

# Enablers of Innovation Performance among Malaysian Small Medium Enterprises toward Industrial Revolution 4.0

<sup>1</sup>\*Shan Shan Teh,<sup>2</sup>Daisy Mui Hung Kee

**ABSTRACT**--*Innovation is a concept that has received much attention in recent years. Innovation is one of the critical factors for organizational success and competitiveness. In Malaysia, innovative behavior is still at the infancy stage, especially among SMEs. The innovation rate in Malaysia is also not reaching full potential yet. Although industrial revolution 4.0 is gaining popularity, SMEs remain relatively unaware of the importance of innovation. Therefore, a quantitative study will be conducted among Malaysian SMEs on how to improve innovation performance. The social media and entrepreneurial orientation are the enablers of innovation performance proposed in the present study. Social media is a tool used to interact with customers to acquire useful information in the development stage. Moreover, with the entrepreneurial orientation possessed by the organization, it can lead the organization toward innovation. Besides the two enablers of innovation performance, open innovation is also proposed as a mediator. Open innovation allows the organization to explore outside knowledge and exploit internal resources to stay competitive. As such, open innovation is mediating social media and entrepreneurial orientation toward a better innovation performance among Malaysian SMEs in the era of industrial revolution 4.0. The present study also added knowledge to the theory of the knowledge-based view.*

**Keywords**--*Social Media; Entrepreneurial Orientation; Open Innovation; Knowledge-based View; SMEs*

## I. INTRODUCTION

In today's digitalized era, the industrial revolution (IR) 4.0 is gaining its popularity. IR 4.0 was introduced by Germany to the world. The idea behind IR 4.0 came from the first three industrial revolutions, namely mechanization, electricity, and information technology. In Malaysia, IR 4.0 is being emphasized among SMEs. Therefore, SMEs need to embrace and orient themselves to a new way of doing business in moving toward IR 4.0. For example, SMEs can create and sustain a unique customer experience via e-commerce solutions, social media engagement, and digital marketing platforms to boost their innovation.

According to Global Innovation Index (GII) 2018, Malaysia with a score index of 43.16/100 has been ranked at 35<sup>th</sup> place in Global ranking and at 8<sup>th</sup> place in SEA0 (South East Asia, East Asia, and Oceania) ranking as shown in Table 1 (Dutta et al., 2018). Malaysia used to record a strong GII score between 2011 and 2013 (See Figure 1). Besides, the score of GII also reported a slight increase from 2017 to 2018, and the global ranking also moved up by two positions to 35<sup>th</sup> place. The increased performance of the GII score is evidence indicating that Malaysia is pushing hard for a stronger innovation for business growth. From another perspective, the phenomenon

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<sup>1</sup>\*School of Management, Universiti Sains Malaysia, 11800 Penang, Malaysia, [shann\\_teh@hotmail.com](mailto:shann_teh@hotmail.com), [shann\\_teh@hotmail.com](mailto:shann_teh@hotmail.com).

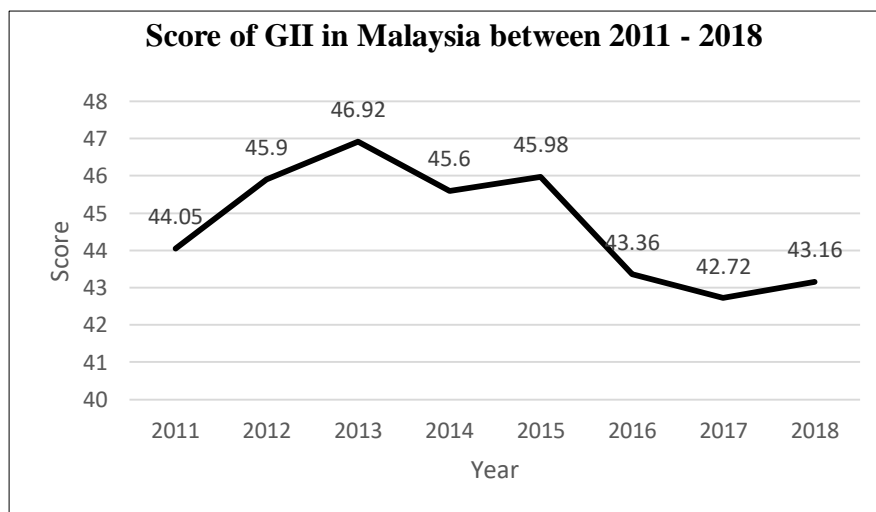
<sup>2</sup>School of Management, Universiti Sains Malaysia, 11800 Penang, Malaysia, [daisy@usm.my](mailto:daisy@usm.my).

