

PARTIAL LEAST SQUARE ANALYSIS ON MICRO ENTERPRISES' INTELLECTUAL CAPITAL AND PERFORMANCE: THE MEDIATING EFFECT OF TACIT KNOWLEDGE SHARING

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ABSTRACT

Micro enterprises formed the majority of business establishments in Malaysia and play an important role in the business ecosystem. There are numerous studies of intellectual capital on large organizations and small and medium enterprises, however no study has been carried out on micro enterprises. The findings of the partial-least square analysis of one hundred and six micro enterprises found that intellectual capital has a significant relationship to organizational performance. In addition, the relationship between intellectual capital and organizational performance was significantly influenced by tacit knowledge sharing. In particular, tacit knowledge sharing proves to be extremely relevant when it comes to reinforcing the intellectual capital on the performance of micro enterprises in Malaysia. Limitations and implications for future studies are discussed.

KEYWORDS: *Intellectual Capital, Tacit Knowledge Sharing, Organizational Performance, Micro Enterprises, Partial Least Square, Malaysia*

INTRODUCTION

Micro Enterprises continue to play a significant economic role globally (Munoz, Welsh, Chan & Raven, 2014). About 76.2% of businesses establishments in Malaysia are micro enterprises (SME Annual Report, 2015). In Malaysia, micro enterprises are defined based on either by sales turnover which is less than RM300, 000 or by employees of less than 5. The government is providing incentives for micro enterprises through focused programmes especially funding, to help them improve and grow towards Small and Medium Enterprises (SMEs) where more incentives are available. Although, micro enterprises dominated the businesses establishments in most countries, however, studies on micro enterprises are limited. Most studies on micro enterprises in Malaysia were focused on the difficulty of obtaining funding (Hassan, Chin, Yeow & Mohd Rom, 2010, Muridan & Ibrahim, 2016), management success (Munoz et al., 2014), entrepreneurial orientation (Awang, Ahmad, Asghar, Subari & Kassim, 2011). Not much

has been studied on intellectual capital of micro enterprises in Malaysia. This paper attempts to fill the gap. The objective of this study is to investigate the relationship of intellectual capital on organizational performance with the inclusion of tacit knowledge sharing as mediating effect. Intellectual capital is very much explored in large organizations, and researches have been expanded to SMEs (Bontis, 1998; Khaliq, Bontis, Jamal & Nasir, 2014; Ngah & Ibrahim, 2009) in identifying factors that influence SMEs performance. Understanding the importance of intellectual in the organization would help the organization to focus on its internal resources and strengths through its people, structure and relationship. Knowing the existence of intellectual capital in micro enterprises would help micro enterprises' owners and relevant authorities to set directions to develop micro enterprises to grow and increase their productivity. As micro enterprises are small, tacit knowledge sharing is highly recommended and it is therefore interesting to explore how intellectual capital and tacit knowledge sharing can help to improve its performance.

LITERATURE REVIEW AND THEORETICAL BACKGROUND

Resources are the basic necessities for the organization to perform. The resource-based theory for the firm suggests that the firms' internal characteristics, especially the cultural patterns of learning and human capital assets accumulation have a significant impact on the firm's capability to introduce new products and compete within disparate markets (Tvorik & McGivern, 1997). Resource-Based Theory is concerned with the idea that a firm's internal resources can become a direct source of sustained competitive advantage for the firm (Davis & Simpson, 2017). In fact, Sveiby (2000) emphasizes that Resource-Based Theory is knowledge-based. Thus, companies must know how to take advantage of flow of organizational knowledge that resides within its people, structure and relationship to create its competitive advantage.

