Integrated Intellectual Capital Model which comprises on human capital, customer capital, structural capital, social capital, technological capital and spiritual capital and Khalique (2012) tested this model in Malaysian and Pakistani SMEs and affirmed that intellectual capital has significant positive influence on the organizational performance of SMEs.

Human Capital

Human capital can be defined as the work-related knowledge, professional skills & expertise, experiences, originality, professional capability, aptitude and abilities that possess by workers to enhance the value adding process (Patricia Ordonez de Pablos, 2005; Kamukama et al., 2010). Human capital is the most important and vital component of intellectual capital and it contribute a lot in organizations. Liu, (2009) argued that employees are the main source of human capital and their knowledge, technical skills and other aspect can be used for the betterment of organizations. Human capital can be developed through preparation programs that delivered by the professionals with the attempt to enhance organizational performance. Khalique et al. (2012) argued that human capital is necessary for the development, creativity and sustainability of employees as well as organizations.

Customer Capital

Customer capital is discusses to the main features of customers such as customer's satisfaction, customer's loyalty and brand images (Khalique, Shaari, Isa, & Samad, 2013). Customer capital is a crucial component of intellectual capital and its importance in small and medium enterprises is highly acknowledged. Customer capital is very important for SMEs to create a long-standing relationship with their existing and potential customers by satisfying their needs and provide value added products and services.

Structural Capital

In organizations structural capital is considered as the main column. It mainly based on non-human storehouse of knowledge within the organization for example well defined policy, procedure, database, rules management processes, managerial practices, information and network system. Patricia Ordóñez de Pablos (2004) asserted that structural capital is a long term and vital asset which can be replicated, and established. Khalique (2012) argued that structural capital is a skeleton of organizations. It helps to shape the way of working in an organization.

Social Capital

Social capital is a prime component of IC. Generally social capital is based on the mixture of social wellbeing, trust and social bandings. It acts like a glue of organization. Bueno, Salmador, and Rodríguez (2004) and Wu and Tsai (2005) argued that social capital is a very important component to attain competitive advantage in a knowledge based economy. The collaboration between organizations is the main root of competitive advantage. Khalique, Mansor, Isa, and Shaari (2014) argued that social capital helps to develop mutual understanding, trust, and professional network.

Technological Capital

Technological capital is also considered as a vital component of intellectual capital more specifically in high-tech SMEs (Khalique, Shaari, & Mansor, 2014). A well developed and advanced level of technological capital can contribute more effectively in order to have a competitive advantage. Technological capital is a main source of innovation in an organization. Khalique, Shaari, et al. (2014) argued that it encompasses advance technological knowledge, process, intellectual property right and industrial property rights.

Spiritual Capital

Khalique, Shaari, et al. (2014) argued that it includes the faith, honesty, and ethical values of employees that will help to the organization to perform effectively and efficiently. Spiritual capital is also one of the most important dimensions of IC and it plays a very productive contribution in organizational performance. Khalique et al (2012) argued that organizations with high spiritual capital could be achieved their selected goals and objectives more easily. Ismail (2005) reported that spiritual capital comprises on truthfulness, forgiveness, moral, devotion, motivation and strength.

2.2 Electronics Small and Medium Enterprises in Malaysia

Malaysian economy is based on SMEs. There is no doubt that SMEs play a critical role in the various sectors such as employment, GDP export and in the development of national economy. In 2011, statistics showed that SMEs constitute 97.3% of the total establishments, contribute about 32% of GDP, and 57.3% of total employment. Surprising, SMEs provide higher rate of employment as compared to the larger industries (SME Report 2012/2013). There is no doubt that service sector is contributing more as compared to other sectors. In service sector electronics SMEs play a vital contribution. These SMEs viewed as as high tech industries. In the services sector, SMEs are occupied 580,985 or 90.1% out of total business establishment which is 591,883 (SME Annual Report 2011/12). In Malaysia the electronics industry was started in 1970. In past Malaysia imported electronics products but now due to well established electronics industries Malaysia is one of the most important exporters of the electronics products. There is no doubt that in Industry 4.0 the contribution of this industry is very important and crucial.

2.3 Intellectual Capital in SMEs

In intellectual field many researchers such as (Bontis et al., 2000; Daud & Yusuf, 2008; de Castro & Sáez, 2008; Patricia Ordonez de Pablos, 2005; Huang & Wu, 2010; Nixon Kamukama, Augustine Ahiauzu, & Joseph M. Ntayi, 2010; Khalique, Isa, & Shaari, 2013; Khalique, Shaari, Isa, & Ageel, 2011; Ordonez de Pablos, 2004) argued that intelletcual capital plays a very important and significnat contribution

in order to enhance the perofmrnace of SMEs. Moreover, they argued that the survival and sustainability of SMEs is mainly based on the identification and capitalization of their intellectual capital. Khalique et al., (2012) conducted a research on SMEs operating in electronics and electrical manufacturing in Malaysia and Pakistan. He argued that intellectual capital has significant and positive impact on the performance of SMEs. Similarly Khalique, Isa, et al. (2013) examined the role of intellectual capital by using four components namely human capital, customer capital, technological capital and spiritual capital and found that these components are significant contributors to enhance the performance of SMEs. During related literature review it was found that there is no such study available that have the six components of intellectual capital in electronics SMEs in Malaysia.

