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# THE IMPACT OF INNOVATION, ORGANIZATIONAL, TECHNOLOGICAL CAPITAL ON INNOVATION PERFORMANCE OF SMEs: THE MEDIATING EFFECT OF INNOVATIVE INTELLIGENCE

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## ABSTRACT

Innovation is crucial for SMEs to survive and impacts the national economy. The present study is conducted in the context of knowledge-based SMEs in Malaysia concerning structural capital (technology capital, innovation capital, and organizational capital), innovative intelligence, and innovation performance. A survey was carried out through a face-face interview and online. A total of 136 usable questionnaires were then analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). This study has shed light on the role of the structural capital of knowledge-based SMEs on innovation performance. While structural capital is significant for organizations to achieve their competitive advantage and should be given necessary attention compared to human capital, innovation and technological capital were not fully capitalized. The presence of innovative intelligence in SMEs helps to be innovative. This result will be encouraging to SMEs in other developing countries. The results obtained are useful for SMEs, especially knowledge-based firms where technology and innovation are critical to achieving a competitive advantage. The results are also significant for agencies that handle SMEs in high-tech and policymakers to increase performance and promote economic stability.

***Keywords***: Entrepreneurship, structural capital, technological capital, innovation capital, organizational capital, SMEs, innovative intelligence.

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## 1. INTRODUCTION

In the knowledge-based economy, knowledge utilisation in Small and Medium Enterprises (SMEs) is crucial to help companies create and sustain their competitive advantage by applying innovation (Castaneda & Cuellar, 2020). Knowledge utilization can be traced through its people, structure,

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and social networking (Ngah et al., 2015). SMEs can utilize their know-how through innovative intelligence to turn the implicit knowledge into product or process innovation. As SMEs represented 98.5% of business establishments in Malaysia (SME Insights, 2021), it has been given special attention. The government is providing much assistance to assist SMEs in performing better as SMEs are essential pillars of the economy. Malaysia has set its goal to achieve the status of a high-income nation by the year 2030. The contribution of SMEs to the Good Domestic Product (GDP) of the high-income nation is more than 50% (OECD , 2017). The National Entrepreneurship Policy 2030 (DKN2030) set to increase SME contribution to GDP to 50.0% (currently 38.3%), generation of employment to 80.0% (currently 66.2%), contribution to total export value to 30.0% (currently 17.3%) and for the turnover of co-operatives to grow to RM60.0 billion (currently RM40.3 billion) (SME Insights, 2021; DOSM, 2020). On Global Innovation Index 2019, Malaysia was at 35th position and improved its position to 33rd position in Global Innovation Index 2020 and remains among the middle-income economies that are bridging the innovation divide. (Malaysia Investment Development Authority, 2020). A comparative report SME Insights (2021) showed that level of innovation of SMEs was a bit higher in middle-income nations but below the level of high-income nations.

Innovation is the crucial survival of organizations, especially SMEs. Integrating knowledge and innovation would help SMEs improve (Cardoni et al., 2020). Knowledge is the feeder to innovation. Thus, in supporting innovation performance, the knowledge found in the intellectual capital of technology, innovation, and organizational capital should be mobilized. Interestingly, many SMEs did not realize knowledge in their organization. SMEs need to recognize their internal strengths to build their solid competencies and capability to increase and sustain their performance. The exploitation of knowledge in SMEs is still heavily discussed. SMEs have not exploited their organizational knowledge to develop sustainable competitive advantage through innovation (Ngah et al., 2016). Many studies have highlighted that SMEs have a significant advantage of knowledge and innovation exploitation (Levy et al., 2003). However, the exploitation of knowledge in SMEs was unstructured, thus impacting the performance (Cardoni et al., 2020). Azyabi and Fisher (2014) stated that a lack of focus and commitment is another reason for SMEs' failure to utilize knowledge to their advantage. The strategic usage of knowledge is to strengthen the organisation's internal resources.

