

# Impact of Intellectual Capital on Organizational Performance of ICT SMEs in Penang, Malaysia

Jamal Abdul Nassir bin Shaari  
University Sains Islam Malaysia, Malaysia

Abu Hasan bin Md Isa  
University Malaysia Sarawak, Malaysia

Muhammad Khalique<sup>1</sup>  
Mirpur University of Science and Technology (MUST), Pakistan

## Abstract

Intellectual capital is a strategic asset for the growth and sustainability of SMEs. It contributes significantly towards the national economy, generating employment and improving the well-being of the public. The main purpose of this research was to determine how six components of intellectual capital affect the organizational performance of ICT SMEs operating in Penang, Malaysia. The developed model was tested through SEM and it adequately explained the effect of intellectual capital on organizational performance. The results suggest that customer capital has a significant positive influence on organizational performance of ICT SMEs while human capital, structural capital, social capital, technological capital and spiritual capital remained insignificant. Future studies may adopt a comparative approach to understand how intellectual capital affects organizational performance in emerging economies.

**Keywords:** *Intellectual capital, human capital, customer capital, structural capital, social capital, technological capital, spiritual capital, organizational performance, ICT SMEs, Penang.*

## Introduction

Intellectual capital has been extensively studied in the context of organizational performance of small and medium enterprises (Khalique, Bontis, Shaari & Hassan, 2015; Khalique & Pablos, 2015; Khalique, Shaari & Isa, 2014). While acknowledging the contribution of SMEs towards the economy, studies have concluded that SMEs survival strongly depends upon their competitive and sustainable advantage (Khalique & Pablos, 2015). This can be

<sup>1</sup>Corresponding Author: Dr. Muhammad Khalique; Email: drmkhalique@gmail.com

achieved through strong intellectual capital (Florin, Lubatkin & Schlitz, 2003). Like other countries, SMEs in Malaysia have also played a significant role in eradicating poverty, developing entrepreneurial culture and enhancing the country's exports. Despite their contribution, SMEs in Malaysia are not operating at the optimum level and their survival rates have decreased significantly (Ahmad & Seet, 2009; Daou et al., 2014). According to an estimate, the failure rate of SMEs has reached 60% (Daou et al., 2014). Some of the factors that have contributed towards the failure of SMEs in Malaysia are lack of entrepreneurial skills, finance and administrative skills (Daou et al., 2014; Lussier & Halabi, 2010). However, most studies have argued that SMEs in Malaysia can improve their performance by building appropriate intellectual capital (Muhammad & Bontis, 2015; Musteen, Ahsan & Park, 2017; Talebi, Rezazadeh & Najmabadi, 2015). Thus, the aim of this study is to measure the effect of intellectual capital on SMEs performance in Malaysia.

## **Literature Review**

### **Intellectual capital**

Intellectual capital is not limited to understanding or illustrating unspoken values of an organization. It is more about transposing the results of an organization's tacit values into new values (Ross, 1998). Researchers have different perspectives on the meaning and composition of intellectual capital. Some scholars have divided intellectual capital into three categories which are human capital, structural capital and technological capital (Edvinsson, 1997; Johnson, 1999; Smith & Parr, 2000). Intellectual capital refers to knowledge based resources that create value for an organization but are not recorded in financial statements (Ordóñez de Pablos, 2003). Edvinsson (1997) is of the opinion that intellectual capital is concerned with "possessing knowledge, making use of experiences, organizational technology, networking with customers and suppliers and possessing professional capabilities necessary for gaining a competitive advantage in a market". However, Hall (1992) suggests that intellectual capital can be categorized with known tangibles or known skills. It has been argued that intellectual capital is a key performance indicator of an organization. Therefore, it should be identified and nurtured by organizations to stay competitive in the rapidly changing global environment. Yang & Lin (2009) found that intellectual capital improves organizational performance from several different perspectives. It helps organizations in improving productivity, reducing cost and increasing profit. Intellectual capital also helps in developing marketing and management strategies (Harrison & Sullivan Sr, 2000). Intellectual capital also plays a vital role in enhancing organizational values and economic performance (Petty & Guthrie, 2000). Thus, this study will focus on the following six components of intellectual capital and its effects on SMEs performance.

