

Article

Intellectual Capital and Firm Performance Correlation: The Mediation Role of Innovation Capability in Malaysian Manufacturing SMEs Perspective

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Abstract: Understanding of intellectual capital's influence on the firm performance has received immense interest in recent years. In this view, the impact of various intellectual capital components, including human, structural, and relational capital, on the performance of small- and medium-sized Malaysian manufacturing enterprises were examined. A correlation between intellectual capital and firm performance were established based on the mediating role of innovation capability. To achieve this goal, a stratified sampling method was used wherein 262 participants' responses from the focused manufacturing firms were obtained and analyzed via the structural equation model (SEM) and resource-based view (RBV). Statistical tools like SPSS.v²⁵ and SmartPLS.v³ were used. The results showed that the relationship between intellectual capital and firm performance was strengthened due to the mediation of innovation capability, thereby gaining higher competitive advantages. It was asserted that the present comprehensive analyses may offer a useful information and guidance to the academics, owners/managers, and policymakers involving the impact of intellectual capital development towards improving the Malaysian SMEs performance.

Keywords: human capital; structural capital; relational capital; innovation capability; firm performance; SMEs



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1. Introduction

Sustainability is a business strategy for generating long-term value by considering how a company functions in terms of the environment's ecological, social, and economic factors. Such strategy aims to have a beneficial impact on one or both areas, thereby contributing to solving some of the world's most ongoing issues. The sustainability concept established various measures, thus promoting company's sustainability [1,2]. Over the years, intellectual capital has been the focus of intense discussion among researchers. Furthermore, intellectual capital is a resource that allows the sustainable progression. Intellectual capital consists of human capital, structural capital, and relational capital. Various past studies examined the influence of intellectual capital on the company's performance and competitive advantages. Earlier reports revealed a positive correlation amid intellectual capital and sustainable growth [3]. Additionally, some research determined how businesses use their intellectual capital to move toward more sustainable practices [4]. It was shown that intellectual capital has a strong impact on an enterprise's competitiveness and long-term sustainability [5]. Intellectual capital definitions have various representations, which depend on their scales. Most researchers in the field of intellectual capital have reached a general consensus that intellectual capital provides additional benefits or items that are simple to understand by its employees. In this perception, the present study for the first

time presents intellectual capital as an intangible asset that generates value for acquiring wealth [6].

The majority of the studies conducted in the field of intellectual capital included the component of human capital, which can be considered as the most important component of intellectual capital [7]. Some scholars' viewed human capital as both implicit and explicit knowledge that can produce values to the firm [8]. Human capital can be a catalyst for creating growth and competitive advantages and increase firm profitability [9]. Earlier study defined structural capital as the non-human storehouse of knowledge in the organization at an early stage [10]. Meanwhile, other studies viewed structural capital as non-physical assets, like databases, organization charts, management processes, and business strategies [11,12]. The main objective of structural capital is to collect and transmit information throughout an organization, allowing for interaction with others [13,14]. On the other hand, relational capital contained knowledge implied in all the external relationships a firm could evolve with its stakeholders, such as customers, suppliers, and trading partners, who enhance the firms in gaining a sustainable competitive advantage [10]. Various past studies classified intellectual capital into three dimensions (human, structural, and relational capital) [15–18]. A significant correlation between intellectual capital components and firm high values was reported that eventually generates implications for firms [19].

Over the last two decades, the impact of intellectual capital on the firm performance emerged as a recurring theme in economic growth research, particularly in the context of SMEs. Nonetheless, few studies were conducted to address the important function of intellectual capital on firm performance in the manufacturing sector [20], especially those operating in Malaysia [21]. Table 1 summarizes the findings of the past studies conducted to examine the impact of intellectual capital on firm performance in manufacturing sector in different countries, including Malaysia. The majority of the studies conducted in the manufacturing sector were in China and Pakistan, whereas only one study was conducted in one manufacturing sub-sector in Malaysia in the past five years.

Table 1. Past studies in Manufacturing sector perspective.

Author	Country	Findings
[8]	Mexico	The results showed that the intellectual capitals have a positive influence on firm performance; the evidence is consistent with several studies in Mexico and abroad.
[22]	China	The results show that physical and human capitals are the strong factors that contribute to firm performance. In addition, relational capital negatively influences profitability and market value, and structural capital and innovation capital have a negative impact on employee productivity.
[23]	Spain	The findings suggest that intellectual capital is a key factor that allows the firm to achieve and maintain competitive advantages, obtaining greater performance. Additionally, this research also shows that the moderating role of family management can be a double-edged sword depending on the type of intangible resources.
[24]	Pakistan	Results of this paper revealed that capital employed and customer capital have a significant positive relationship with the financial performance of firms in Pakistan, whereas structural capita has negative effect on the financial performance of the firms. The findings suggest political instability as a significant moderating variable on the relationship among intellectual capital, its components, and firms' performance.
[25]	China	The results show that human and structural capital exert a positive impact on firm performance, while relational capital has a negative impact; overall, intellectual capital enhanced the firm's performance once it was mediated by a third variable.

Table 1. Cont.

Author	Country	Findings
[26]	China	The findings reveal a positive relationship between intellectual capital and financial performance of high-tech and non-high-tech SMEs. Specifically, intellectual capital is positively associated with firms' earnings, profitability, and operating efficiency. Additionally, capital employed, human capital, and structural capital are found to be the most influential value drivers for the performance while relational capital possesses less importance.
[27]	Iran	The findings show that the diversity of measurement mediates the relationship between intellectual capital and organizational performance. This paper may offer guidance to companies concerning the competencies needed for securing positive organizational outcomes from their knowledge resources, such as intellectual capital.
[28]	Pakistan	The findings of the study indicate that intellectual capital have a significant positive influence on new venture performance. Similarly, intellectual capital significantly positively contributes to competitive advantage.
[29]	Malaysia	The results demonstrate that human capital, customer capital, structural capital, social capital, technological capital, and spiritual capital are crucial components of intellectual capital, and all link to firm performance.
[30]	Pakistan	This study found significant positive direct and indirect effects on innovation capability and organizational performance among three dimensions of intellectual capital: human, relational, and technological.
[31]	Italy	The empirical results highlight that profitability is significantly and positively affected by financial and physical capital, such as human capital, but the effect of human capital is weak, and the structural capital has a negative effect on firm performance. Additionally, technology intensity reinforces the positive effect of human capital on firm performance: the higher the technological intensity, the higher the positive impact of human capital on firm performance.
[32]	India	Overall, the study results indicated increasing trends for all types of intellectual capital disclosures. Similar trends are observed for patent applications and patent grants, indicating a surge in patenting activities across the manufacturing sector.

Most Malaysian SMEs continue to use traditional performance measurement methods designed decades ago, involving mostly tangible assets, like buildings and equipment. Currently, Malaysia and many other countries have been establishing a knowledge-based business environment requiring a new model that includes intangible assets. Therefore, the intellectual capital model is getting more attention in this scenario. Despite significant contribution towards GDP, the Malaysian SMEs faced numerous challenges in their day-to-day operations. Although they play sizable roles in economic improvement, the social uplifting and political instability in Malaysia lowered the SME's contribution to the growth domestic product (GDP) development compared to other SMEs in developing or developed countries [33]. In brief, the SMEs in Malaysia are not gaining beneficial performance wherein the SMEs contribution toward GDP is merely 32.7% (SME Corp, 2018/2019). Compared to other emerging nations, the Malaysian SMEs' contribution towards the nation's GDP is comparatively lower [33]. Malaysian SMEs' GDP contribution dropped significantly from 21.7 in 2014 to 20.1 in 2018 (Figure 1). Some studies indicated that the manufacturing sector's financial performance over the past few years is low due to their marginal contribution to the nation's GDP (SME Corp, 2014–2018/2019). The low performance of Malaysian manufacturing SMEs during 2014–2018 enable us to determine the factors that can increase their performance.