of GII score dropping from 2013 to 2018 cannot be neglected as it is one of the alerts toward the innovation of Malaysia which needs to be concerned. Thus, it is imperative to discuss the topic of innovation in Malaysia, especially among SMEs. This is because SMEs are constituting 98.5% of the business community in Malaysia and it is believed that SMEs are the most significant contributor to the GII score.

**Table1:** GII 2018 among South East Asia, East Asia and Oceania (SEAO)

Country	Score (0 -100)	Region	Region Rank	Global Rank
Singapore	59.83	Southeast Asia	1	5
Korea	56.63	East Asia	2	12
Japan	54.95	East Asia	3	13
Hong Kong, China	54.62	East Asia	4	14
China	53.06	East Asia	5	17
Australia	51.8	Oceania	6	20
New Zealand	51.29	Oceania	7	22
Malaysia	43.16	Southeast Asia	8	35
Thailand	38	Southeast Asia	9	44
Vietnam	37.94	Southeast Asia	10	45
Mongolia	35.9	East Asia	11	53
Brunei Darussalam	32.84	Southeast Asia	12	67
Philippines	31.56	Southeast Asia	13	73
Indonesia	29.8	Southeast Asia	14	85
Cambodia	26.69	Southeast Asia	15	98

Source: Adapted from Dutta et al. (2018)



**Figure 1:** Score of GII in Malaysia between 2011 – 2018

Source: GII between 2011-2018

Besides that, Malaysian SMEs must adopt innovation and technology in their business operation in moving toward a high-income nation via productivity-driven and innovation-led growth by 2020. However, SMEs always faced challenges in their innovation and commercialization due to a lack of integrated support and funding to

finance. According to CEO Steinbeis Malaysia Foundation (STMY), Dr. Abdul Reezal Abdul Latif, local SMEs have the desire for innovation, but the challenges they faced to innovate and transform their organizations toward IR 4.0 are capital and time (The Malaysian Reserve, 15th March 2018). Furthermore, the other constraints confronted by SMEs are lack of knowledge on competitors and global demand, lack of information on the targeted market, and lack of employees' skills (SME Corp, 2017/2018). These problems faced by SMEs cannot be neglected as it will affect the tendency of innovation. Hence, the present study is investigating the enablers of innovation performance among Malaysian SMEs to facilitate innovation and solve the problems faced by SMEs.

The present study proposed two potential enablers of innovation performance among SMEs in Malaysia, namely social media and entrepreneurial orientation. Nowadays, social media is a useful platform used in business. Social media is mainly utilized to engage or interact with customers. The top five social media used by Malaysians are Twitter (23.8%), Google+ (31.3%), YouTube (48.3%), Instagram (57.0%) and Facebook (97.3%) (MCMC, 2018). According to the latest Digital 2019, Malaysia is the highest-ranked in SEA for mobile social media penetration, and it has been ranked in the top five globally (New Straits Times, 31st January 2019). The study also reported that Malaysians have an 80% internet penetration rate and spent eight hours and five minutes online averagely. This has been indicated that social media is penetrated by most of the customers. Therefore, social media is an important platform for SMEs in engaging with their customers as it is able to provide essential knowledge for the development of product and service and it can eventually promote a better innovation performance to Malaysian SMEs. Other than that, the SME Survey also highlighted that Malaysian SMEs require an ecosystem with more engagement and collaboration (SME Corp, 2018). Thus, social media is proposed as one of the enablers of innovation performance among SMEs in Malaysia.