## Intellectual Capital and Organizational Performance

Past studies have found that intellectual capital has a positive effect on organizational performance (Musteen, Ahsan & Park, 2017; Hitt et al., 2001; Usoff et al., 2002; Karp, 2003). It is important for organizations to have a competitive advantage. This competitive advantage depends both on physical and intellectual capital. Hitt et al., (2001) found that intellectual capital has a strong effect on organizational efficiency, productivity and innovative culture. Usoff et al., (2002) argue that intellectual capital is an important resource for organizations and it plays a significant role in creating value addition. Musteen, Ahsan & Park (2017) and Karp (2003) found that intellectual capital is not only a source of wealth creation in business organizations but it is a strategic resource for increasing business performance and achieving a competitive edge. Pena (2002) while validating intellectual capital and organizational performance relationship concluded that intellectual capital also plays an important role in creating entrepreneurs. In addition, Berman (2012) measured the effect of intellectual capital on organizational performance. The study measured business performance through productivity, organizational profitability and organizational performance. The study found that intellectual capital positively effects all the three variables of organizational performance.

*H1: Intellectual capital has a positive and significant impact on organizational performance.*

## Human Capital and Organizational Performance

In the present era, organizations have significantly increased their investment in human capital development (Guthrie, 2001). A recent study on Malaysian ministerial officers found that human capital and organizational performance are highly correlated (Tastan & Davoudi, 2015). Researchers have argued that human capital along with service delivery significantly contributes towards organizational performance (Neubert et. al., 2017; Joanes & Gill, 1998; Saifuddin et al., 2014; Beh, 2010; Ferreira & Franco, 2017). Similarly, a study conducted in the private banking sector of Batticaloa also found that both human resources management (HRM) and human capital development positively influence organizational performance (Bontis, 1999). Most researchers are of the opinion that firms that invest in human capital will have a competitive advantage over others (Saifuddin et al., 2014; Beh, 2010). Therefore, it is necessary for a firm to provide an environment where employees can acquire fresh and innovate ideas (Chua, 2002). Daud & Yusoff (2010) found a strong association between human resource management (HRM) and organizational performance. The study also concluded that HRM practices including staff selection, pay and employee empowerment significantly contribute towards organizational effectiveness and performance. Chua (2002) suggests that it is necessary for firms to invest in the development of human capital for sustainable growth and organizational performance.

*H2: Human capital has a positive and significant impact on organizational performance.*

## Customer Capital and Organizational Performance

Another important category of intellectual capital is customer capital. Customer capital relates to the present worth of cash inflows arising from present and future customers. Thus, customer capital strongly depends on strong marketing and communication channels (Bontis et al., 2000). Customer capital has also been conceptualized as relational capital (Edvinsson, 1997). Relational capital is a sustainable relationship of an organization with all its stakeholders including employees, raw material suppliers and other members of the value chain (Serenko & Bontis, 2013). Gourio & Rudanko (2014) argues that existing and future customer base are critical for an organization as the present and future cash flows depends on them. Firms rich in customer capital are generally the leaders in the industry (Ozkan, Cakan & Kayacan, 2017). It has also been argued that customer capital promotes intellectual capital practices which help in improving organizational performance (Andreeva & Garanina, 2016). Without customer capital, organizations cannot achieve market value and business performance. In addition, studies have found that firms with a large customer capital would be less price sensitive (Chen et al., 2004; Benavides-Velasco et al., 2005).

Thus, customer capital comprises of both tangibles and intangibles. Past studies have argued that trading, strategic alliance, network and communication channels with customers and suppliers are important ingredients of customer capital. Thus, customer capital acts as a bridge between intellectual capital and organizational performance (Edvinsson, 1997). In fact, without customer capital firms cannot survive. Thus, customer capital strongly depends on human capital and structural capital (Chen et al., 2004; Garcia-Muina et al., 2008).