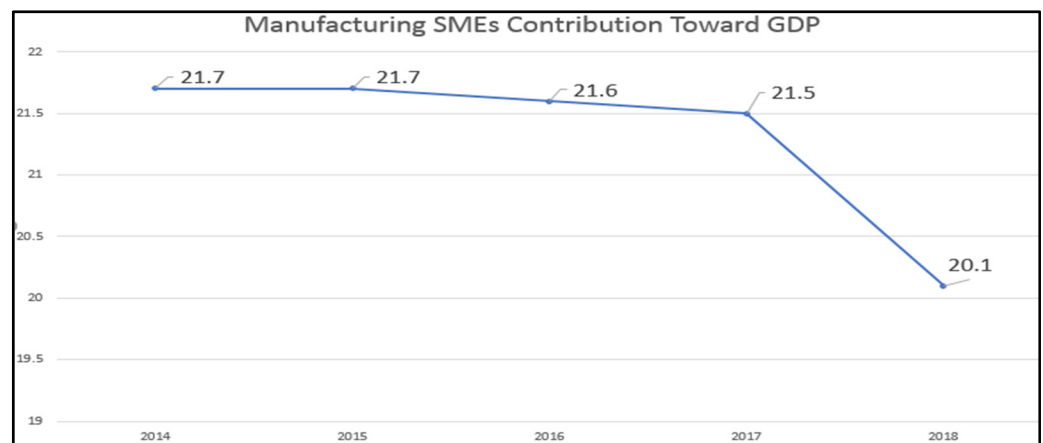


Figure 1. Contribution of various manufacturing companies to GDP during 2014 to 2018 (Source: SME Corp, 2018/2019).

Since manufacturing SMEs are the second-largest contributor toward Malaysian GDP after the service sector, it is considered as an important sector to the nation's economy. In recent times, the declining trends in the Malaysian manufacturing SMEs showed a significant impact on the overall economy. Malaysian manufacturing SMEs faced a major problem in terms of GDP contribution together with services or constructions. Thus, the current study is considered as a significant contribution to address this issue. Hence, a careful study must be conducted to address the performance-dealing issues of manufacturing SMEs and their low contribution to Malaysian GDP [21,34]. Past studies have indicated that a lack of information is one of the factors that can contribute to the manufacturing SMEs' low performance [35]. Nonetheless, high competition has forced various manufacturing SMEs in Malaysia to utilize intangible resources for survival and financial sustenance. Manufacturing SMEs faced intense market pressure, increasing technical progress, shorter product life cycle, and increasing changes in consumer needs. These challenges caused the manufacturing SMEs to move away from mass production to customization options, where consumer awareness became important [36]. Depending on these factors, this work analyzed the impacts of various key components of intellectual capital. The study's contribution was to develop a theoretical framework in the intellectual capital area, which has never been conducted before in the manufacturing sector perspective, especially in Malaysia, to address the lack of previous studies. The main motive to conduct this study was the need for an urgent research to address the issue of low contribution of the manufacturing sector toward the nation's GDP [21]. Moreover, past studies have not addressed these issues from an intellectual capital-firm performance perspective. Furthermore, intellectual capital has been addressed to solve many issues regarding firm performance [21,37]. Likewise, a good and unambiguous correlation amid intellectual capital and firm performance was found in a meta-analysis of 159 studies wherein the aim was to examine the relationship between intellectual capital and performance [30].

The interaction between human capital, structural capital, and relational capital was explored to determine the strong impact of intellectual capital on firm performance. Finally, the role of innovation capability as a mediating variable in the relationship between intellectual capital and firm performance was investigated.

The present study investigated the relationship between intellectual capital, innovation capability, and firm performance in manufacturing SMEs in Malaysia. Thus, the following research questions were addressed in the study.

1. Is there a positive relationship between intellectual capital and innovation capability?
2. Is there a positive relationship between innovation capability and firm performance?
3. Is there a positive relationship between intellectual capital and firm performance?
4. Does innovation capability mediate the intellectual capital and firm performance correlation?

2. Theoretical Framework and Literature Review

The capacity of a firm to generate new ideas and implementing them into new goods or services that improve the firm's performance is referred to as innovation capability. A human-capital-supported firm becomes more creative by developing new capabilities and ideas that meet the market needs. Upon paying more attention to human capital investment, an organization's potential for creativity can dramatically influence the innovation capability [38]. As a result, high human capital made it easier for businesses to reach better levels of innovation capability, thus overcoming all possible challenges with their innovation plans. The importance of structural capital lies in the firm's information technology-based systems that play a vital role in supporting the firm performance [27]. When businesses place a premium on structural capital's role in the innovation, they will benefit from improved knowledge-gathering, storage, sharing, and application of infrastructures [9]. In addition, their ability to do the right thing in the proper way would gradually improve, resulting in improved quality, lower costs, and a more in-depth understanding that might contribute to organizational success [39]

Conversely, structural capital may include guidance to avoid unnecessary innovation operations that can boost employees profitability and income generation [40,41]. Relational capital are resources that connect the firms with other parties such as governments and industries [42,43]. A firm's potential to innovate can be enhanced through heavy investment in relational capital. The emergence and implementation of relational capital significantly contribute to the formation of circumstances that enable a corporation and its surrounding subjects to initiate, innovate, build, and maintain interactions amongst members of a specific organization [44]. Firms with greater relational capital have access to technological information that is difficult to duplicate. In this view, relational capital techniques are critical in establishing an organization's strategic plans in order to improve the innovation processes [45,46]. Organizations become more effective and profitable by investing heavily in relational capital, thus supporting the creation of innovative processes [47].

By definition, through the innovation capacity a firm is capable of identifying novel concepts and then transforms these ideas into newfangled products and services, thus improving the company's performance. Alternatively, performance of a firm is characterized by its capacity to accomplish excellent economic benefits, such as revenue generation, profits, lowering of products' cost, enhancing sales, and assets return. Moreover, a firm with a substantial innovation capability can drive it into a high level of competitive advantages, thereby enhancing its performance by improving the process of innovating new ideas and processes that competitors cannot imitate. Earlier reports demonstrated that the innovation capability is a significant factor that can develop valuable resources into products, thus leading to the sustainable competitive advantages and superior performance of a firm [48,49]. Considering such benefits of achieving high performance of the firm, the innovation capability has gained much attention in the literature and addressed many issues [50,51].

Intellectual capital is the value of the firm's employee expertise, skills, business training, or any proprietary information that may give the company a competitive advantage. Intellectual capital is a valuable resource and can be defined broadly as a company's collection of all informational resources that can be used to increase revenues, attract new consumers, develop new products, or improve the business [52]. Moreover, intellectual capital is the sum of a company's employee skills, organizational processes, and other intangibles that contribute to the firm's profits. Several extensive reviews in the intellectual capital's field were carried out [10,53–55]. Even so, a substantial study on the three dimensions of intellectual capital framework, including human capital, structural capital, and relational capital, has been conducted intensively.