A few authors agreed that organizations are able to perform better if they are able to exploit their internal resources and capabilities (Penrose, 1959 as cited by Marr et al. 2004). Internal resources and capabilities are important to sustain organization's competitive advantage (Camisón, Puig-Denia, Forés, Fabra, Muñoz & Martínez, 2016). Therefore, entrepreneurs need to understand what are the key resources and drivers of performance and value in their organizations. The goal of improving organizational performance is to ensure that the organization resources, system and processes are run effectively and efficiently to increase higher productivity and revenue. Moreover, the purpose to investigate the organizational performance is to identify the organization's position in the market and its ability to fulfil the stakeholders' needs (Lo, Wang, Wah, & Ramayah, 2016; Lo, Mohamad, Ramayah, & Wang, 2015). Knowledge-based view is the extension of Resource-Based Theory that identifies intellectual capital as the internal resources. In fact, intellectual capital is created through the combination and exchange of knowledge (Choo & Bontis, 2002). The intellectual capital is derived from human, social and structural resources that can create the organizations' competitive advantage (Teece, 1998). Stewart (1997) defines intellectual capital as "the intellectual material – knowledge, information, intellectual property, experience – that can be put to use to create wealth". Bontis (1998) defines intellectual capital as the pursuit of effective use of knowledge (the finished product) as opposed to information (the raw material) and further explained that intellectual capital can be considered a multidimensional second-order conceptual construct (Bontis, 1999) which is further divided into three sub-domains: human capital, structural capital and relational capital. Human capital refers to the value of knowledge, skills, and experiences of employees; the structural capital consists of the organization's essential operating processes, the way it is structured, its information flows and databases, its leadership and management style, and its culture and incentive schemes, as well as intellectual property rights (Aramburu, Sáenz & Blanco, 2015; Grant, 1991) and, finally, the relational

capital, is formed by the knowledge embedded in the relationships with the external environment (Pirozzi & Ferulano, 2016).

Tacit knowledge has long been considered instrumental to the competitive advantage of organizations (Wipawayangkool & Teng, 2016). Tacit knowledge can be described as a knowledge people carry in their minds and is, therefore, difficult to access and share (Puusa & Eerikäinen) which according to Polanyi (1966) cannot be articulated. Tacit knowledge sharing takes place when members' in the organization sharing their experience (Mayfield, 2010). Much of the literature focuses on the tacit knowledge held by individuals rather than collective tacit knowledge. As tacit knowledge is valuable depending on the content of the knowledge, sharing one's knowledge with another could increase or add value to the knowledge itself (Leonard & Sensiper, 1998).

HYPOTHESES DEVELOPMENT

Intellectual Capital and Tacit Knowledge Sharing

Intellectual capital is tacit – and tacit knowledge cannot be sold no matter how much someone is willing to pay (Stewart, 2000; pp.74). People develop and use tacit knowledge before they formalize or codify it. Ruta and Macchitella (2008) highlight that the three dimensions of intellectual capital – human capital, social capital and organizational capital – can influence the motivation of individuals to share their knowledge with other members within the organization. Koenig (1998) stresses that in order for knowledge to be circulated evenly in the organization, it must be supported by social capital, which comprises culture, trust, knowledge behaviour, human capital and the structural capital of the processes, resources, technology, and metric.

H1: Intellectual capital has a positive relationship to tacit knowledge sharing

Tacit Knowledge Sharing and Organizational Performance

Knowledge sharing is the behaviour of disseminating and assimilating the acquired knowledge with other members within the organization (Zhang, Yu & Li (2016). Tacit knowledge has a direct impact on organizational performance and a crucial input to innovation (Cavusgil et al., 2003, Odiri, 2016, Muthuvello et al., 2017) and yields competitive advantage in the organization (Stähle & Grönroos, 2002). It is argued that the most effective means of transferring valuable tacit knowledge is actually not to codify it, but rather to transfer it through an implicit mode (Schenkel & Teigland, 2008). Tacit knowledge is not easily shared and it is considered more valuable because it provides context for people, places, ideas and experience (Odiri, 2016). In SMEs, tacit knowledge sharing is actively practised – through constant and open communication (Gray, 2006).

H2: Tacit knowledge sharing has a positive relationship to organizational performance.

Tacit Knowledge Sharing as a Mediator

Widen-Wuff and Suomi (2003) found that intellectual capital needs a processing mechanism, which is knowledge sharing, to have an impact on business performance, as in the research in Finland. On the same note, Yang (2007) found that knowledge sharing facilitates the collective individual knowledge, thus, leading to organizational effectiveness. Knowledge sharing is divided into two forms: donating knowledge (communicating to others what one's personal intellectual capital is) and collecting knowledge (consulting colleagues in order to get them to share their intellectual capital) (Weggeman, 2000; Van de Hoof & Van Weenen, 2004). These two processes evolve together in the knowledge sharing procedure and are always followed by

controversy and interaction, and dialectically collective inquiry among colleagues, especially for tacit knowledge (Fernie et al. 2003). Wang et al. (2014) found that tacit knowledge sharing has a greater impact on operational performance compared to financial performance.

H3: Tacit knowledge sharing mediates the relationship between intellectual capital and organizational performance.