The study also proposed entrepreneurial orientation as the second enablers of innovation performance among SMEs. It was reported that business formation in Malaysia is substantially below than high-income countries due to partly lack of perceived entrepreneurship capabilities (SME Masterplan, 2012 - 2020). According to the 2011 Global Entrepreneurship Monitor (GEM), the general lack of confidence and perceived capability in entrepreneurship has made Malaysia less favorable when compared to other countries (SME Masterplan, 2012 - 2020). Furthermore, the involvement in the international among Malaysian SMEs is still low due to a lack of entrepreneurial direction (Ismail & Zakaria, 2018). A report has indicated that Malaysian SMEs are reluctant to take-risk, lack innovativeness, and not up to aggressive competition (Ismail & Zakaria, 2018). Thus, how entrepreneurial orientation leads SMEs to be more innovative is still questionable. Hence, entrepreneurial orientation among Malaysian SMEs should be studied to improve competition and assist in contributing to economic growth which eventually improves the innovation performance.

Besides the suggested two enablers of innovation performance, open innovation is another variable to be proposed as a mediator in the present study. SMEs must facilitate their automation and digitalization to stay competitive. In the SME Survey, 31.8% of the respondents are aware of IR 4.0. As such, about 69% of them are ready for the IR 4.0, 66.4% are anticipating that the adoption of IR 4.0 can enhance the productivity and efficiency, and 62.1% respondents realize that the biggest challenge in implementing IR 4.0 is the employees' lack of knowledge and skills (SME Corp, 2018). Other than that, shortage of skilled workers in Malaysia is the greatest challenge as there is a strong demand for a digital workforce (The Star, 28th March 2019). Therefore, SMEs must continuously seek for the new and existing technologies in which they align their business with IR 4.0. As an open

innovation concept allows organizations to explore outside knowledge and to exploit internal resources to stay competitive (Popa, Soto-Acosta, & Martinez-Conesa, 2017), it might be beneficial to solve the problems of lacking knowledge and skills as well as financial issues. Thus, open innovation is proposed as a mediator to mediate the two enablers toward innovation performance.

As a conclusion, the present study proposed that social media and entrepreneurial orientation are the potential enablers that can assist in improving the innovation performance among SMEs. The study also proposed that open innovation is a potential mediator with the above relationships. Hence, this study seeks for the impact of social media and entrepreneurial orientation on innovation performance via the mediating role of open innovation.

## II. LITERATURE REVIEW

### *2.1 Overview of SMEs in Malaysia*

The new definition of SMEs has been reviewed and endorsed at the 14th National SMEs Development Council (NSDC) Meeting in July 2013. The definition has consisted of all the sectors such as manufacturing, services, construction, agriculture, and mining & quarrying. Under this new definition of SMEs, all SMEs must register their organization under the Companies Commission of Malaysia (SSM) or other equivalent bodies. Besides, another two criteria utilized to determine the definition of SMEs are based on sales turnover and the number of full-time employees with the “OR” basic as follows (SME Corp, 2018).

a) In terms of manufacturing sector, SMEs are defined as the sales turnover not more than RM50 million OR the number of full-time employees not more than 200.

b) In terms of services and other sectors, SMEs are defined as the sales turnover not more than RM20 million OR the number of full-time employees not more than 75.