Intellectual capital is the organization's internal resource and has been widely promoted as a fundamental strategic approach to help SMEs perform better (Ngah & Wong, 2020). Consequently, this study provides empirical evidence on the importance of adopting intellectual capital dimensions to integrate knowledge management and innovation. Structural capital is one of the main elements of intellectual capital that provides support to the organization. Innovation has been a critical strategy for competitive advantage. Knowledge is a feeder to innovation. Knowledge flows in the organization from people to structure and customer relationships. Much research on intellectual capital, including human capital, structural capital, and customer capital, has significantly affected organizational performance (Hanifah et al., 2020). However, the structure of structural capital has seldom been addressed. Structural capital includes processes, data, systems, designs, and knowledge Stewart (2000). As structural capital involves utilizing and applying knowledge at the organizational level, dimensions like organizational capital, technological capital, and innovation capital need to be mobilized. However, the specific interrelationships between dimensions of structural capital are not known. Also, innovation intelligence is still new in SMEs

that warrants significant attention. This paper aims to highlight the gap theoretically and empirically.
This study also examines the effect of technology, innovation, and organizational capital on innovation performance and the mediating effect of innovative intelligence of knowledge-based SMEs in Malaysia.

## 2. LITERATURE REVIEW

### *2.1. Innovation Performance in SMEs*

In measuring the performance of knowledge-based SMEs, innovation performance is one of the critical measurements to be used. However, innovation performance in Malaysian SMEs is not impressive (Abd Razak et al., 2018). Therefore, Ghazilla et al. (2015) posited that SMEs are experiencing less innovation performance because they have insufficient or incompetent human resources. Their employees are not prepared or ready to change according to the current situation. In this respect, SMEs are experiencing a lack of qualified employees, limited internal training, and the incapability to retain competent employees to venture into innovation (Kang, 2016; Muhammad et al., 2010). A study by Alegre et al. (2011) found that knowledge in the organization strongly influences the innovation performance of high-tech small and medium enterprises in Portugal. SMEs that spend more on R&D tend to have a better innovation performance (Ren et al., 2014). Utilization of knowledge through intellectual capital, especially in R&D, helps SMEs realize their innovation potential (Han & Li, 2015). The innovation performance can only be enhanced with reliable antecedents (Curado et al. 2018).

### *2.2. Intelligence*

Intelligence is defined as the collective value-added benefits obtained from intangible assets such as knowledge from the employees, management, stakeholders, and customers (Liebowitz, 2006). Knowledge and experience go hand in hand in developing intelligence. The difference between information and intelligence is; information is factual, and intelligence is information that has been screened, distilled, and analyzed (Drucker, 1988; Kahaner, 1996). The studies of intelligence in SMEs revolve around competitive intelligence (Placer-Maruri et al., 2016), business intelligence (Popovič et al., 2019; Stjepi'c et al., 2021) and, artificial intelligence (Kumar & Kalse, 2021). Most of the intelligence affect positively to the firm performance. However, innovative intelligence is less explored even though it directly affects organizational performance (Ngah et al., 2015; 2016).

### *2.3. Innovation Capital and Innovative Intelligence*

Innovation capital refers to the organisation's capability to exploit knowledge to create innovation (Wu & Sivalogathasan, 2013). Innovation capital includes intellectual property and certain other intangible assets. According to Dyer et al. (2019), innovation capital can turn novel ideas into reality. Innovation capital is derived from three primary sources; human capital, social capital, and reputation innovation (Duran et al., 2014). Kijek (2012) posits that innovation capital is a funnel to generate knowledge assets. The capability of SMEs to develop and implement innovative processes in the organization would accomplish developing innovative products (Al-kalouti et al., 2020). In the Industrial Revolution 4.0, SMEs in Malaysia realized the importance of innovation

capital or capability and allocated some budget for internal or external research and development (Ngah & Wong, 2020).

On top of that, the government is providing many incentives to encourage innovation and technology adoption. It is well-known that innovation is a crucial tool for SMEs to be successful. Akman and Yilmaz (2008) discuss the roles of market orientation, innovation strategy, and innovative capability on SMEs' innovation success in developing countries.