RESEARCH METHODOLOGY

Questionnaire Development

The intellectual capital measurement was adopted from Bontis (1998), tacit knowledge sharing measurement was adopted from Choi and Lee (2002) and organizational performance measurement was adopted from Gold et al. (2001). Items statements in the variables sections are measured as subjective estimates using a five-point Likert scale (with 1 = strongly disagree and 5 = strongly agree).

Respondent profile

The survey was carried out on one hundred and six micro-businesses owners. About 28% of micro enterprises are in food and beverages industry while 12% are in the retail and wholesale industry. Most of the micro-businesses are sole-proprietors (49.1%) while partnership represents about 26.4%. Majority of the companies have been in the business between 2 – 4 years. Meanwhile, about 54.7% of companies recorded annual sales turnover of less than RM200k. Refer to respondents' profile, the majority of the respondents are male (60.4%) whereby Malay formed the majority at 68.9% followed by Chinese about 23.9%. Majority of the respondents are owners (54.7%) and partners (14.2%). Majority of respondents are degree holders at 34% and 31.1% are Diploma holders. Table 1 shows the company's' profile and Table 2 shows the respondents' profile.

Table 1. Companies profile

Variable	Category	Frequency	%
Company Status	Sole-Proprietor	52	49.1
	Family-owned	16	15.1
	Partnership	28	26.4
	Others	10	9.4
Business Establishment	< 2 years	23	21.7
	2 – 4 years	39	36.8
	5 – 8 years	22	20.8
	8 – 10 years	8	7.5
	10 years	14	13.2
Annual Sales Turn-over	< RM200,000	58	54.7
	200,001 – 300,000	26	24.5
	300,001 – 500,000	9	8.5
	500,001 – 1 mil	6	5.7
	1.1 mil – 3 mil	1	0.9
	>3 mil	6	5.7

Table 2. Respondents profile

Variable	Category	Frequency	%
Gender	Male	64	60.4
	Female	42	39.6
Race	Malay	73	68.9
	Chinese	25	23.6
	Indian	1	0.9
	Others	7	6.6
Position	Owner	58	54.7
	Co-owner	11	10.4
	Partner	15	14.2
	Manager	12	11.3
	Executive	9	8.5
	Others	1	0.9
Level of education	SPM/STPM	24	22.6
	Certificate	3	2.8
	Diploma	33	31.1
	Bachelor	36	34.0
	Professional	4	5.7
	Qualifications Others	1	0.9

RESULTS

Partial Least Square (PLS) was used in this study. PLS is a second-generation multivariate technique (Hair et al. 2012) which can simultaneously evaluate the measurement model and the structural model with the minimal error variance (Hair et al. 2013). Common method variance needs to be examined as the data was collected via self-reported questionnaires and both the predictor and criterion variables are obtained from the same person (Podsakoff et al., 2003, Amin et al., 2016). According to Podsakoff and Todor (1985), in self-reported measures from the sample samples will raise an issue of same-source bias or general method variance. Thus, there are few remedies to address this issue and Harman’s single factor test was used in this study. In this test, all the principal constructs were entered into a principal component factor analysis (Podsakoff and Organ, 1986). Evidence method bias exists when a single factor emerges from the factor analysis, or one general factor accounts for the majority of the covariance among the measures (Podsakoff et al., 2003). In this study, the results showed a six-factor solution with a total variance explained of 74.716 percent and the first factor only explained 40.77 percent which confirms that common method bias is not a serious problem in this research.

Measurement Model

Convergent validity is the degree to which multiple items to measure the same concept are in agreement (Hair et al., 2017). As suggested by Hair et al., (2010, 2013) we used the factor loadings, composite reliability (CR) and the average extracted (AVE) to access convergent validity. The recommended values for loadings are set at > 0.5, the AVE should be > 0.5 and the CR should be > 0.7. Figure 1 presents the framework for this study where intellectual capital and tacit knowledge sharing are presented as a second-order construct. Table 3 shows the results of the measurement model exceeded the recommended values indicating sufficient convergence validity (Figure 2).