*H3: Customer capital has a positive and significant impact on organizational performance.*

## Structural Capital and Organizational Performance

Structural capital refers to current business practices of an organization. It is inclusive of research and development costs, trademarks, innovation and patent rights. Structural capital is also influenced by the culture in an organization, i.e. the norms and values shared by employees of an organization (Hsu & Fang, 2009). Moreover, behavioral norms and unwritten rules including appearance of the employees and their attitude are associated with human capital. It has been argued that organizational culture is a valuable asset of a business entity. A strong organizational culture plays a significant role in serving customers efficiently and positively effects organizational performance (Andreeva & Garanina, 2016; Saleim et al., 2014).

Firms that nurture and utilize structural capital will perform better than their competitors (Stewart & Ruckdeschel, 1998). Past studies have found that firms tend to invest heavily on three types of intellectual capital which include employee capital, structural capital and

customer capital (Leana & Pil, 2006; Becker & Gerhart, 1996). Walsh & Linton (2011) have documented that structural capital has enhanced the performance of both service and non-service firms in Malaysia. Chu & Choi (2000) examined the business performance of selected firms in Hong Kong. They concluded that one of the key components for their success is investment in structural capital.

Management theorists spend considerable resources on the development of internal resources including human capital and structural capital (Leana & Pil, 2006; Becker & Gerhart, 1996). It is argued that firms in the global innovative era face challenges related to technological breakthroughs, rapid changes in social conditions, consumers' needs and short product life cycle (Hsu & Fang, 2009). Consequently, firms need to enhance their innovative performance by investing in structural capital (Evans & Davis, 2005; Sharbati et al., 2010).

*H4: Structural capital has a positive and significant impact on organizational performance.*

### **Social Capital and Organizational Performance**

Social capital is defined as "a resource reflecting the character of social relations within an organization" (Bueno et al., 2006). It has been argued that social capital is an asset which positively effects organizational performance and employees. According to Inkpen & Tsang (2005), the employees of an organization can tap the resources available in social capital although they might not have contributed in developing the network.

Past studies on social capital have concluded that social capital in an organization promotes productive interactions and relationships between members of an organization. This not only helps in sharing knowledge but also improves organizational performance (Andrews, 2011). On the contrary, some researchers are of the opinion that capital has several disadvantages (Inkinen, 2015). For example, studies have found that in a well-developed and structured social capital, it becomes extremely difficult for new members of the organization to participate in the network (Inkinen, 2015). Social capital has three components which are structural social capital, relational social capital and cognitive social capital (Khalique & Mansor, 2016; Subramaniam & Youndt, 2005). Structural social capital is more related to the connection of the members of the network (Subramaniam & Youndt, 2005). On the contrary, relational social capital relates to the trust between the members of the network, while cognitive social capital relates to the shared values and goals amongst members (Edvinsson, 1997).

*H5: Social capital has a positive and significant impact on organizational performance.*

## Technological Capital and Organizational Performance

Technological capital in firms play an important role in enhancing the knowledge base of employees (Sullivan, 2000). The presence of technological assets also contribute in knowledge assimilation and elimination of organizational barriers which are necessary for improving organizational performance. Technological capital also enables multiusers to access the needed information at the right moment as often as needed (Walsh & Linton, 2011; Alavi & Leidner, 2001). However, the presence of technological assets is not sufficient for improving organizational performance. It requires top management support for the use of technology.

The top management must develop and foster a knowledge-based culture in the organization (Alavi & Leidner, 2001; Benavides-Velasco & Quintana-García, 2005; García-Sánchez & Bolívar-Ramos, 2017). Past studies have found that technological competencies play an important role in creating an organizational culture which enables employees to generate new ideas and knowledge. The tools for generating new ideas and knowledge include the internet, interaction with customers, workers, members and suppliers (Rauch, Frese & Utsch, 2005). Prior studies suggest that information exchanges through the use of technological assets help in the creation of virtual information groups for creating knowledge and improving organizational performance (Rauch, Frese & Utsch, 2005). For example, Fiat prior to launching the famous car model "Punto" developed a web page and invited customers and other suppliers to give feedback on the design and features of the upcoming model. Approximately 3000 customers and suppliers gave their feedback that made the launched model successful (Green Jr., Inman, Birou & Whitten, 2014). Similarly, Hallmark adopted the same approach by creating Hallmark Creation Community in which stakeholders gave valuable inputs on the design of greeting cards (Kambil, Friesen & Sundaram, 1999; Carlsson, 2004). Thus, it can be concluded that a technological base supported by employees and the management plays a significant role in improving organizational performance and maintaining a competitive edge (Apostolou, Sakkas, & Mentzas, 1999; Carlsson, 2004)