*H1: Innovation Capital has a positive relationship with Innovative Intelligence*

### *2.4. Organizational Capital and Innovative Intelligence*

Organizational capital refers to the organization's tools, systems, and structures to help employees achieve excellent and better performance (Bontis, 1998; Bontis et al., 2000). The organizational capital (OC) comprises systems, structure, corporate culture, organizational process efficiency, databases, information, and production technology (Serrat, 2017; Bontis et al., 2000). It is also known as the codified knowledge that the organization wholly owns. Organizational capital is closely related to top management's support that would lead to the firm's direction (Dessein & Prat, 2017). Barbieri et al. (2021) posit that organizational capital (OC) is a repository of knowledge embedded at the organizational level. Moreover, it needs to be regulated through innovation to impact the organizational performance, especially on innovation performance. Thus, organizational capital is the driver for innovation capability and innovation performance (Benevene et al., 2017).

*H2: Organizational Capital has a significant relationship with Innovative Intelligence*

### *2.5. Technological Capital and Innovative Intelligence*

Technological capital refers to the capability of unique know-how accumulated from investing in research and development (R&D), organization capital, and brands (McGrattan & Prescot, 2009). It is a combination of knowledge directly linked to the development of the activities and functions of the organisation's technical system (Martı´n-de-Castro et al., 2006). Technological capital is considered one way for SMEs to practice innovation and contribute to innovation performance. Technological capital is usually accessed from intellectual property, which provides a substantial advantage to the organization (Alazzawi et al., 2018). Technological innovation is essential in the organization, especially supporting innovation activities (Chaoji & Martinsuo, 2019). Zakery and Saremi (2021) found that technological capital was not incorporated with knowledge or intelligence for corporate strategies for internationalizing firms. Nevertheless, the efficiency of technological capital requires strong support from top management. Past studies have found that technological competencies are essential in promoting innovative intelligence to generate new ideas and knowledge.

*H3: Technological capital has a significant relationship with Innovative Intelligence*

### *2.6. Innovative Intelligence and Innovation Performance*

Innovation intelligence is essential for an organization's survival (Dessein & Andrea, 2017). A study has shown that for entrepreneurs to acquire a successful entrepreneurial behavior, they must have successful intelligence of practical, analytical, and creative intelligence and entrepreneurial self-efficacy (Papula & Volná, 2013). Weiss and Legrand (2011) define innovative intelligence as "the human cognitive ability to gain insight into problems or opportunities in new ways and to discover new and unforeseen implementable solutions." SMEs' capability to use knowledge to their advantage and compete in the market would give them a competitive advantage. The ability of SMEs to use innovative intelligence is crucial to be successful in a business venture. As knowledge is embedded in every corner of SMEs, they must gather all knowledge strategically to be their intelligence resources (Papachristodoulou et al., 2017). The company needs to acquire innovative intelligence as it creates the capability to gain insights into complex problems or opportunities and discover new and unforeseen solutions that can be implemented (Ünay & Zehir, 2012). Innovative intelligence can help SMEs to discover business opportunities through knowledge management. Intelligence such as business and competitive intelligence have been highlighted as options to assist SMEs in managing their data and knowledge and benchmarking their competitors (Papachristodoulou et al., 2017; Marzetti & Tronconi, 2009; Mohsin et al., 2015). However, innovative intelligence is not well-explored to strategically position SMEs in a competitive situation. Understanding the role of innovative intelligence in SMEs would offer other insights to support SMEs.