Based on the statistics of the SME survey, the real GDP growth has consistently outperformed the overall economy as the average annual growth rate at 6.6% compared to 5.2% in the period of 2011-2017 (SME Corp, 2018). As a result, the contribution of SMEs to overall GDP has increased from 32.2% (2010) to 37.1% (2017). The higher GDP growth of SME was led by both consumption activities and private investment, supported by strong domestic demand, sustained domestic and foreign tourist spending, partly affected from hosting the 2017 SEA Games, and the higher demand of exports for products and services of SMEs from ASEAN and other trading partners (SME Corp, 2018).

In terms of SME employment, it has increased to 66.0% of total employment with a growth of 3.4% compared to 2.1% in 2016. The statistic has shown that the growth of SME employment was higher, while large firms remained flat at -0.01% in 2017. This is partly due to the shift of employment from large firms to SMEs since 2014 (SME Corp, 2018). Overall, there is about 61.7% of SME employment generated from services sectors, specifically in the distributive trade, food & beverage, professional, scientific, and technical sub-sectors. Meanwhile, the second-largest contributor was manufacturing with 16.5%, followed by agriculture with 11.0%, construction with 10.5%, and mining & quarrying with 0.3% (SME Corp, 2018).

Other than that, the productivity of SMEs is relatively low as compared to large companies, although SMEs' productivity continued to improve by 3.7% in 2017 with a value of RM63,167 compared to RM60,887 in 2016. The growth of productivity was contributed by strong productivity growth in the mining & quarrying with 11.9%

and services sectors with 6.0% during the year. However, the productivity between large companies and SMEs has remained at 3.3 times since 2016. This is due to little participation of high-skilled workers and lower investment in capital among SMEs (SME Corp, 2018).

In 2017, SME exports recorded a higher growth of 7.9% compared to 7.0% in 2016. This is driven by the growth of the agriculture sector with 48.1%, manufacturing sectors with 7.8%, and services sector with 6.7%. However, the contribution of SME exports to the total exports in terms of percentage share was lowered at 17.3% in 2017 compared to 18.9% in 2016. This is mainly due to the robust exports by large firms which are driven by higher manufactured exports such as electrical & electronics and petroleum-related products. Therefore, large firms significantly benefited in this global economic growth and trade activity (SME Corp, 2018).

Overall, with the statistics discussed above, SMEs act as a significant role in improving economic growth in Malaysia, especially in terms of growth of GDP, employment, labor productivity, and exports. SMEs are not only the enablers of growth as in the past but also a key driver of growth (SME Corp, 2018). Therefore, challenges or issues that are faced by SMEs cannot be neglected. Instead, support and assistance from the government or other agencies are crucial for Malaysian SMEs.

## ***2.2 Challenges and Issues faced by SMEs in Malaysia***

A survey on SMEs is conducted by SME Corporation Malaysia twice a year since 2009 as part of monitoring the development and performance of Malaysia SMEs. This survey aims to identify the challenges and issues faced by SMEs. Also, the survey enables help government in formulating effective programs and comprehensive SME development policies for SMEs. In the SME survey, the recent SME business performance and the outlook are gauging to determine the challenges and issues faced by SMEs. The challenges and issues encountered are the cost of running the business, financing, export, human capital, IR 4.0, ICT adoption and e-commerce, and other related issues that directly and indirectly affect SMEs.

First of all, the main issue faced by SMEs is the increase in operating costs. It was found that the average annual operating cost increased by 20% which is at a faster rate compared to previous quarters. This has resulted in the concerning of cash flow or liquidity issues. The cash flow issue can be attributable to a few factors such as late payment by customers and clients, high cost of running business and the Goods and Services Tax (GST) (SME Corp, 2018). SMEs rely heavily on cash flow in operation; therefore, these factors can affect their ability to operate and grow their businesses. The demand for the loan from financial institutions has gradually decreased with the issue of cash flow. The reasons given for failed loan applicants were the business is too young, poor or no financial track record and the difficulty in evaluating the application.