According to past studies, firms having higher intellectual capital display higher competency to innovating and increasing the performances. However, several studies assumed that high performance could be sustained via developing intellectual capital [29,46]. Earlier researches in the developing economies found that intellectual capital is an important

source of competitive advantage for organizations [8,42,46] that increase the firm's performance. Hence, manufacturing SMEs in Malaysia should apply these strategies to penetrate and achieve market advantages, thus leading to superior firm performance. It is hoped that the findings of this study can assist the manufacturing firms in building intellectual capital to achieve improved firm performance deficient in the earlier works [56]. Effective management is also important in administering intellectual capital within the SMEs. Several scholars have emphasized the importance of developing a modern perspective to improve the firm's performance [11,25].

Earlier investigations highlighted the relationship between intellectual capital on firm performance [3,8,10]. Future research must examine whether there are any factors that can mediate the relationship between intellectual capital and firm performance [30]. In the past, the role of innovation capability on intellectual capital and varied contributions on firm's performance was examined [30]. Furthermore, several mediating role between intellectual capital and performances were identified [57]. For example, one study looked at the mediating influence on total quality management (TQM) practices and innovation performance. The impact of intellectual capital and strategic orientations on innovation capability and firm performance in Malaysian information and communication technology (ICT) SMEs was focused [58]. In addition, the link between intellectual capital, innovation capability, and firm performance was determined [59].

3. Hypotheses Development

3.1. Implication of Intellectual Capital on Innovation Capability

A positive connection between human capital and innovation processes can boost a company's innovation capabilities. Innovative skills are considered a result of the organization's human capital built and gained [60,61]. The increase of a firm's human capital positively improves its innovation activities. In this regard, previous research revealed a positive link between human capital and innovative capabilities [62,63]. Structural capital allowed information to be stored in a database system and made them available to people when required; thus, the decisionmakers can gain from such information [64,65]. Several studies reported a positive link between structural capital and innovative capability [41,64,66–69].

Relational capital had a noticeable positive implication on innovation practices and organizational performance, which was revealed in past studies where a significant connection of relational capital with the firm's innovation capability was ascertained. Repeated studies revealed that higher levels of human capital, structural capital, and relational capital can lead to improve the innovation capability. Thus, the following three hypotheses were made depending on the earlier disclosures:

Hypothesis 1a (H1a): *There is a positive relationship between human capital and innovation capability.*

Hypothesis 1b (H1b): *There is a positive relationship between structural capital and innovation capability.*

Hypothesis 1c (H1c): *There is a positive relationship between relational capital, and innovation capability.*

3.2. Implication of Innovation Capability on Firm Performance

Innovation capability is considered as one of the most critical dimensions in the firm's competitiveness. It was claimed that the more the firm is innovative, the more it has the capability in its processes and is more likely to have superior overall performance [70]. There was a significant and positive relationship between innovation capability and business performance [49,71–75]. Present research posits that the higher the level of innovation capability within a firm, the greater the performance that can be achieved by the firm. These arguments allowed the research to develop various hypotheses. Previous researchers studied the alteration in specific capabilities and implemented them indirectly into intellectual capital, suggesting the inclusion of more capabilities for comprehensive

understanding [76,77]. Thus, more investigations are needed on the implementation of the structured frameworks to assess the elemental and configuration performances. The theory based on resource views was used by the earlier researchers to determine the impact of innovation capability in improving the firm's performance. For further explanation of the results, various hypotheses were developed, indicating a direct correlation between intellectual capital and innovation capability. This work hypothesized the following:

Hypothesis 2(H2): *There is a positive relationship between innovation capability and firm performance.*

3.3. Implication of Intellectual Capital on Firm Performance

Human capital refers to an employee's skills, experience, creativity, knowledge, and problem-solving ability. Thus, a firm with skilled and expert employees can enhance its performance by efficiently investing their knowledge and creativity in the firm. Most of the intellectual capital studies conducted in the past showed some links between human capital and firm performance. Human capital positively affects the financial performance, thus increasing the sales and reducing the firms' costs [8]. It found that human capital enhances the firm performance [78,79] where human capital was found contribute positively to the firm's financial performance [80–83]. This might support the past literature that emphasized the importance of human capital [42,46,84,85]. Human capital also leads to higher efficiency, such as operational effectiveness, higher return on assets, and firm competitiveness. Intellectual capital influences were examined in the context of human capital, which assisted the impacts of other capital on the firm's performances.

Structural capital characterizes the operations, working procedures, working culture, atmosphere, and quick market response of a firm. A firm with a strong structural capital would enjoy superior performance through the powerful process with advanced technologies in producing a product/service with rich knowledge included in the information system that is transferred into useful resources. Regardless of intellectual capital capability, some skills, such as structural capital and technology integration skills, are less imitable [11]. Such inimitable organizational skills and knowledge can enhance firm performance goals achievement by generating new ideas and identifying opportunities to re-establish business processes through structural capital although, in the majority of studies, structural capital is rarely discussed. Simultaneously, it is a significant factor, as it smooths and quickens the new goods production processes for better performance [81,82]. Past studies also found positive and significant results regarding the structural capital relationship against financial performance [11,42,84]. Structural capital was shown to increase the firms' profitability and reduce the operating costs through the positive connection with the firm performance [31,43,81,83,84]. Firms with significant structural capital can perform a wide range of value-creation tasks. Therefore, structural capital refers to the processes, systems, solutions, databases, patents of a firm's processes, systems, and solutions that could increase firm performance [85–87]. These structure-driven firms have the potential to contribute to the development of the infrastructure needed for knowledge production and superior performance [46,84,85].

Relational capital is implied in all the external relationships wherein a firm case evolve its competitive advantage with its stakeholders, like customers, suppliers, and trading partners, and enhance the firm performance [10]. Logically, relational capital can enhance the firm's performance through strong communication and relationship with customers, suppliers, and distributors. These relationships can help the firms in reducing their cost and lowering their prices with the same quality. Past researchers argued that relational capital is the most complicated component amongst all the intellectual capital components because it is the most external factor to the firm than other intellectual capital components [11]. Simultaneously, relational capital is considered as one of the most important factors that impacts the firm's performance. Many researchers found that there was a significant positive relationship between relational capital and firm performance [8,11,42,84,85]. Based on the abovementioned discussions, the present study posits that the higher the level

of human capital, structural capital, and relational capital, the greater the level of firm performance. Thus, the following three hypotheses were developed:

Hypothesis 3a (H3a): *There is a positive relationship between human capital and firm performance.*

Hypothesis 3b (H3b): *There is a positive relationship between structural capital and firm performance.*

Hypothesis 3c (H3c): *There is a positive relationship between relational capital and firm performance.*

3.4. Correlation between Intellectual Capital and Firm Performance Mediated by Innovation Capability

Innovation capabilities develop human capital, especially in their attitude towards the firm performance. Moreover, individuals' behavior has led to acquire valuable experience as enablers and professionalism for the performance of the innovation capabilities for the firm performance [86]. Human capital acts as an input for continuous innovation of ideas that encourages employees' physical and non-physical properties. Essentially, skills management must develop a creative workplace environment, particularly expertise and personal qualities. Thus, in order to ensure safety, employees must have creativity and innovative practices that would positively increase the performance [87].

Structural capital is the experience that stays with a company as workers leave. This capital of ingrained knowledge and formalized experience can increase innovation practices because the production of new products, processes, or techniques generally requires incorporating and implementing separate components of current knowledge [88]. Throughout innovation capability, structural capital would substantially affect firm performance since its processes, system, or producers would smooth the innovation processes and eventually lead to superior performance. Structural capital facilitates and fosters knowledge and would impact the organization's innovation. It also assists innovation with well-structured systems, databases, and procedures for superior performance [30]. Organizations create several partnerships during their business operations, such as buyer-supplier relationships, strategic alliances, and joint ventures. That allows them to share information and expertise that are incapable of creating innovative services or products and overcoming the unavoidable associated risks with the innovation process [89].