2.4 Conceptual Framework

The conceptual framework of this study is based on intellectual capital theory. Khalique, Shaari, and Isa (2013) proposed the developed intellectual capital theory which is based on six components of intellectual capital namely human capital, customer capital, structural capital, social capital, technological capital and spiritual capital. The combination of these six components in a model is known as integrated intellectual capital model (IICM). Therefore, in this study six components of intellectual capital are consider as the predictor variables and the organizational performance employs as predicted variable. Six research hypotheses were constructed to get the objectives of the study.

2.5 Research Hypotheses

1. Human capital has positive influence on the organizational performance of electronics SMEs in Kuching
2. Customer capital has positive influence on the organizational performance of electronics SMEs in Kuching
3. Structural capital has positive influence on the organizational performance of electronics SMEs in Kuching
4. Social capital has positive influence on the organizational performance of electronics SMEs in Kuching
5. Technological capital has positive influence on the organizational performance of electronics SMEs in Kuching
6. Spiritual capital has positive influence on the organizational performance of electronics SMEs in Kuching

3. Research Methodology

The objective of this study was to examine the influence of intellectual capital on the organizational performance of electronics SMEs operating in service sector. To that end, a survey instrument with five-point Likert scale (1= totally disagree, 5 = totally agree) of Khalique et al. (2012) was used to measure the constructs. Six components namely, human capital, customer capital, structural capital, social capital, technological capital and spiritual capital were proposed as independent variables which were felt to be important for intellectual capital implementation.

Having validated the questionnaire through extensive literature review, expert validation and pilot testing, a sample of 500 individuals from electronics SMEs were selected by applying convenience sampling technique. The data were gathered by sending questionnaire directly to the staff of organizations. A total of 400 participants were involved in this study. The response rate was 90% which the author felt to be reasonable for this kind of study.

4. Data Analysis

Before testing the hypotheses the data were screened and cleaned. Empirical data from electronics SMEs operating in Kuching, Sarawak were used to test the proposed research hypotheses. All the acquired data were analyzed through IBM SPSS Statistics 22. Before testing the hypotheses the reliability of the constructs were also ensured. To test the research hypotheses multiple regression analysis was used.

4.1 Descriptive Statistics

In this study the descriptive statistics were used to examine the background information of the participants. A total of 400 respondents were participated in this study. The details of respondents are demonstrated in Table1.The demographic profile of respondents is listed in Table 1.

Table No. 1 Demographic Profile of Respondents

Profile		Frequency	Percent
Gender	Male	226	56.5
	Female	174	43.5
Age	20-25	42	10.5
	26-31	77	19.3
	32-37	133	33.3
	38-43	80	20.0
	44-49	47	11.8
	50-55	21	5.3
Race	Malay	74	18.5
	Chinese	221	55.3
	India	28	7.0
	Others	77	19.3
Education Level	Diploma	59	14.8
	Degree or professional qualification	154	38.5
	Postgraduate	34	8.5
	Others	153	38.3
Monthly Income	Below RM 1,500	45	11.3
	RM 1,500-RM 3,000	133	33.3
	RM3,001-RM4,500	157	39.3
	RM4,501-RM6,000	57	14.3
	RM6,001-RM7,500	8	2.0
Size of Organization	Below 10 employees	96	24.0
	11-20 employees	122	30.5
	21-30 employees	108	27.0
	31-40 employees	62	15.5
	Above 40 employees	12	3.0
Years of Service with Organization	Below 5 years	194	48.5
	6-10 years	131	32.8
	11-15 years	50	12.5
	Above 15 years	25	6.3
Years of Operation of Organization	Below 10 years	206	51.5
	11-20 years	115	28.8
	21-30 years	57	14.3
	Above 30 years	22	5.5

4.2 Reliability Analysis

In this study Cronbach's Alpha was employed to check the reliability and internal consistency of each variable. Hair, Anderson, Tatham, and Black (1998) suggested that the item loadings obtained 0.6 and above could be considered as reliable and acceptable. The results of reliability in Table 2 clearly reported that the employed constructs of the study are reliable and met the minimum threshold suggested by (Khalique et al, 2012; Pallant, 2007). The result of reliability is listed in Table 2.