*H4: Innovative Intelligence has a significant relationship with Innovation Performance*

### *2.7. Mediation Analysis of Innovative Intelligence*

Innovation Capital, regarded as an element of intellectual capital, reflects the ability of an organization to create and commercialize the new knowledge (innovation) Kijek (2012). With the flow of new knowledge, Innovation capital is one of the core elements of intellectual capital that helps an organization gain and sustain its sustainable competitive advantage through innovation performance (Kijek, 2012). R&D is a proxy of innovation capital where knowledge and innovation play a huge role in helping organizations create new products (Asim & Sorooshian, 2019; Wang, & Wang, 2012). The capability of SMEs to develop and implement innovative processes in the organization would accomplish developing innovative products (Al-kalouti et al., 2020). Edvinsson and Malone (1997) describe innovation capital as the renewal capabilities of an organization to create and introduce new products and services to the market. Therefore, the role of innovation capital on SMEs' innovation performance would provide another insight into SMEs in the Asian context.

Marzetti and Tronconi (2009) argue that it is difficult to assess the real impact of organizational capital on firm performance due to its complexity. However, based on a study by Barbieri et al. (2021), organizational capital was both directly and indirectly positively related to performance through the mediation of innovation and clarity of change. The organization willing to adopt new ideas by revisiting and improving their products, services, or processes would improve their performance (Bowen et al., 2010).

Technological capital indirectly influences innovation performance even though, in total, structural capital has a substantial impact on innovation performance (Aramburu et al., 2015). As technological capital contributes to ideas for new products, services, or processes, it makes sense

that the more technology input generated, the more organisational performance and profit (Alazzawi et al., 2018). Wu et al. (2016) emphasized that organizational capabilities like innovative intelligence would enhanced the impact on the innovation performance. According to the OECD (2018) report, most innovative companies use technological and non-technological innovations to introduce new products or services (Zambon & Monciardini, 2015). Therefore, technology capital indirectly affects firm financial performance (Zakery & Saremi, 2021). Saadi and Che Razak (2019) propose that the relationship between technological capital and innovation performance should be mediated by innovative capability or intelligence, especially sustainability.

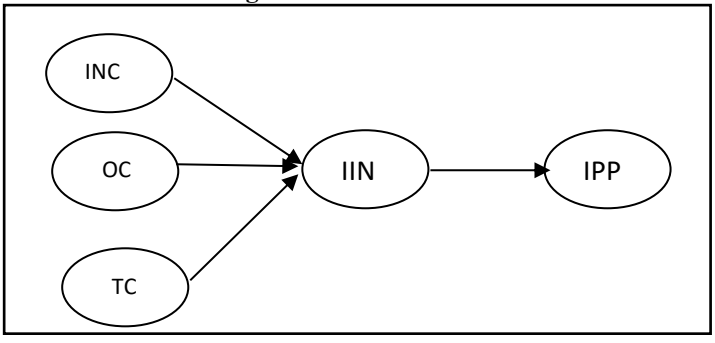
*H5: Innovative Intelligence mediates the relationship between Innovation Capital and Innovation Performance*

*H6: Innovative Intelligence mediates the relationship between Organizational Capital and Innovation Performance*

*H7: Innovative Intelligence mediates the relationship between Technological capital and Innovation Performance*

Figure 1 presents the research framework for the study. Innovation Capital, Organizational Capital and Technological Capital are the independent variables. Innovative Intelligence is the mediating variable, while Innovation Performance is the dependent variable.

**Figure 1:** Research Framework




***Note***: INC- Innovation Capital; OC- Organizational Capital; TC- Technological Capital; IV- Innovative Intelligence; IPP – Innovation Performance

## 3. METHODOLOGY

Based on the latest data released by the DOSM (2020), the total number of SMEs in Malaysia in 2020 was 1,151,339 or 97.2% of total establishment and the total of SMEs in Malaysia was 907,065 establishments (Department of Statistic, 2020). A survey was carried out on knowledge-based SMEs in Central Malaysia through an offline and online method. Central Malaysia covers the state of Selangor, and the city of Kuala Lumpur was chosen because the majority of SMEs operate in the area, which 19.8 per cent or 179,600 establishments. A simple random sampling was chosen as it is most convenient, especially when the available databases and respondents' profiles are similar. A single respondent design was employed based on the size of SMEs and the respondents'

familiarity with the research topic as each SMEs selected respondents as knowledgeable representatives (Salavou & Avlonitis, 2008).