In order to achieve a competitive advantage, the company's strong relationships with external or internal parties are the most influential. In addition, clients having a strong partnership with an organization would contribute to the increased progress of superior, innovative products or services for better performance [73,74]. If a firm ensures the successful implementation of relational capital, it eventually increases the firm's performances. It was indicated that the relationship between human capital, structural capital, and relational capital toward firm performance can be made stronger through innovation capability as a mediator. A comprehensive literature review revealed that there was consistency in the relationships, and according to [90], the mediation role exists when the relationships between two variables are consistent. This scenario predicted that the total effect of human capital, structural capital, and relational capital on firm performance is likely stronger than the direct effect, as assessed by [91]. An all-inclusive overview of literatures allowed us to develop the following hypothesis:

Hypothesis 4a (H4a): *Innovation capability mediates the relationship between human capital and firm performance.*

Hypothesis 4b (H4b): *Innovation capability mediates the relationship between structural capital and firm performance.*

Hypothesis 4c (H4c): *Innovation capability mediates the relationship between relational capital and firm performance.*

In the conceptual framework of this study, the three intellectual capital components (as independent variables) of human capital, structural capital, and relational capital were

considered. In addition, one mediating variable, such as innovation capability, and one dependent variable, namely the firm performance, was used, as shown in Figure 2.

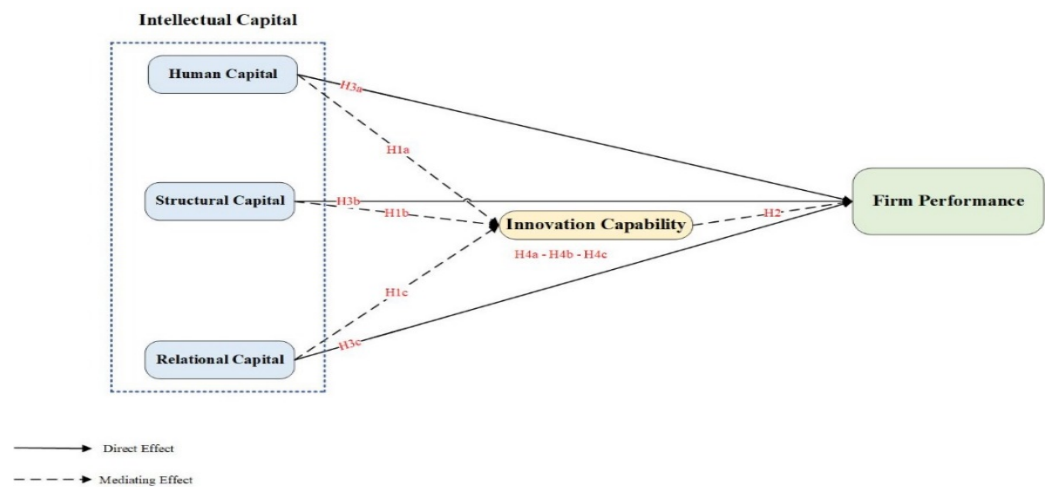


Figure 2. Conceptual framework of present work.

4. Methodology

Present study evaluated the influence of various intellectual capital components (human capital, structural capital, and relational capital) on innovation capability and firm performance. It also tested the mediation role of innovation capability between intellectual capital (human capital, structural capital, and relational capital) and firm performance. Robustness analysis provides an approach to the structuring of problem situations in which uncertainty is high [92]. Thus, the result does not require a robustness of the analysis since it proved its low uncertainty though its high liability and validity. The results were complete and supported by past literatures.

4.1. Measures

Following the earlier work, we adopted the research instruments as shown in Appendix A (Table A1). Five (5) items were adopted from [9] for human capital instruments, seven (7) items were adopted from [46] to measure structural capital, and five (5) items were adopted from [46] to measure relational capital. Six (6) items were utilized to quantify the mediation role of innovation capability following the protocol referred to in [93]. In addition, five (5) items were adopted from [29] to measure the firm performance. A seven-point Likert scale was used to measure the study variables, where the scales ranged from 1 (strongly disagree) to 7 (strongly agree). Previous past studies proved the high reliability and validity of the items used in this study. However, the item's reliability is important because it determines the value of the study's test; it also assures the integrity and quality of a measurement instrument. The item's reliability will ensure the result's assurance for a clear understanding on addressing the research problem which eventually enhanced the economics' outcomes [94].

4.2. Study Population

Owner/managers of Malaysian manufacturing SMEs have the most accurate information about their firm performance [95]. Based on this suggestion, we used owner/managers of the manufacturing SMEs as a unit of analysis for the research. There are several reasons to select manufacturing firms in Malaysia for this study. First, based on the latest annual reports of the SMEs Corp (2018/2019), Malaysian manufacturing firms are considered to be the second-largest contributors to the country's GDP over the past two decades. The second reason is due to the performance declining issue in the past few years [95]. Third, limited studies exist on the performance declining issues of the manufacturing SMEs in

Malaysia. Together, the present research sampling frame was obtained from Federal of Malaysian Manufacturers (FMM Directory, 50th Edition).

4.3. Sampling Size

Present study population consists of (2470) manufacturing firms listed under the FMM Directory. Thus, the G-power (3.1.9.7) software was used to determine the minimum sample size required [96,97]. G-power is the most common method and has recently been used in determining the sample size. However, the researcher used a *t*-test with five (5) predictors with a total number of 138 as the minimum sample size required to conduct the study. A total of 1650 questionnaires were handed out to the owners and managers of various manufacturing firms across 14 states of Malaysia. Since Malaysia is considered a multicultural country with various ethnics, researchers used the English language for easier communication with the respondents. The researcher distributed a high number of questionnaire considering that SMEs have a very low response rate of less than 20% [98]. The researcher also considered a large sample size because the more significant the sample size, the more probability for generalizing the results. The chosen sampling method allowed accurate data on intellectual capital and firm performance to be gathered from the population.

4.4. Sampling Technique

Stratified sampling was utilized since the manufacturing SMEs registered under the FMM Directory, which was listed in a well and structured manner. Stratified random sampling is a sampling method in which a population is divided into smaller sub-groups called strata. Strata are produced in stratified random sampling, or stratification, depending on shared features or characteristics among individuals, such as income or educational attainment [90]. The population was divided into sub-groups based on the states in Malaysia, which were 14 states, and the sample based on the percentage given in the FMM Directory for each state was chosen, having an appropriate number of firms from each state. However, after dividing the population into strata based on states, The respondent selection process went through two (2) stages. In the first stage, the researcher calculated the number of firms in each state (See Table 2). The second stage was identifying the number of distributed questionnaires in each state considering their percentage. For example, Selangor scored the highest percentage (40%); thus, the distributed data for Selangor should be higher than other states. The researcher followed a caution procedure of collecting enough data from each state, so the results can be generalized to manufacturing sector for all states in Malaysia, as shown below in Table 2. In this work, the managers or owners were the respondents from the manufacturing firms due to their high level of acquired knowledge relevant to the firm [98]. Thus, the respondents of this study were owners/managers of manufacturing SMEs in Malaysia.

4.5. Data Collection Procedures

Several quantitative questions were used in the data collection, assessing the views of the respondents related to the firm's performance that acted as a primary construct of the theoretical framework [99]. Due to the circumstances of COVID-19 in Malaysia, movement control has been imposed by the government to prevent the virus from spreading. Hence, researchers used the online platforms to collect the data through a Google Form sent to the firm's official emails, which were provided in the directory. A cover letter was provided to explain the purpose of the study. After that, the researchers distributed all 1650 questionnaires to the selected respondents in Malaysian SMEs. The data collection procedures progressed from 1 January 2021 until 30 June 2021. The data were collected, and the amount of collected data from each state is shown in Table 2. Cleaning procedures were carried out to ensure that the responses from the relevant participants were consistent to conduct additional data analyses.