In focusing on the export activity of SMEs, the survey indicated that about 14.7% of the respondents had exported their products or services to the United States and China. This has been shown that SMEs tend to widen their market by undertaking different initiatives such as diversifying in new export markets, establishing networking with people in the targeted market, and joining the international trade promotional activities in order to boost their export. However, SMEs still facing some constraints in going abroad. The constraints are lack of information in the targeted market, expect to incur the higher operating cost, lack of knowledge on global demand, competitors and procedure to export, and insufficient human resources.

Next, the realization of the importance of IR 4.0 among SMEs is not reaching the satisfaction level. SMEs must be able to facilitate their automation and digitalization to stay competitive in the era of IR 4.0. In the SME Survey, 31.8% of the respondents are aware of IR 4.0. Of which, about 69% of them are getting ready for the IR 4.0, 66.4% are anticipating that the adoption of IR 4.0 can enhance the productivity and efficiency, and 62.1% respondents realize that the most significant challenge in implementing IR 4.0 is the employees' lack of knowledge and skills (SME Corp, 2018). Based on the findings, the government must undertake many initiatives for SMEs to embrace IR 4.0 and stay competitive. At the same time, SMEs must continuously seek for new and existing technologies in aligning their business toward IR 4.0.

Other than that, the limited usage of social media and e-commerce has shown that SMEs are struggling in adopting digitalization pace which could influence the business and productivity gains (SME Corp, 2018). Nowadays, social media is a crucial tool used in business. Social media is mainly utilized to engage or interact with customers. The top five social media used by Malaysian are Facebook with 97.3%, Instagram with 57.0%, YouTube with 48.3%, Google+ with 31.3% and Twitter with 23.8% (MCMC, 2018). This has been indicated that social media is penetrated by most of the customers. Therefore, social media is an essential tool for SMEs in engaging with their customers as it can provide essential knowledge for the development of products and services.

Lastly, issues such as barriers of infrastructure, regulatory and administrative burden, lack of financial support, and insufficient digital skills in the workforce are struggles by SMEs in digital development. As digitalization has been picked up around the world, the adoption of digital technologies is exceptionally imperative for Malaysian SMEs as they represent 98.5% of the entire establishment to boost economic growth. As SMEs are taking a more prominent role in shaping the future of the economy, therefore different measures must be encountered to solve the challenges and issues. Although the government has provided various supports and assistance for SMEs, SMEs require self-initiation and self-improvement in their business.

### ***2.3 The Literature Gaps between Social Media, Entrepreneurial Orientation, Open Innovation, and Innovation Performance***

From the review of literature, it has been empirically established that social media and entrepreneurial orientation are significantly related to the performance and thus, the mediating variable is introduced to explain the causal mechanism behind the relationship between independent variables and dependent variables. In this study, open innovation acts as a mediator to explain the relationship between social media and entrepreneurial orientation to innovation performance.

The social media acts as a superior platform for organizations to communicate with customers. Theoretically, the involvement of customer using social media in the process of new product or service development able to provide an opportunity for SMEs to achieve a better innovation performance (Salo, 2017). This information is valuable as it can provide the solutions to meet the preferences of the customers in the new product or service development. Therefore, it can be concluded that social media can be a potential tool that could improve innovation performance among SMEs. However, the blossoming nature of social media and the implication of social media among SMEs is under-research in the literature (Ahmad, Abu Bakar, & Ahmad, 2019; Cheng & Shiu, 2018). Thus, a study pertaining to social media and innovation performance is a must among Malaysian SMEs.