Moreover, it might be challenging to get more than one respondent in SMEs knowledgeable to provide a well-informed response (Kull et al., 2017). The measurement of instruments of structural capital was adapted from Bontis (1998), Lee and Choi (2003), and Cohen and Kaimenakis (2007). In addition, innovative intelligence instruments were adopted from Weiss and Legrand (2011), and innovation performance was adapted (Roberts & Grover, 2012; Wu et al., 2007). The Likert scale was utilized in the survey. Data collected were then analyzed using Partial Least Square of Structural Equation Modelling (SEM). The purpose of using SEM is due to its robustness and the ability to run analysis concurrently. In SEM, the reporting of results was done on two measurement and structural models. The test was carried out in the measurement model to test the outer model, while the structural model validated the inner model.

## 4. RESULTS AND DISCUSSION

A total of 136 questionnaires were returned and usable for data analysis. Most firms were local (94%), and another 6% were foreign companies. About 58% were from the services sector and 42% from manufacturing. Most companies have been operating for more than ten years (30%), while 27% were between 2-4 years of operation. Regarding knowledge acquisition, 48.5% of SMEs have internal R&D, 25.7% share with strategic partners, and 8.8% acquire from research programs. Most companies allocated less than 50k a year for R&D, while 18.4% spent between 51k and 100k a year. Only 11% spend more than 300k on R&D. Table 1 shows the details on profiling of SMEs and respondents.

**Table 1:** Demographic Profiling

| | **Company Information** | **Frequency** | **Per cent** |
|---|---|---|---|
| Company | Local | 127 | 93.4 |
| | Foreign | 9 | 6.6 |
| Sector | Manufacturing | 57 | 41.9 |
| | Services | 79 | 58.1 |
| Knowledge Acquisition | In-house R&D | 65 | 48.5 |
| | Strategic Partner | 35 | 25.7 |
| | Scientific Journals | 7 | 5.1 |
| | Research Program | 12 | 8.8 |
| | Internal Experts | 9 | 6.6 |
| | Consultants | 4 | 2.9 |
| | Others | 4 | 3.0 |
| Allocation for R&D | < 50k | 73 | 53.7 |
| | 51 -100k | 25 | 18.4 |
| | 101-300k | 13 | 9.6 |
| | >300k | 15 | 11 |
| | **Respondent Information** | | |
| Gender | Male | 98 | 72 |
| | Female | 38 | 28 |
| Occupation | CEO | 59 | 43.4 |

| | | | |
|---|---|---|---|
| | Partner | 11 | 8.1 |
| | General Manager | 29 | 21.3 |
| | Others | 37 | 27.2 |
| Highest Level of Education | SPM/STPM (O /A-Level) | 16 | 11.8 |
| | Certificate | 5 | 3.7 |
| | Diploma | 26 | 19.1 |
| | Degree | 69 | 50.7 |
| | Post Graduate | 19 | 14 |

The G-Power analysis was carried out to verify the sample size used in the study. Using a Linear Regression of Fixed Model's effect size $f^2 = 0.15$ with 80% power (alpha = .05, two-tailed), G*Power suggests 110 participants would be adequate. In this study, the total usable response was 136, indicating an ample number of respondents.

Harman's one-factor test is used to test evidence suggesting the presence or absence of common method bias in this dataset (by Podsakoff et al., 2012). The results showed that the single primary factor was 42.2%, indicating the model is free from common method bias. These results suggest that common method bias is not a cause of major concern in this sample. Therefore, further analysis can be carried out.

### *4.1. The Measurement Model*

The convergent validity, internal reliability, and discriminant analysis can be used to test the measurement model. The measurement model or outer model examines the loadings, reliability, and validity of the measures used to represent each construct (Chin, 2010). Hair et al. (2017) suggested that the loadings should exceed the recommended value of 0.7. The composite reliability of variables is above the threshold of 0.7, and the average variance extracted was above the threshold of 0.5, as Kline (2011) suggested. The measures of all the variables/constructs have good levels of convergent validity. Table 2 presents the convergent validity variables with constructs. Therefore, the convergent validity has been fulfilled.