Table 2. Collected data from each states following stratified sampling method.

Sates	% of Each State	Number of Firms	Amount of Collected Data
Selangor	40%	1104	108
Kuala Lumpur	6%	166	21
Johor	16%	438	43
Penang	12%	321	26
Perak	10%	274	30
Malacca	4%	119	13
Negeri Sembilan	5%	127	12
Pahang	1%	35	5
Kedah	3%	76	11
Sabah	1%	22	3
Sarawak	2%	49	5
Kelantan	0.07%	2	1
Perlis	0.07%	2	1
Terengganu	0.2%	5	1
Total	100%	2740	280

5. Data Analysis and Outcomes

5.1. Response Rate

The required number of respondents was based on the expected response rate of SMEs in Malaysia, which was less than 20% [98]. The response rate is one of the important aspects indicating the survey quality. It was indicated that surveys with the rate of response less than 20% are more accurate compared to those having rates nearly 60 or 70%. Conversely, a recent study used 45 meta-analyses and differentiated the rate of response among the surveys made by web or online and other mode. The results revealed that the response rate in the web/online survey on average was about 11% lower than other types of surveys [100,101]. Thus, a total of 1650 questionnaires were given to the respondents in the relevant manufacturing firms in Malaysia. In addition, all the returned questionnaires were usable since the Google Form restricted respondents to answer all the questions given; otherwise, the form could not be submitted to the researchers. Thus, a total of 280 questionnaires were finally selected for the data analyses, obtaining a response rate of about 16.97%. None of the questionnaires were excluded or deleted since there was no issue faced regarding missing values. Table 3 presents the achieved response rates and questionnaires distribution.

Table 3. Achieved rate of response via questionnaire surveys in SMEs.

Method	Questionnaires Description	Frequency	Percentage
Questionnaire survey	Distributed	1650	100%
	Received/Collected	280	16.97%
	Unreturned	1370	83.03%
	Excluded	0	0
	Usable	280	16.97%

5.2. Data Screening

The present questionnaire survey-based study was coded by assigning specific numerical values to each item; then, the SPSS statistical software version 25 entered the numerical

data. Only questionnaires that were above 90% completion were considered for analysis, based on the recommendation of [102]. Outliers are extremely high or low data values correlated with a particular question or all questions [103]. Outlier issues were also examined before further analysis. Based on the whisker box-plot inspection, several outliers were detected. Specifically, 18 outliers were found and deleted as recommended by [104]. Hence, after deleting the outlier a total number of 262 questionnaires were retained for further analysis.

5.3. Normality

5.3.1. Skewness and Kurtosis

Data skewness and kurtosis were inspected to determine data normality using SPSS.v²⁵. Skewness measures the degree to which a variable's distribution is symmetrical. Kurtosis, on the other hand, measures the distribution's peakedness or peak intensity [105]. According to the thumb rule, the data dispersion is said to be normal if the skewness and kurtosis values are ranged within ± 1 , [105]. Table 4 shows the achieved values of skewness, kurtosis, mean, and standard deviation for all the study variables. The computed values clearly showed that the data followed the normal distribution. Conversely, the values of mean and standard deviation were correspondingly ranged from 4.202–4.712 and 1.089–1.197.

Table 4. Relevant study variables and calculated measures.

Variables	N	Mean	Std. Deviation	Skewness	Kurtosis
HC	262	4.421	1.160	−0.549	−0.075
SC	262	4.332	1.089	−0.398	−0.172
RC	262	4.501	1.129	−0.487	−0.102
IC	262	4.202	1.197	−0.249	−0.375
FP	262	4.712	1.135	−0.590	−0.086

5.3.2. Common Method Bias

Common method bias (CMB) happens when variations in responses are caused by the instrument rather than the actual predispositions of the respondents that the instrument attempts to uncover, and it occurs when the same measurement instrument is used to collect data for both dependent and independent variables. [106]. However, to assess CMB, researchers used Harman's one-factor test using SPSS V25. The results show the first factor, which usually accounts for the greater amount of variance, followed by the second, which also accounts for as much as the remaining variances as it can, and onward. The present study accounted for the first factors for 30.211% (the threshold value should be below 50%), while none of the remaining factors could explain beyond 10% of the variance as shown in Table 5.

5.4. Demographic Profile of Respondents

Table 6 depicts the demographic profile of all the participants with 53.4% (n = 140) of them were male, and 46.6% (n = 122) were female. In addition, 35.9% (n = 94) of them were in the age limit of 31–40 years (highest in number), followed by 31.3% (n = 82) in the age group of 41–50 years, 17.2% (n = 45) within 20–30 years, and 15.6% (n = 41) were 50 years and above. Furthermore, the ethnicity of the participants involved in the Malaysian manufacturing enterprises were considered, which showed 46.6% (n = 122) of them were Malay, followed by 28.6% (n = 75) Chinese, 22.1% (n = 58) Indian, and 2.7% (n = 7) from other ethnic groups. About 39% (n = 102) of the respondents were bachelor's degree holders, 24% (n = 63) had a diploma, 13.4% (n = 35) received a master's degree, 11.8% (n = 31) had certificates, 9.9% (n = 26) completed SPM level, and only 1.9% (n = 5) were PhD/DBA degree holders.

Table 5. Total variance explained.

Components	Initial Eigenvalues			Extraction Sums of Squared Loading		
	Total	% Of Variance	Cumulative%	Total	% Of Variance	Cumulative%
1	1.511	30.211	30.211	1.511	30.211	30.211
2	1.272	25.431	55.642			
3	0.925	18.493	74.135			
4	0.811	16.221	90.357			
5	0.482	9.643	100.000			

Table 6. Participants' demographic profiles.

Profile	Category	Frequency	Percentage (%)	Cumulative (%)
Gender	Male	140	53.4	53.4
	Female	122	46.6	100.0
Age	20–30	45	17.2	17.2
	31–40	94	35.9	53.1
	41–50	82	31.3	84.4
	50 and above	41	15.6	100.0
Ethnicity	Malay	122	46.6	46.6
	Chinese	75	28.6	75.2
	Indian	58	22.1	97.3
	Others	7	2.7	100.0
Education	SPM	26	9.9	9.9
	Certificate	31	11.8	21.7
	Diploma	63	24	45.7
	Bachelor Degree	102	39	84.7
	Master Degree	35	13.4	98.1
	PhD/DBA	5	1.9	100.0

5.5. Evaluation of Measurement Model

This measurement model contained five latent variables and was constructed via Smart-PLS software. The model evaluation (reflective) was performed in terms of the convergent validity. The results revealed that the item loadings were above the threshold of 0.5 as recommended by [107]. It was further claimed that the outer loading could be accepted when it is above 0.7, 0.6, and 0.5 and is satisfactory only when the (AVE) score is more than 0.5. Based on the results, SC4 scored 0.474, which can be considered as lower than the acceptable range, as shown in Figure 3. Hence, the item SC4 was dropped, as shown in Figure 4.