*H6: Technological capital has a positive and significant impact on organizational performance.*

## Spiritual Capital and Organizational Performance

Spiritual capital has emerged subsequent to religious capital but there is a lack of consensus on its definition and measurement (F-Jardón & Martos, 2009). Khalique et al., (2011) developed an integrated structural model which measured the effect of spiritual capital on organizational performance. Nakhata (2018) defines spiritual capital as "the spiritual strength (power) that controls and encourage people to act in any situation". In addition, Nakhata (2018) has divided spiritual capital into three categories which are

embodied state (habituation), objectified state (manifestation) and institutional state (institutionalization).

Embodied state, also known as habituation refers to an individual's living habit and behavior in accordance with the religion that the individual follows (Edvinsson, 1997). Objectified state also known as manifestation relates to the following of religious teachings worship, symbol and religious ceremonies (Florin, Lubatkin & Schltze, 2003). Institutional state also known as institutionalization relates to following the teachings and traditions of a religion (Felício, Couto & Caiado, 2014). Past studies have found that highly spiritual individuals tend to make decent profit and are focused on the continuity of their businesses. These individuals "behave and act with honor, integrity, sincerity, honesty, truth, trust, love, morals and ethics". Spiritual capital focuses on "reciprocity, interrelated and dependence to sustainable development with a view to reaching final prosperity and happiness for all. It regulates how human capital, structural capital and relational capital are used (Akhtar et al., 2015). Past studies have found that spiritual capital guides how to use human capital, structural capital and relational capital in a business enterprise (Sullivan, 2000). Consequently, it results in sustainable development and brings prosperity and happiness to all the stakeholders of business entities (Florin, Lubatkin & Schltze, 2003). Spiritual capital is also important for both individuals and organizations. It provides a framework on how to manage business operations without deviating from laws, standards and ethics. Consequently, it results in improving organizational performance (Abdullah & Sofian, 2012).

*H7: Spiritual capital has a positive and significant impact on organizational performance.*

## Conceptual Framework

Based on the above discussion the conceptual framework has been developed. The conceptual framework is presented in Figure 1.