**Table 2:** Convergent Validity Analysis

| Variable | Construct | Loadings | α | CR | AVE |
|---|---|---|---|---|---|
| Innovation Capital | INVC1 | 0.888 | | 0.92 | 0.74 |
| | INVC2 | 0.910 | | | |
| | INVC3 | 0.768 | | | |
| | INVC4 | 0.918 | | | |
| Organizational Capital | OC1 | 0.75 | | 0.92 | 0.64 |
| | OC2 | 0.800 | | | |
| | OC3 | 0.850 | | | |
| | OC4 | 0.825 | | | |
| | OC5 | 0.800 | | | |
| | OC6 | 0.765 | | | |
| Technological Capital | TC1 | 0.820 | | 0.94 | 0.71 |
| | TC2 | 0.908 | | | |
| | TC3 | 0.885 | | | |
| | TC4 | 0.794 | | | |

| | | | | |
|---|---|---|---|---|
| | TC5 | 0.884 | | |
| | TC6 | 0.787 | | |
| Innovative Intelligence | IINV1 | 0.812 | 0.96 | 0.76 |
| | IINV2 | 0.886 | | |
| | IINV3 | 0.910 | | |
| | IINV4 | 0.899 | | |
| | IINV5 | 0.885 | | |
| | IINV6 | 0.804 | | |
| | IINV7 | 0.889 | | |
| Innovation Performance | IPP1 | 0.796 | 0.93 | 0.74 |
| | IPP2 | 0.893 | | |
| | IPP3 | 0.790 | | |
| | IPP4 | 0.907 | | |
| | IPP5 | 0.912 | | |

The heterotrait-monotrait ratio of correlations (HTMT) was used to test the discriminant analysis, as recommended by Henseler et al. (2015). HTMT is considered superior and able to achieve higher specificity and sensitivity rates. Furthermore, all the values are below the threshold of 0.90, as Teo et al. (2008) suggested. Therefore, the discriminant analysis has been achieved. Table 3 presents the discriminant analysis of HTMT.

**Table 3:** Discriminant Analysis (HTMT)

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Innovation Capital | | | | | |
| Innovation Performance | 0.66 | | | | |
| Innovative Intelligence | 0.72 | 0.73 | | | |
| Organizational Capital | 0.82 | 0.69 | 0.86 | | |
| Technology Capital | 0.76 | 0.63 | 0.65 | 0.76 | |

***Note***: CR= Composite Reliability; AVE= Average Variance Extracted.

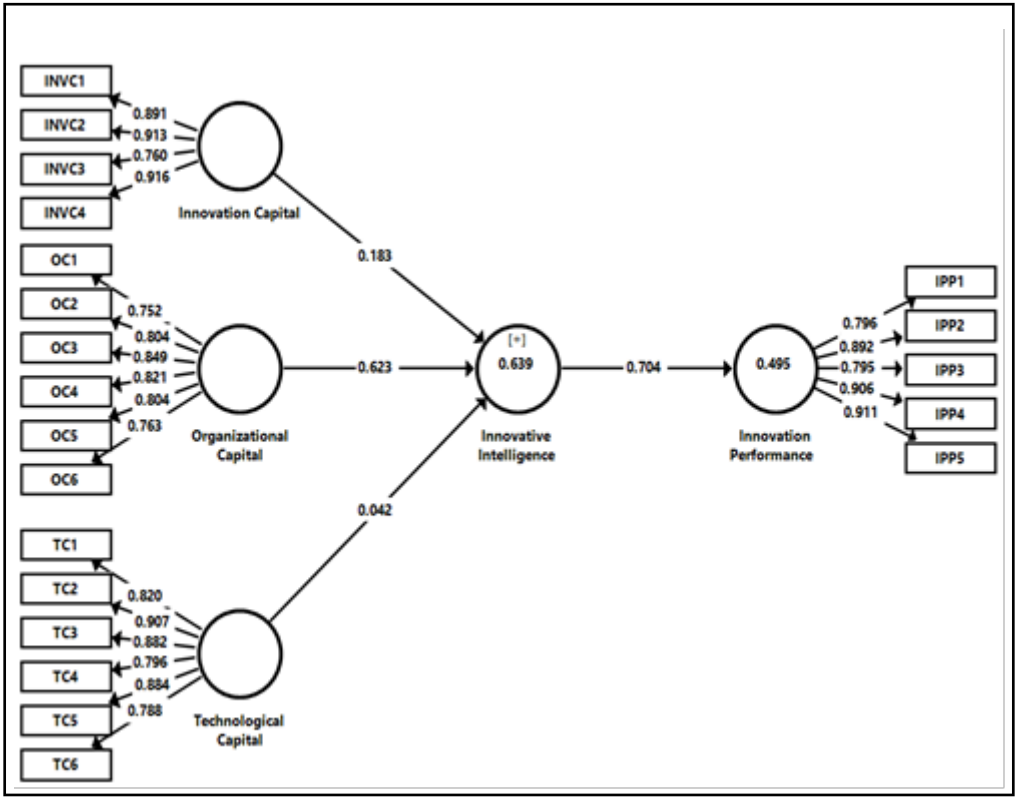
The convergent validity and discriminant analysis have been carried out; therefore, all items are valid to be tested further.