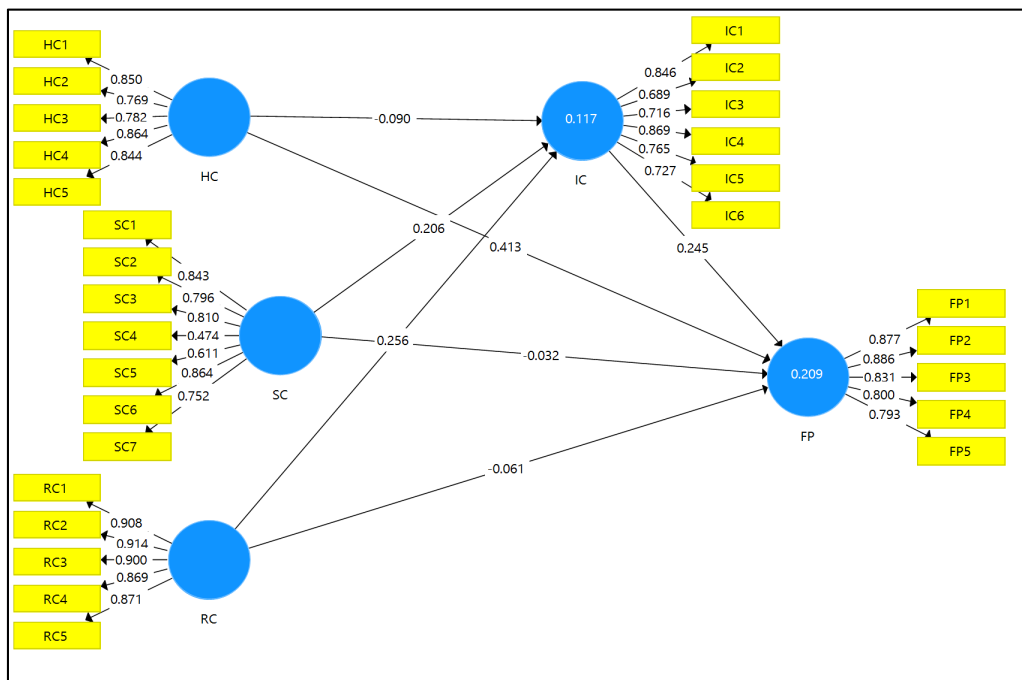


Figure 3. Measurement model architecture.

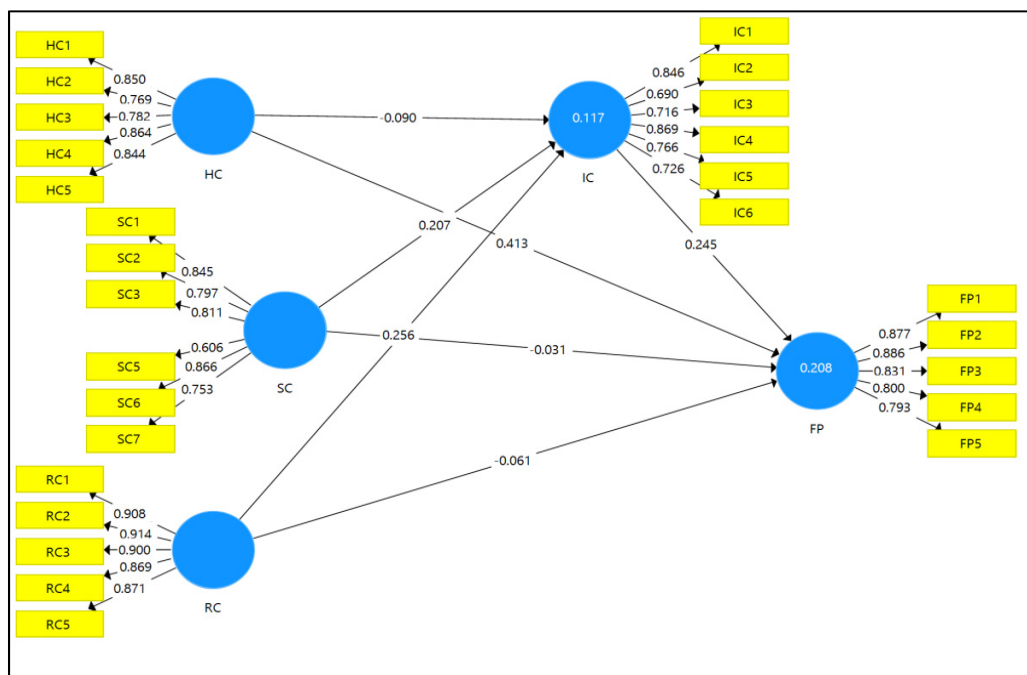


Figure 4. Modification of measurement model.

The researchers deleted the low loading item SC4 and re-ran the PLS-Algorithm, as shown in Figure 4. Then, all items met the convergent validity criteria and were retained for further analysis. Values of all the items were above 0.5. The results showed that the item loading was ranged from 0.606 to 0.914.

Table 7 shows that all items had high factor loading (>0.5). Moreover, the constructs had an AVE value of more than 0.5, as recommended by [108]. The results showed that AVE scored range from 0.579 to 0.797. Additionally, the composite reliability (CR) of the research variables was conducted to make sure that the scores were within the threshold of 0.80, as recommended by [108]. The CR scored was more than 0.80 for all constructs. The

CR scores ranged from 0.898 to 0.952. Besides, Cronbach's alpha for all constructs showed a value of more than 0.7, which falls within the threshold. The Cronbach's alpha results ranged from 0.864 to 0.936, thus indicating that internal consistency had been achieved for all the research items. Therefore, the convergent validity and reliability criteria were met in the present study.

Table 7. Results of convergent validity of the constructed measurement model.

Constructs	Item Code	Loading	α (>0.70)	CR (>0.80)	AVE (>0.50)
HC	HC1	0.850	0.881	0.913	0.677
	HC2	0.769			
	HC3	0.782			
	HC4	0.864			
	HC5	0.844			
SC	SC1	0.845	0.873	0.904	0.615
	SC2	0.797			
	SC3	0.811			
	SC5	0.606			
	SC6	0.866			
	SC7	0.753			
	RC	RC1			
RC2		0.914			
RC3		0.900			
RC4		0.869			
RC5		0.871			
Innovation Capability	IC1	0.846	0.864	0.898	0.597
	IC2	0.690			
	IC3	0.716			
	IC4	0.869			
	IC5	0.766			
	IC6	0.726			
Firm Performance	FP1	0.877	0.894	0.922	0.702
	FP2	0.886			
	FP3	0.831			
	FP4	0.800			
	FP5	0.793			

The HTMT (Heterotrait-Monotrait Ratio of Correlation) criterion refers to the ratio of construct correlations to construct correlation [83], which was used to address the dissemination validity. When the HTMT value for the structural path has a confidence interval close to 1, and based on this, there is a lack of discriminant validity [85]. The HTMT value of 0.90 can be accepted for conceptually similar constructs [85]. In this study, the HTMT findings were lower than 0.90, suggesting the establishment of the discriminant validity (Table 8).

Table 8. Heterotrait-monotrait ratio of correlation for discriminant validity.

Variables	FP	HC	IC	RC	SC
FP					
HC	0.439				
IC	0.207	0.096			
RC	0.207	0.049	0.274		
SC	0.066	0.172	0.229	0.660	

5.6. Evaluation of Structural Equation Model

Figure 4 illustrates the design of structural equation model that enclosed all the study variables. This model was built and assessed using Smart-PLS. v3. Table 9 displays a correlation amid the variables wherein the antecedent factors were found to be directly correlated to the independent variables. Furthermore, another direct correlation was found amid these variables. Figure 5 shows the calculated *t*-values.

Table 9. Direct relationship among different variables.