Table No. 2 Reliability Test of Constructs

Variables	Cronbach's Alpha
Human Capital	0.924
Structural Capital	0.896
Relational Capital	0.898
Social Capital	0.911
Technological Capital	0.930
Spiritual Capital	0.852
Organizational Performance	0.927

4.3 Testing of Hypotheses

Multiple regression analysis was used to examine the influence of intellectual capital on the organizational performance of electronics SMEs in Kuching. In regression analysis coefficient of determination *(R^2)* refers the goodness of fit for the regression model. Table 3 demonstrates the multiple regression results. 75.1% (R^2 = 0.752) of the variance in organizational performance of the SMEs is jointly explained by the six independent variables (F = 198.195; Sig. = 0.000). This indicated that 75% of the variance in SMEs' performance was explained by the contributions of human capital, customer capital, structural capital, social capital, technological capital and spiritual capital. This means that there is a strong positive relationship between intellectual capital and the organizational performance of SMEs

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Table No. 3 Multiple Regression Model Summary

Independent Variables		**Dependent Variable (Organizational Performance)**		**Significant Level**
		Unstandardized Coefficients	***t-values***	
Constant (β)		-0.149		
Human Capital		0.162	3.514	0.000
Structural Capital		0.143	2.907	0.004
Customer Capital		0.316	6.888	0.000
Social Capital		0.116	2.773	0.006
Technological Capital		0.094	2.958	0.003
Spiritual Capital		0.215	4.869	0.000
R	**0.82**			
R Square	**0.68**			
Total Sum of Squares	**430.0**			
F- Value	**140.10**			0.00
Stand. Error of the Estimate	**0.590**			

In an attempt to indentify which components of intellectual capital significantly lead to enhance the performance of SMEs, a standardized coefficient of regression by using *t*-values was analyzed. In Table 3, the examination of the absolute t-values and the corresponding significance levels in the model was done to determine the robustness of the model. Regression-coefficient indicates the degree of each explanatory variables contribution to the variation explained in the dependent variable. In regression model five variables namely, human capital (t = 2.58, β = 0.115, p = 0.010), customer capital (t = 8.005, β = 0.364, p = 0.000), structural capital (t = 3.133, β = 0.159, p = 0.002), technological capital (t = 2.815, β = 0.082, p = 0.003) and spiritual capital (t = 5.848, β = 0.253, p = 0.000), were found to be significant predictors at the significant level of 5% while social capital (t = 1.471, β = 0.056, p = 0.142) was appeared as insignificant. The empirical findings clearly reported that all five components of intellectual capital as a collectively and individually play crucial role to increase the performance of SMEs while social capital was appeared as insignificant contributor. The summary of the results is listed in Table 4.

Table No. 4 Result of Findings Summary

No	**Hypotheses**	**Result**
1	Human capital has positive influence on the organizational performance of electronics SMEs in Kuching	Accepted
2	Customer capital has positive influence on the organizational performance of electronics SMEs in Kuching	Accepted
3	Structural capital has positive influence on the organizational performance of electronics SMEs in Kuching	Accepted
4	Social capital has positive influence on the organizational performance of electronics SMEs in Kuching	Accepted
5	Technological capital has positive influence on the organizational performance of electronics SMEs in Kuching	Not Accepted
6	Spiritual capital has positive influence on the organizational performance of electronics SMEs in Kuching	Accepted

5. Conclusion and Discussion

This study was designed to investigate the influence of intellectual capital on the organizational of SMEs operating in electronics SMEs in Kuching by using Integrated Intellectual Capital Model. The findings of this study revealed that the components of intellectual capital as collectively and individually have significant relationship with the performance of SMEs. The findings of this study are corroborating with research conducted by prior researchers in intellectual capital field such as (Bontis et al., 2000; Hsu & Fang, 2009; Ordonez de Pablos, 2004; Tovstiga & Tulugurova, 2007). Khalique, Isa, et al. (2013) has conducted study on electronics SMEs in Kuching by using four components of intellectual capital namely human capital, customer capital, technological capital and spiritual capital. A total of 400 participants were involved in this study and they found that five components contribute significantly namely human capital, customer capital, structural capital, technological capital and spiritual capital. In this study social capital is appeared as insignificant predictor. The findings of this study affirmed that intellectual capital has significant role to enhance the performance of SMEs.

The findings of this study clearly showed that intellectual capital has important role in order to enhance the performance of SMEs. This study provides information to the policy makers and the CEO, Managing Directors and Managers of SMEs to capitalize their intellectual capital to stay alive in an Industry 4.0. This study attempts to fill the existing gap in literature. Like other studies this research has some limitations such as small sample size, and simple data analysis methods. Future studies could be conducted by using Smart PLs and Structural Equation Modeling Technique (AMOS). This study invites potential researchers to explore and examine the impact of intellectual capital in various sectors. They can also conduct their study to make a comparison among different countries.

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