### *4.2. The Structural Model*

When the measurement model assessment is satisfactory, the next step in evaluating PLS-SEM results is assessing the structural model. Standard assessment criteria, which should be considered, include the coefficient of determination ($R^2$), the blindfolding-based cross-validated redundancy measure $Q^2$, and the path coefficients' statistical significance and relevance. Hair et al. (2017) suggested that collinearity must be examined to avoid biasing the regression results before assessing the structural relationships. In addressing the common method bias of PLS-SEM, Kock (2015) suggests a complete collinearity assessment approach. Hair et al. (2017) and Kock (2015) indicate that the ideal values of VIF should be close to 3 and lower. The assessment showed that most VIF values are close to 3 and lower. Some items are above 3, but not more than 5, and VIF values above 5 indicate potential collinearity issues among the predictor constructs. Since collinearity is not an issue, the next step is examining the $R^2$ value. Together, innovation capital, organizational capital, and technological capital contributed a 63.7% variance in innovative

intelligence. All independent variables and the mediating variable contributed 46.7% ($R^2$= 0.467) of variance in Innovation Performance in the structural model. As a guideline, $R^2$ values of 0.75, 0.50, and 0.25 can be considered substantial, moderate, and weak (Henseler et al., 2009; Hair et al., 2018). As a rule of thumb, $Q^2$ values higher than 0, 0.25, and 0.50 depict the small, medium, and large predictive relevance of the PLS-path model (Hair et al., 2018). The coefficient of determination ($R^2$) is considered moderate in this study. Blindfolding innovation performance ($Q^2$= 0.338) and innovative intelligence ($Q^2$= 0.474) is between the PLS-path model's medium to large predictive relevance. Figure 2 presents the structural model of the study.

**Figure 2:** The Structural Model




Innovation capital didn't significantly impact innovative intelligence (β=0.183, t=0.055) and technological capital on innovative intelligence (β=0.042, t=0.615). Therefore, H1 and H3 are not supported. Meanwhile, organizational capital has a significant relationship to innovative intelligence (β=0.623, t=6.933) and innovative intelligence has a significant relationship to innovation performance (β=0.704, t=13.842); therefore, both H2 and H4 are supported. Table 4 shows the detailed path analysis of the direct relationship of hypotheses.