No	Relationship	β	Std. Error	<i>t</i> -Value	<i>p</i> -Value	Decision
H1a	HC > IC	−0.090	0.062	1.446	0.074	Not Supported
H1b	SC > IC	0.207	0.071	2.936	0.002	Supported
H1c	RC > IC	0.256	0.063	4.057	***	Supported
H2	IC > FP	0.245	0.058	4.223	***	Supported
H3a	HC > FP	0.413	0.048	8.579	***	Supported
H3b	SC > FP	−0.031	0.077	0.406	0.343	Not Supported
H3c	RC > FP	−0.061	0.060	1.027	0.152	Not Supported

Note: *** = $p < 0.000$.

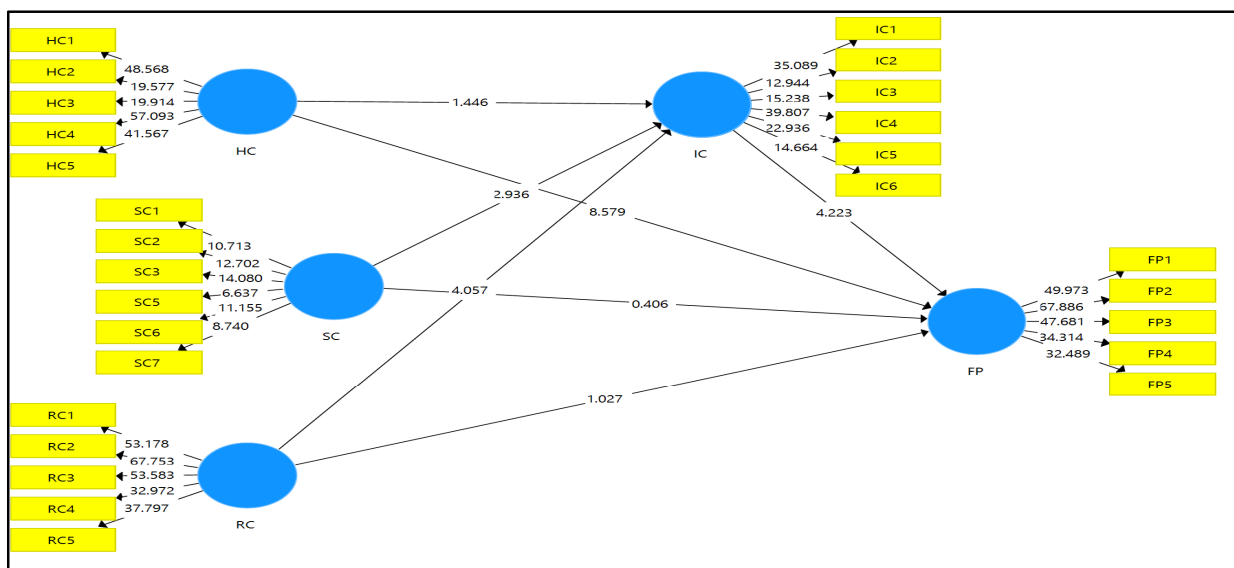


Figure 5. The design of structural equation model with all variables.

The analyses of the direct relationship between the component of intellectual capital and innovation capability indicated a positive and significant relationship between the two intellectual capital components and innovation capability. Only one hypothesis indicated a non-significant relationship. The results of each sub-hypothesis for each component are

described in the subsections below. The results for Hypothesis H1a revealed an insignificant correlation among human capital and innovation capability ($\beta = -0.090$; t -value = 1.446; p -value > 0.05). Thus, it could not support the relationship between human capital and innovation capability. The results in support of H1b revealed a positive and strong correlation amid structural capital and innovation capability ($\beta = 0.207$; t -value = 2.936; p -value < 0.05), thus supporting the hypothesis. Hypothesis H1c was also supported through a positive and strong correlation amid relational capital and innovation capability ($\beta = 0.256$; t -value = 4.057; p < 0.05). Hypothesis H2 was also supported by a strong and positive correlation amid innovation capability and firm performance ($\beta = 0.245$; t -value = 4.223; p -value < 0.05). In short, the correlation amid innovation capability and firm performance was upheld.

Table 9 shows the results in favor the intellectual capital components and firm performance correlation, supporting the Hypothesis H3a ($\beta = 0.413$; t -value = 8.579; p < 0.05). Conversely, structural capital and relational capital correlation towards the firm performance was found to be marginal ($\beta = -0.031$; t -value = 0.406; p -value > 0.05 for H3b and $\beta = -0.061$; t -value = 1.027; p -value > 0.05 for H3c); thus, H3b and H3c were not supported.

5.7. Mediation Impact of Innovation Capability

The present study hypothesized that innovation capability mediates the relationship between intellectual capital components (human, structural, and relational capital) and firm performance. Before performing the mediating role, the measurement model properties were assessed and confirmed to meet this purpose. Based on the results obtained, the reliability and validity of the measurement model was established. Furthermore, all the indicators showed a factor loadings value of over 0.70 and an AVE convergent validity score of over 0.50. The value of both Cronbach's alpha and composite reliability were more than 0.70, showing internal consistency. The discriminant legitimacy criterion was also achieved using the HTMT, where all the values below 0.9. In brief, the proposed measurement model showed acceptable outcomes, indicating its applicability for the mediating analysis.

Mediation role of Innovation Capability on Intellectual Capital Components and Firm Performance Relationship

This study employed a basic bootstrapping of 5000 re-samples, bias-corrected, one-tailed, and at a significance level of 0.05 to assess the statistical significance of the path coefficients. The mediating factor analysis signified that innovation capability had a mediating influence on intellectual capital components (structural capital and relational capital) and firm performance correlation. In contrast, innovation capability showed no mediating effect on human capital and firm performance correlation. The results in Table 10 ($\beta = -0.022$; t -value = 1.239; p -value > 0.05) for Hypothesis H4a clearly revealed insignificant mediation effect of innovation capability on human capital and firm performance correlation. Thus, the mediation role of innovation capability on human capital and firm performance correlation was unsupported. Moreover, the outcomes for the Hypothesis H4b ($\beta = 0.051$; t -value = 2.147; p -value < 0.05) displayed a positive and considerable mediation consequence of innovation capability on structural capital and firm performance correlation, thereby strongly supporting the hypothesis. As shown earlier, no significant relationship exists in the relationship between structural capital and firm performance.

The results revealed that the innovation capability as a mediator can play a considerable role to enhance and strengthen such relationship. Innovation capability, however, supports structural capital to increase firm performance. The results for Hypothesis H4c ($\beta = 0.063$; t -value = 2.994; p -value < 0.05) showed an appreciable mediation impact of innovation capability on relational capital and firm performance relationship, thereby supporting the hypothesis. Despite the non-significant relationship between relational capital and firm performance, the mediation role of innovation capability enhances this relationship and strengthens relational capital resources to support and improve the firm's performance.

Table 10. Mediation role of innovation capability.

No	Relationship	Beta	Std. Error	t-Value	p-Value	Decision
H4a	HC > IC > FP	−0.022	0.018	1.239	0.108	Not Supported
H4b	SC > IC > FP	0.051	0.024	2.147	0.016	Supported
H4c	RC > IC > FP	0.063	0.021	2.994	0.001	Supported

6. Discussion

In this study, various hypotheses were developed to determine whether the intellectual capital components show a positive correlation to innovation capability and firm performance, which has been tested with the first and third hypotheses. The results of structural capital and relational capital relationship with innovation capability for H1b (t -value = 2.936) and H1c (t -value = 4.057) was strongly supported. Present results are in good agreed well with the reported findings that affirmed the positive role of structural capital and relational capital in enhancing the innovation capability [40,64,66,67,69]. In addition, earlier works showed a strong correlation among relational capital and innovation capability [46,71,72,108]. These results support the assumption of (RBV) theory where effect utilization of internal resources enhanced competitive advantages for higher performance. This study was unable to support the human capital and innovation capability correlation (Hypothesis H1a). The obtained results (t -value = 1.446) were consistent with past study that showed an insignificant human capital and innovation capability correlation [109].