With the purpose of understanding the effect of entrepreneurial strategy on organizational performance, entrepreneurial orientation has received a substantial amount of theoretical and empirical attention in recent years (Shan, Song, & Ju, 2016). Even though the entrepreneurial orientation is vital in SMEs' performance especially in innovation development, there is still scarce study on entrepreneurial orientation in developing countries compared to developed countries (Khaleel, Al-shami, Majid, & Adel, 2017; Wei & Ling, 2015). Recent studies also indicated that entrepreneurial orientation is still an element that can be further studied (Beattie, 2016). According to Shirokova, Bogatyreva, Beliaeva, and Puffer (2016), the real environmental situation that makes the entrepreneurial orientation impact on the organizational performance need to be resolved. Khaleel et al. (2017) and Imran et al. (2018) also insisted on the need for a study in investigating mediators in the relationship between entrepreneurial orientation and performance in Malaysian SMEs. Therefore, it leads to a gap in identifying mediators to strengthen the relationship between entrepreneurial orientation and performance. Hence, open innovation acting as a mediator between the relationship of entrepreneurial orientation and innovation is proposed in this study.

Open innovation allows organizations to explore outside knowledge and to exploit internal resources to stay competitive (Popa et al., 2017). Some of the studies have demonstrated that open innovation has a positive relationship on a firm's performance (Popa et al., 2017; Zhou, Yao, & Chen, 2018). However, other studies have suggested that it can have a negative impact on performance (Caputo, Lamberti, Cammarano, & Michelino, 2016; Laursen & Salter, 2006). From the findings, it is indicated that researchers have not reached a consensus on how open innovation affects an organization's innovation and performance. Besides, the mediating role of open innovation has also not been explicitly investigated in Malaysian SMEs. Ultimately, the exploration of its potential role as a mediating factor could provide a better understanding on how to leverage it to achieve a desirable organizational goal and stay competitive. Hence, the purpose of this study is to examine how open innovation acts as a mediator in the relationship between social media, entrepreneurial orientation, and innovation performance.

### **III. METHODOLOGY/MATERIALS**

A quantitative study is implied in the present study to investigate how to improve the innovation performance among Malaysian SMEs. Furthermore, purposive sampling is chosen as a sampling technique in this study. Purposive sampling is a form of convenience sampling because it relies on the judgment of the researcher when choosing a sample (Hair, Wolfenbarger, Money, Samouel, & Page, 2015). Furthermore, the use of purposive sampling is justified when there is a need for information from a specific target group of people who can provide the desired information.

In this study, the managers of SMEs from five different states in Malaysia namely Selangor, Kuala Lumpur, Johor, Perak, and Penang are selected as samples because these five states have the highest concentration of SMEs. According to the statistics provided by SME Corp (2016), Selangor has the highest concentration of SMEs with 19.8%, followed by Kuala Lumpur with 14.7%, Johor with 10.8%, Perak with 8.3%, and Penang with 7.4%. In addition, the inclusion criteria in selecting organizations must be taken into consideration also. The inclusion criteria for organizations are (1) the organization has been operating for at least a year in order to ensure

organization is mature and stable for innovation; (2) the organization must have not exceeded 200 full-time employees for manufacturing sector and (3) not exceeded 75 full-time employee for services or other sectors.

#### **IV. RESULTS AND FINDINGS**

The present study contributes knowledge to the theory of the knowledge-based view (KBV). KBV is the extension of the resource-based view. It shifts the concerns of tangible and intangible resources to knowledge, and thus the organization's decision making and attention will have priority on competitive capabilities and knowledge (Qi & Chau, 2018). According to Nonaka and Konno (1998), knowledge is the only resource that provides a sustainable competitive advantage. KBV has emphasized that knowledge is the most strategically essential resource to the organization. It is used to explain the crucial role of knowledge creation and sharing in enhancing organizational performance. Of which, social media, entrepreneurial orientation, and open innovation act as knowledge sources to improve innovation performance in this study. As such, the KBV theory sheds light on the relationship between knowledge and innovation performance.