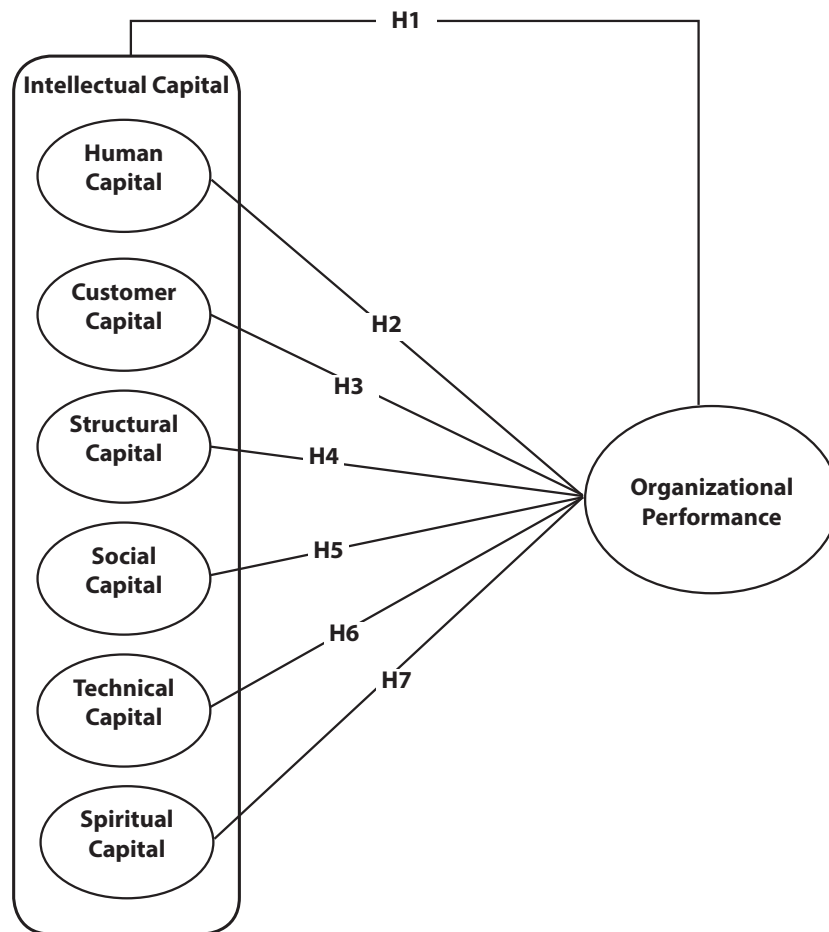


Figure 1: Conceptual Framework

## Methodology

### Population and Sample Size

The scope of the study was limited to ICT SMEs located in Penang, Malaysia. Penang was selected as it is one of the most industrialized states in Malaysia. The list of the SMEs was obtained from Association of Malaysia from TEEAM directory and Federation of Malaysian

Manufacturers. Only those SMEs were targeted whose employee population ranged between 5 and 150 individuals. The convenience sampling technique was used in this study. While selecting the respondents, it was ensured that they were at least of assistant manager level. Five hundred and fifty questionnaires were sent to the selected respondents through surface postal mail. Two hundred and thirty-seven employees from 77 SMEs responded. The response rate was approximately 43%, representing 51% of all SMEs which is adequate (Krejcie & Morgan, 1970).

### **Scales and Measures**

The questionnaire used in this study has two parts. Part one was related to demographics which has five items all based on the nominal scale. Part two of the questionnaire had eight constructs, all based on the five point Likert scale. The details are discussed in the following sections.

#### **Human Capital Scale**

The human capital scale was adapted from the scales and measures developed by Bontis (1999). It has 13 items. Its reliability in earlier studies ranged between 0.65 and 0.85 (Bontis, 1999, Rauch, Frese & Utsch, 2005; Fox et al., 2018).

#### **Customer Capital Scale**

The customer capital scale was adapted from the scales and measures developed by Bontis (1999). It has 10 items. Its reliability in earlier studies ranged between 0.7 and 0.84 (Bontis, 1999; Gourio & Rudanko, 2014; Tastan & Davoudi, 2015).

#### **Structural Capital Scale**

The structural capital scale was adapted from the scales and measures developed by Bontis (1999). It has 13 items. Its reliability in earlier studies ranged between 0.77 and 0.88 (Bontis, 1999; Andreeva & Garanina, 2016; Ozkan, Cakan & Kayacan, 2017).

#### **Social Capital Scale**

The social capital scale was adapted from the scales and measures developed by Cara et al., (2008), Subramaniam & Youndt (2005) and Zeller et al., (2002). It has 13 items. Its reliability in earlier studies ranged between 0.75 and 0.87 (Felício, Couto & Caiado, 2014; Cara et. al., 2008; Subramaniam & Youndt, 2005; Zeller et al., 2002).

#### **Technical Capital Scale**

The technical capital scale was adapted from the scales and measures developed by García-Muiña et al., (2008) and Bueno et al. (2006). It has 12 items. Its reliability in earlier studies ranged between 0.65 and 0.77 (Felício, Couto & Caiado, 2014; García-Muiña et al., 2008).

### Spiritual Capital Scale

The spiritual capital scale was adapted from the scales and measures developed by Ismail (2005) and Youndt (1998). It has 12 items. Its reliability in earlier studies ranged between 0.7 and 0.88 (Neubert, Bradley, Ardianti & Simiyu, 2017; Ismail, 2005; Youndt, 1998).