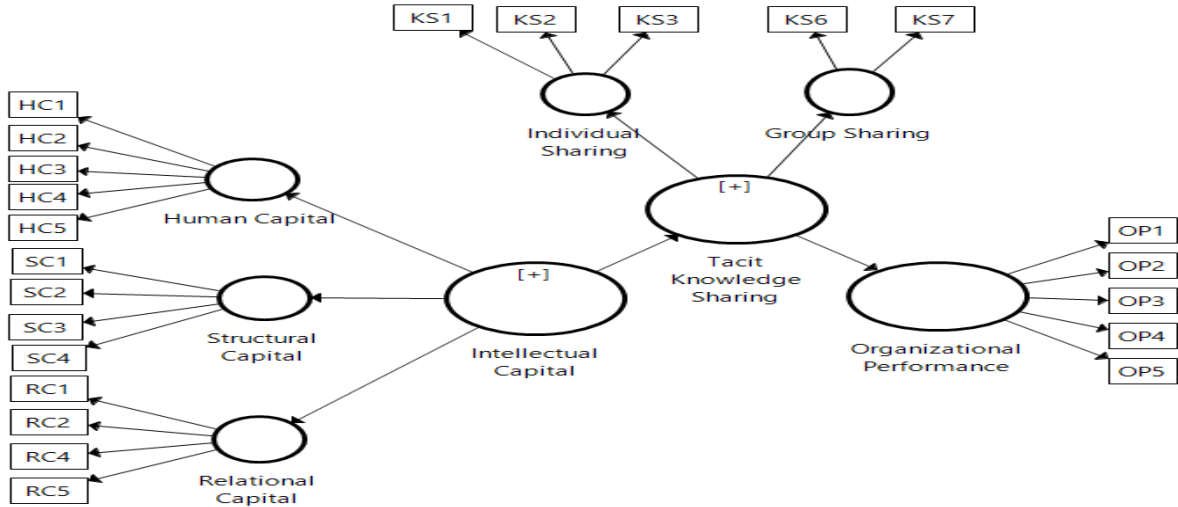


Figure 1. The research model

Table 3. Measurement Model

1st Order Constructs	2nd Order Constructs	Item	Loadings	CR	AVE
Human Capital		HC1	0.741	0.898	0.639
		HC2	0.809		
		HC3	0.819		
		HC4	0.819		
		HC5	0.806		
Structural Capital		SC1	0.867	0.908	0.712
		SC2	0.877		
		SC3	0.829		
		SC4	0.800		
Relational Capital		RC1	0.822	0.892	0.673
		RC2	0.814		
		RC4	0.786		
		RC5	0.858		
	Intellectual Capital	Human Capital		0.894	0.738
		Structural Capital			
		Relational Capital			
Individual Sharing		KS1	0.861	0.942	0.845
		KS2	0.896		
		KS3	0.890		
Group Sharing		KS6	0.829	0.811	0.682
		KS7	0.823		
	Tacit Knowledge Sharing	Individual Sharing		0.881	0.789
		Group Sharing			
Organizational Performance		OP1	0.900	0.928	0.721
		OP2	0.821		
		OP3	0.848		
		OP4	0.809		
		OP5	0.865		

Notes: AVE – Average Variance Explained; CR – Composite Reliability

To analyze relationships between variables, discriminant validity assessment is a prerequisite (Henseler, Ringle & Sarstedt, 2015). Besides, discriminant analysis is the degree to which items differentiate among constructs or measure distinct concepts (Hair et al., 2017). For this study, Heterotrait-monotrait (HTMT) ratio of correlation was used to assess the discriminant validity which is considered superior compared to other methods (Henseler et al. 2015). HTMT is recommended as it is able to achieve higher specificity and sensitivity compared to the cross-loading criterion. HTMT values close to 1 indicates a lack of discriminant validity. Some authors suggest a threshold of 0.85 (Kline 2011), whereas others propose a value of 0.90 (Teo et al. 2008). If the value of the HTMT is higher than this threshold, there is a lack of discriminant validity.

Table 4 shows the result of HTMT. All the value were lower than the threshold, thus it demonstrated adequate discriminant validity.

Table 4. Discriminant Analysis- HTMT Result

Constructs	GS	HC	IS	OP	RC	SC
GS						
HC	0.691					
IS	0.743	0.642				
OP	0.646	0.486	0.433			
RC	0.812	0.542	0.431	0.457		
SC	0.844	0.79	0.711	0.576	0.753	

Note: GS- Group Sharing; HC- Human Capital; IS- Individual Sharing; OP- Organizational Performance; RC- Relational Capital; SC- Structural Capital

Structural Model

In assessing the structural model, there are few steps need to be taken. Firstly, to assess the collinearity issues. All the inner VIF value for the independent variable is less than 5 and 3.3 which indicate collinearity is not a concern (Hair et al., 2017). The next step is to assess the significance and relevance of the structural model relationships. Table 5 shows that all path coefficients are significant with p-value < 0.000.