**Table 4.** The Structural Equation Modelling results for hypotheses

| Variable | Standard Coefficient (ß) | t-statistic | *p*-value | Conclusion |
|---|---|---|---|---|
| H1: Innovation Capital has a significant relationship with Innovative Intelligence | 0.183 | 1.922 | 0.055 | Not Supported |
| H2: Organizational Capital has a significant relationship with Innovative Intelligence | 0.623 | 6.933 | 0.000 | Supported |
| H3: Technological capital has a significant relationship with Innovative Intelligence | 0.042 | 0.503 | 0.615 | Not Supported |
| H4: Innovative Intelligence has a significant relationship with Innovation Performance | 0.704 | 13.842 | 0.000 | Supported |

### *4.2.1. The Mediation Analysis*

Hair et al. (2014) define mediation as the translator that carries forward the influence of the independent variable on the dependent variable. Bootstrapping was used to test the mediation effect, as Hair et al. (2017) suggested. Also, VAF (variance account for) was employed to confirm the mediation effect of attitude between the antecedents and online purchasing intention. After running the blindfolding procedure (Henseler et al., 2009) with an omission distance D=9, the $Q^2$ value of Innovative Intelligence (0.476) and the $Q^2$ value of Innovation Performance (0.359), which is well above zero, indicating the predictive relevance of the PLS path model. The total effect of bootstrapping and the VAF calculation (99%) provide mixed results of mediation effect between the antecedents' and independent variables. Innovative intelligence did not mediate the relationship between innovation capital and innovation performance (β=0.129, t=1.901) and the relationship between technological capital and innovation performance (β=0.030, t=0.502). Nevertheless, innovative intelligence mediates the relationship between organizational capital and innovation performance ((β=0.438, t=6.007). Table 5 presents the results of the mediation analysis.

**Table 5.** Mediation Analysis

| Hypotheses | Path Coefficient | t-value | Conclusion |
|---|---|---|---|
| H5: Innovative Intelligence mediates the relationship between Innovation Capital and Innovation Performance | 0.129 | 1.901 | Not Supported |
| H6: Innovative Intelligence mediates the relationship between Organizational Capital and Innovation Performance | 0.438 | 6.007* | Supported |
| H7: Innovative Intelligence mediates the relationship between Technological capital and Innovation Performance | 0.030 | 0.502 | Not Supported |

***Note***: * = p< 0.001

## 5. CONCLUSION

This study examines the effect of technology, innovation, and organizational capital on innovation performance and the mediating effect of innovative intelligence of knowledge-based SMEs in Malaysia. The results showed that innovative intelligence mediates only between innovation capital and organizational capital and innovation performance. Meanwhile, technological capital did not have a significant impact on innovation performance. The finding is similar to Alazzawi et al. (2018) in their study of Indian companies and Shaari et al. (2018) of ICT SMEs in Penang. This is very interesting because knowledge-based SMEs spend on R&D and actively acquire and process knowledge for innovation; however, they did not fully capitalize on their technology capital. Instead, SMEs utilize their organizational capital to produce new products and services through their human capital skill and capability. Therefore, innovative intelligence was an essential link for SMEs to achieve better innovation performance.

The innovation performance of SMEs in Malaysia is still not encouraging. Currently, SMEs' contribution to GDP is only 38%, which falls under the middle-income nation's category, while Malaysian is set to achieve a high-income nation status by 2030. This study provides good information on SMEs' innovation performance and contributing factors in Malaysia. This study provides a real scenario of SMEs' practices for practitioners and relevant stakeholders. SMEs should explore opportunities in innovation management that require an innovative process to be implemented by utilizing knowledge to its maximum. SMEs should closely pay attention to their innovation capital and technological capital as they are important for SMEs to be innovative. The SMEs, relevant agencies, and policymakers should further investigate the implementation or practice of SMEs' technological capital, innovation capital, and organizational capital to assist SMEs in exploiting innovation in every way. This study is not without limitations. Firstly, the study is only focused on knowledge-based SMEs. Future studies should look into technological-based SMEs and include other internal resource dimensions. A further in-depth study should be deployed to investigate and observe innovation activities' actual practices with knowledge management. The policymakers and related agencies should look into innovation in helping SMEs practice innovation in the organization. Most SMEs prefer to focus on their particular strengths that might overlook the essential capitals in the systems.

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