### Organizational Performance Scale

The organizational performance scale was adapted from the scales and measures developed by Bontis (1999), Ismail (2005), Tovstiga & Tulugurora (2007) and Youndt (1998). It has 19 items. Its reliability in earlier studies ranged between 0.7 and 0.8 (Green Jr., Inman, Birou & Whitten, 2014; Bontis, 1999; Ismail, 2005; Tovstiga & Tulugurora, 2007; Youndt, 1998).

### Data Analysis

After preliminary analysis including normality and reliability, confirmatory factor analysis was performed on the measurement and structural models. The fit indices used in this study with criteria of the fitness are summarized in Table 1.

**Table 1: Fit Indices**

	$\chi^2$	$\chi^2/df$	RMSEA	CFI	NFI	TLI
Criteria	Low	< 5.0	< .08	> 9.0	> 0.9	> 0.95

### Results

Descriptive analysis was carried out to measure the univariate normality and internal consistency of the adapted constructs. The results are presented in Table 2.

**Table 2: Descriptive Analysis**

Constructs	Mean	Std. Dev.	Skewness	Kurtosis	Reliability
Intellectual Capital	4.16	1.27	0.85	1.15	0.90
Human Capital	4.65	1.09	0.98	1.15	0.75
Customer Capital	3.78	1.96	0.39	0.78	0.80
Structural. Capital	4.45	0.87	1.08	0.99	0.88
Social Capital	4.10	0.99	0.66	1.17	0.85
Technological Capital	4.01	1.33	0.87	1.01	0.66
Spiritual Capital	3.98	1.44	1.07	1.13	0.93
Organizational Performance	4.18	1.25	1.11	0.99	0.82

The results in Table 2 shows that the highest skewness value was for organizational performance (SK= 1.11, Mean = 4.18, SD= 1.25) and the lowest for customer capital (SK= 0.39, Mean = 3.78, SD= 1.96). Similarly, the highest kurtosis value is for social capital and the lowest for customer capital. Since all the skewness and kurtosis values ranged between  $\pm 3.5$ , therefore, the constructs fulfill the requirements of univariate normality (Joanes & Gill, 1998). The results also show that the highest Cronbach's Alpha value is for spiritual capital ( $\alpha=0.93$ , Mean= 3.98, SD= 1.44) and the lowest for technological capital ( $\alpha=.66$ , Mean= 4.01, SD= 1.33). Since all the Cronbach's alpha values are greater than 0.60, therefore, it can be safely assumed that the constructs have adequate internal consistency (Leech, Barrett & Morgan, 2014).

### Convergent Validity

Convergent validity for this study was ascertained through the SEM results. The factor loadings of all the indicator variables in the structural model (Figure 2), and fit indices are greater than the minimum prescribed criteria (Table 3). Therefore, it can be inferred that the constructs on the present data set fulfill the requirements of convergent validity.

### Confirmatory Factor Analysis (SEM)

Confirmatory factory analysis was carried out for each construct separately. The results are presented in Table 3.