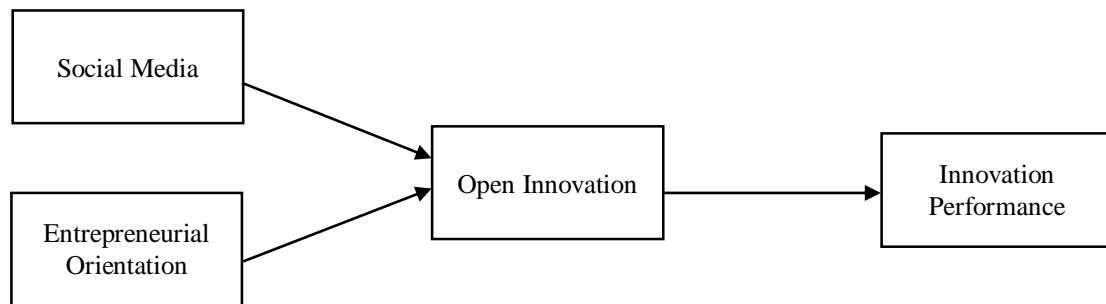
Based on an empirical study on KBV, the potential influence of vast knowledge obtained from customer involvement through social media can have impact on SME innovation performance (Cheng & Shiu, 2018). For instance, the nature of customer knowledge obtained via social media can impact the innovation development (Cui & Wu, 2016); and organization can understand the preference of customers, detect defects earlier, and thus produce more creative product or service idea that is highly valued by customers (Mahr, Lievens, & Blazevic, 2014). Therefore, the KBV theory is viable in the relationship between social media and innovation performance in the present study. This is because social media enables in creating knowledge from customers and eventually improves the innovation performance among Malaysian SMEs. Hence, the present study proposed the positive relationship between social media and innovation performance.

Next, entrepreneurial orientation defined as an organization is willing to conduct innovation activities, take risks in creating new products and services, move faster than competitors, and proactively looking for new opportunities (Soininen, Martikainen, Puumalainen, & Kyläheiko, 2012). Empirical research indicated that organizations with entrepreneurial orientation would create a higher level of knowledge-based resources enabling competitive advantage (Dada & Fogg, 2016). Aligned with this, entrepreneurial orientation can be viewed as consistent on the KBV theory. As a result, the entrepreneurial orientation enables to improve the innovation performance among Malaysian SMEs which is feasible with KBV theory. Thus, the positive relationship between entrepreneurial orientation is proposed in the present study.

Furthermore, a critical contribution of KBV in this study is the identification of two distinct sources for innovation namely internal oriented and external oriented (Menon & Pfeffer, 2003). There is a study indicating that the relationship between knowledge sourcing and innovation performance is based on internal-oriented and external-oriented sourcing (Wang, Wang, Zhao, Lyles, & Zhu, 2016). In terms of open innovation, organizations are allowing to gain knowledge from other organizations and exploit it within the organization in order to improve innovation performance and stay competitive. In addition, it is believed that open innovation can mediate the relationship between social media, entrepreneurial orientation, and innovation performance. Thus, the open innovation is consistent with the KBV theory in present study.



As a conclusion, knowledge-based resources are difficult to socially complex and imitate. The diversity of the knowledge base and the capabilities within the organization are the major determinants of an organization to sustain competitive advantage and achieve superior performance. As a result, social media, entrepreneurial orientation and open innovation act as knowledge sources to improve innovation performance in this study. The proposed framework is shown in Figure 2.



**Figure 2:** Proposed framework

## V. CONCLUSION

The present study has contributed knowledge to the theory of KBV. Although many empirical studies have already been carried out on innovation performance within the context of SMEs, this study attempts to fill the literature gaps, as mentioned in section Literature Review in order to benefit both academics and researchers. With the variables of social media, entrepreneurial orientation and open innovation, it can enhance the innovation performance among SMEs and eventually improve the economic growth of Malaysia. By narrowing the context of this study, it should be able to provide better innovation knowledge to managers of SMEs. This study is expected to serve as a guide to managers in Malaysia on how the organizations can increase the innovation activities and enhance the innovation performance with the assistance of enablers of innovation performance such as social media and entrepreneurial orientation. With the knowledge provided, managers of SMEs can operate their business more successfully and stay competitive in terms of innovation.

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