Figure 2 presents the structural model of this study and Table 5 presents the results of structural model and results of hypotheses. The most commonly used to evaluate the structural model is the coefficient of determination (R² value). This coefficient is a measure of the model’s predictive accuracy and is calculated as the squared correlation between a specific endogenous construct’s actual and predicted values (Hair et al., 2014). All three variables together explained 26.1 percent of the variance. Using bootstrapping technique with a re-sampling of 500, the path estimates and t-statistics were calculated for the hypothesized relationships. The evaluation of effect size (f²) was carried out to assess the relative impact of a predictor construct on an endogenous construct (Cohen, 1988). The results indicate that both intellectual capital (0.558) and tacit knowledge sharing (0.382) have substantial effects in producing the R² for tacit knowledge sharing and organizational performance respectively. These findings are also supported by the Q² value (Geisser, 1974; Stone, 1974) of the predictive relevance. After running the blindfolding procedure (Henseler et al., 2009) with an omission distance D 7, the Q² value of organizational performance (0.312), which is well above zero, indicating the predictive relevance of the PLS path model.

From the analysis, it was found that intellectual capital (β = 0.736, p < 0.000) was positively related to tacit knowledge sharing. On the other hand, tacit knowledge sharing was positively related to organizational performance (β = 0.513, p < 0.000). Bootstrapping procedure was used

to test the mediating effect of tacit knowledge sharing and showed that the indirect effect ($\beta = 0.377, p < 0.000$) was significant, indicating that there was a mediating effect.

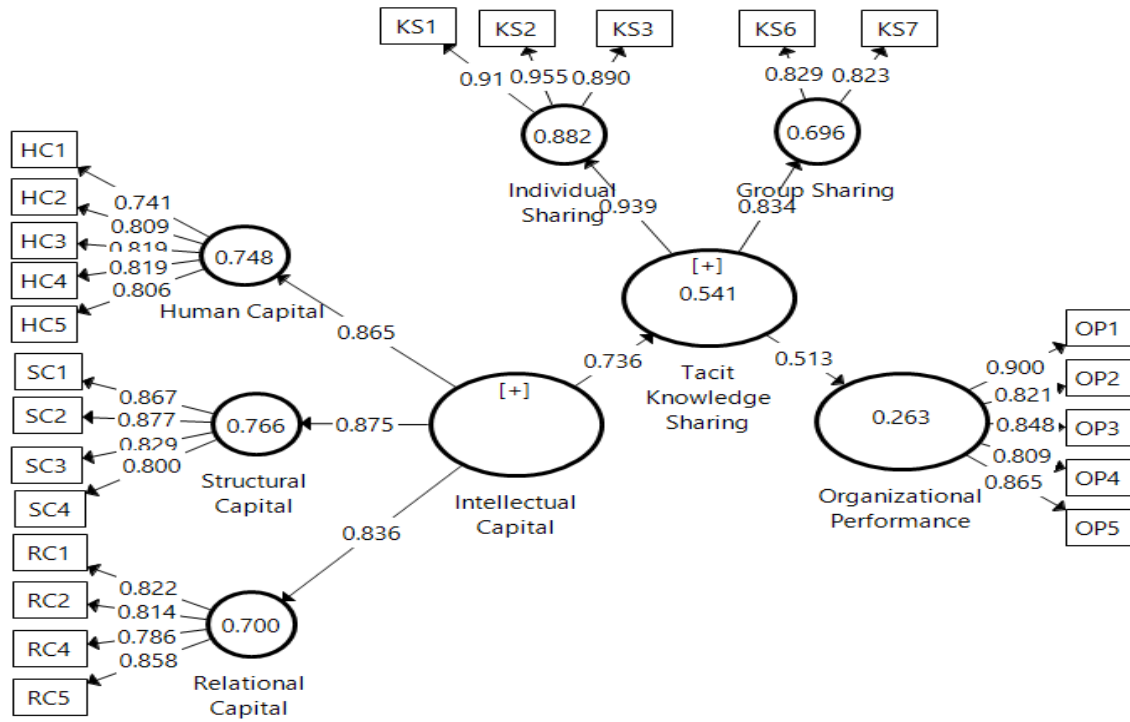


Figure 2. The structural model

Table 5. Hypothesis Testing

Hypothesis	Beta	SE	t-value	LL	UL	f ²	R ²	Q ²	Findings
H1: IC -> TKS	0.736	0.057	13.013	0.597	0.825	0.558	0.541	0.161	Supported
H2: TKS -> OP	0.513	0.080	6.413	0.305	0.641				Supported
H3: IC -> TKS->OP	0.377	0.074	5.121	0.206	0.519	0.382	0.263	0.257	Supported