**Table 3: Confirmatory Factor Analysis**

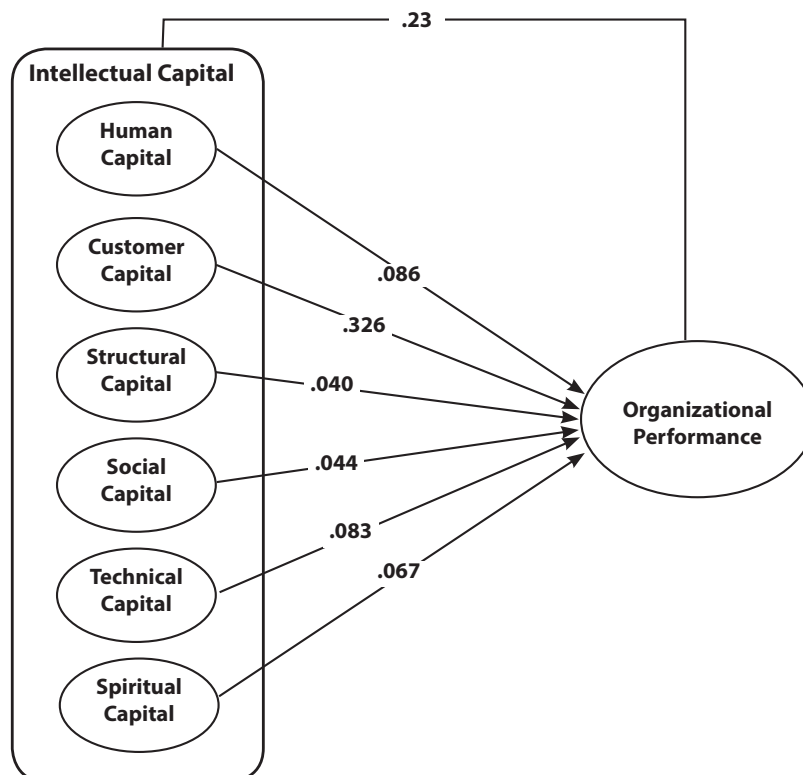
Constructs	$\chi^2$	$\chi^2/df$	RMSEA	CFI	NFI	TLI
Intellectual Capital	134.78	3.40	.076	.973	.987	.977
Human Capital	75.55	1.65	.057	.965	.965	.966
Customer Capital	44.87	1.87	.077	.987	.965	.974
Structural Capital	87.98	2.34	.075	.964	.958	.977
Social Capital	56.79	3.34	.067	.955	.987	.962
Technological Capital	76.64	4.45	.077	.976	.989	.991
Spiritual Capital	58.63	3.87	.072	.975	.967	.984
Organizational Performance	58.73	4.34	.056	.976	.054	.982
Criteria	Low	< 5.0	< .08	> 9.0	> 0.9	> 0.95

## Structural Model

Subsequent to the measurement model, the structural model was also tested. It fitted very well. In the process the items with high modification index were dropped. The results from the measurement model are presented in Table 4 and the structural model is presented in Figure 2.

**Table 4: Measurement Model Results**

Hypotheses	SRW	T values	P values	Result
Intellectual Capital→Org. Performance	.228	2.943	0.001	Support H1
Human Capital→Org. Performance	.086	1.737	0.084	Does not support H2
Customer Capital→Org. Performance	.326	4.593	0.000	Support H3
Structural Capital→Org. Performance	.040	0.725	0.470	Does not support H4
Social Capital→Org. Performance	.044	0.869	0.386	Does not support H5
Tech. Capital→Org. Performance	.083	1.037	0.301	Does not support H6
Spiritual Capital→Org. Performance	.067	1.383	0.169	Does not support H7



**Figure 2: Structural Model**

## **Discussion and Conclusion**

The main purpose of this research was to determine how six components of intellectual capital affect the organizational performance of ICT SMEs operating in Penang, Malaysia. The developed model fitted very well. The results of the study show that intellectual capital has a positive and significant impact on organizational performance of ICT SMEs in Penang, Malaysia. These findings are consistent with the previous literature (Khalique et al., 2015; Khalique & Mansor, 2016; Ngah & Ibrahim, 2009; Seleim, Ashour & Bontis, 2004; Sharabati, Naji-Jawad & Bontis, 2010; Tripathy, Gil-Alana & Sahoo, 2015). In addition, the findings also reveal that customer capital has a significant positive influence on organizational performance of ICT SMEs while human capital, structural capital, social capital, technological capital and spiritual capital are insignificant. The results of this study suggest that the management and owners of SMEs need to understand the importance of focusing on the intellectual capital of their customers with full spirit. Furthermore, the study also suggests that ICT SMEs requires investment in human capital, structural capital, social capital, technological capital and spiritual capital. Nevertheless, due to a small sample size, the generalizability of this research is limited. This study sets a milestone for future potential researchers in the field of knowledge management, intellectual capital and ICT SMEs. This research strongly recommends to conduct a comparative study on different countries and sectors to understand the application of intellectual capital in organizations and to increase the credibility of the results. Moreover, other mediating variables such as entrepreneurship, innovation and knowledge management can also be used in future research to provide a better explanation on the relationship between intellectual capital and organizational performance in SMEs.

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