DISCUSSION

The objective of this study was to examine the effect of tacit knowledge sharing as a mediating variable in the relationship between intellectual capital and organizational performance of micro enterprises. The results of this study found that intellectual capital had a significant relationship to tacit knowledge sharing therefore H1 is supported. This finding is similar to previous studies on tacit knowledge sharing especially on the relationship between intellectual capital and knowledge management (Nahapiet & Ghosal, 1998; Haldin-Herrgard, 2000; Manzanque et al., 2017; Vinicius et al., 2017). Saint-Onge (1996) further emphasized that tacit knowledge sharing is important in aligning the intellectual capital in the organization (Vinicius et al., 2017, Bontis, 1998, Khalique et al., 2015, Ngah & Ibrahim, 2011). The findings supported the previous literature that intellectual capital plays an important role in promoting tacit knowledge sharing in the organization. Besides, the relationship between tacit knowledge sharing and organizational performance was significant (H2 was supported) and this finding is studies done by Soto-Acosta et al. (2017), Oyemomi et al. (2016), Odiri, 2016, Muthuvello et al. 2017). Finally, tacit knowledge sharing mediates the

relationship between intellectual capital and organizational performance (H3 was supported). The finding was consistent with Gold et al. (2001), Lee and Choi (2003), Wang et al. (2014) where intellectual capital is complemented by knowledge sharing to enhance the performance of the organization. However, this relationship is rather weak. This is perhaps that micro enterprises do use tacit knowledge sharing to create the flow of knowledge in the organization; however, the effect on organizational performance is not that encouraging. It can be concluded that intellectual capital is a key issue in order to promote organizational performance of micro enterprises. In particular, tacit knowledge sharing proved to be extremely relevant when it comes to reinforcing the intellectual capital of micro enterprises in Malaysia. As micro enterprises' size is very small, therefore tacit knowledge sharing is routine in the organization. Tacit knowledge sharing enhances the performance of micro enterprises where the richness of knowledge possessed by owners and employees were circulated and shared where tacit knowledge is crucial to the organization (AlQdah & Salim, 2013). Therefore, tacit knowledge sharing should be aggressively encouraged in micro enterprises to ensure that it will enhance the organizational performance. The ignorance of tacit knowledge sharing would jeopardize micro enterprises in the long run. The intellectual capital C of micro enterprises of human capital, structural capital and customer capital had been well utilized by micro enterprises and tacit knowledge sharing complemented the process. Even though micro enterprises are considerably small in term of size, however, managing their internal resources which is intellectual capital shouldn't be ignored. It is important for micro enterprises to set strategic strategies to align their intellectual capital to enhance their performance thus they would be able to upgrade their status to SMEs as well as increasing their productivity and profitability. It is understood that micro enterprises practice tacit knowledge sharing unconsciously; however formal tacit knowledge sharing should be introduced and implemented in order to capitalize and transform tacit knowledge into innovation especially when tacit knowledge is important to improve human capital in organizations (Mohajan, 2016).

CONCLUSION

This study had presented tacit knowledge sharing as a mediator between intellectual capital and organizational performance of micro enterprises. It is interesting to discover that intellectual capital is important to regulate knowledge sharing however its effect on performance is rather small. It is important for micro enterprises to realize the importance of intellectual capital and maximize their tacit knowledge sharing activities. Relevant authorities can further assist micro enterprises to grow aggressively by capitalizing their intellectual capital especially towards innovation as micro enterprises have huge potential to develop innovation especially in a digital economy where knowledge is the main resource. This study is not without limitations. Bigger number of respondents would give better results. In depth interview should be carried out to understand the common knowledge sharing practices and investigate on how intellectual capital is exist in micro enterprises environment. Future studies should address areas like innovation capabilities, technology capital and innovation intelligence in micro enterprises and research topic like networking, open innovation, growth and entrepreneurial strategies should be considered.

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