Innovation capability was tested in several contexts toward firm performance since innovation capability creates different benefits for SMEs. Among these benefits, and one of the most important ones, was the enhancement of firm performance. Furthermore, it was reaffirmed that firms' high level of innovation capability generates higher firm performance in manufacturing SMEs in Malaysia rather than other factors. Hence, innovation capability has a significant positive relationship with firm performance H2 (t -value = 4.223). The current results agreed well with the reported findings that affirmed a positive role of innovation capability in improving the firm performance [48,77,78,80,110]. In short, we demonstrated that innovation capability plays a vital part in firms' strategic considerations based on the assumption of (RBV) theory, which helped in enhancing the firm's resources for higher competitive advantages and firm performance.

Regarding the direct relationship between the intellectual capital components and firm performance, it was reaffirmed that investing in human capital could improve firm performance in manufacturing SMEs in Malaysia rather than other intellectual capita; hence, only human capital has a significant and positive relationship on firm performance H3a (t -value = 8.579). Present results reaffirmed a positive role of human capital in improving the firm performance [42,46,84]. These results support and confirm the preposition of RBV theory, where human capital could be an effective resource in firms, leading to higher competitive advantages and superior performance [110].

On the other hand, the relationship between structural and relational capital on firm performance was not significant for H3b (t -value = 0.406) or H3c (t -value = 1.027). These findings agreed well with other reports, reconfirming an insignificant correlation of structural capital [24,80,111–113] and relational capital [86,87,114,115] with firm performance. Furthermore, a past study stated that enhanced innovation activities in firms will build a strong relationship with the customer; thus, the manufacturing firm's capability will eventually improve firm performance directly [29]. There must be a deliberate plan for gaining a competitive advantage in innovation capability. For example, the findings of this research highlighted the need for human capital to retain knowledgeable and skilled employees to foster innovation practices inside firms. In addition, those who are highly skilled and experienced have more extraordinary ability to create new ideas, which lead

to an increase the firm performance. It was concluded that the strong effect of innovation capability on intellectual capital can enhance the performance of a firm, leading towards sustainable development. The last hypothesis of the current study, which was related to the innovation capability as a mediator, clearly showed that by enhancing the intellectual capital of the manufacturing firms, a high firm performance can be achieved through the application of the innovation capability.

The current results supported the mediation hypotheses of innovation capability (H4b and H4c: t -value = 2.147 and 2.994, respectively). Despite the non-significant relationship between structural and relational capital on firm performance (H3b and H3c: t -value = 0.406 and 1.027, respectively), innovation capability as a mediator had an important role in enhancing this relationship for better performance, which affirms the presumption of RBV theory. The results show that manufacturing SMEs in Malaysia have governing reconfiguring insinuations for structural capital and relational capital. Additionally, the results show the importance of the connection between intellectual capital and firm performance mediated by innovation capability. In contrast, the study was unable to find enough evidence to support the mediating role of innovation capability between human capital and firm performance (t -value = 1.239); thus, H4a was not supported since no statistical evidence shows a significant relationship between human capital and innovation capability (t -value= 1.446). Therefore, this result was reasonable.

The obtained results revealed a noteworthy effect of innovation capability between the study's concepts that concentrated on intellectual capital utilization. The current findings identified innovation as a capability that reduces the negative effects of increasing intellectual capital on manufacturing firm performance. As a result, it was underlined that the firm's ability to restructure itself is closely related to its economic benefits. Thus, it is suggested that a planned strategy must be employed to obtain a favorable situation of intellectual capital. For instance, to become innovative in the rapidly altering business setting, a firm's intellectual capital needs no plans for the firm for adjustments, like supplier and customer relationships, knowledge of properties, market stability, and competitors, that allow creating a value within and outside the firm [114]. According to the study results, the research revealed a strategy for improving the intellectual capital of manufacturing SMEs in Malaysia looking to expand their core competency and gain the competitive advantages. The results agreed with the reported works [21,29].

6.1. Research Contribution

The present work contributed in terms of new knowledge related to intellectual capital and firm performance correlation. The study contribution was through measuring the intellectual capital resources in Malaysian manufacturing SMEs. Additionally, the study also attained the intellectual capital factors influencing and enhancing firm performance. The study concluded that the relationship between manufacturing firm's intellectual capital and non-tangible assets is beneficial. The current study findings in the context of manufacturing SMEs in Malaysia are attributed to this disclosure. The current study enhances the knowledge and understanding regarding the influence of innovation capability as a mediator between intellectual capital and firm performance in Malaysian manufacturing firms. This result was highly supported by the assumption of resource-based view (RBV) theory that suitable utilization of firm intellectual resources will lead to highly competitive advantages for better performance. Moreover, the current study's results expanded the knowledge of RBV theory by providing empirical evidence that intellectual capital enhance and improve the performance of the firm as well as the mediation role of innovation capability for stronger relationships. The study also explored the influence of innovation capability on a manufacturing firm's intellectual capital into one single model and re-confirmed what was initially assumed to be stable. However, most previous studies in the context of intellectual capital and firm performance have addressed the issues in various sectors around the world. Hence, very limited studies conduct the same framework to explore the issue of the

performance decline of manufacturing SMEs in Malaysia [21]. However, this study focused on the declining of the manufacturing sector contribution toward the country's GDP.

6.2. Research Implications

This research revealed the importance of intellectual capital in the manufacturing industry, mainly manufacturing SMEs in Malaysia. The development of intellectual capital can assist in the manufacturing sector's firm performance. Consequently, the influence of various vital factors of intellectual capital that are responsible for the weak correlation among intellectual capital and indicators of firm performance in the Malaysian manufacturing SMEs were examined. These factors were shown to have a significant impact on national financial policies. Furthermore, the findings and analysis demonstrated some practical contributions to the mentioned topic. First, the study found that more emphasis on intellectual capital and innovation activities in manufacturing SMEs is required. However, it revealed some significant managerial implications for integrating intellectual capital and innovation capability, demonstrating that the two notions have a causal relationship.

This main finding of this work indicated that increased intellectual capital that results from innovation capability accumulation can have a significant impact on firm performance with significant practical implications. According to earlier studies, the firm's performance is evaluated in terms of the firm's internal resources; therefore, keeping employees with high knowledge capital and skills rather than a high number of employees is more important for the firm's survival. Intellectual capital can help to improve the resolutions and decisions taken by the firm. The ability to innovate demonstrates a focus on intelligent knowledge management. Essential resources, such as knowledge creation, are internalized or employed differently in different stages and activities in this way. The current disclosure confirmed that intellectual capital-based success is a vital component and requirement in every firm's sustainability. However, this could be one method for raising the profile of intellectual capital utilization in the manufacturing industry while also providing a consistent platform for stakeholders to better utilize intellectual capital assets. This argument can help owners/managers design successful and practical plans in competitive markets, giving academics more information about the relationship between intellectual capital and firm performance. In order to achieve a high degree of firm performance, researchers must examine the integration of intellectual capital and innovation capability, particularly in the manufacturing sector.

This study provided valuable information and strategy for owner/managers of manufacturing SMEs, academics, and policymakers to follow. Moreover, researchers, business owners, and policymakers all agreed on the necessity of taking a more active role in fostering the creation of intellectual capital in their firms. The study's framework will enable them to obtain meaningful and practical measurements for identifying intellectual capital in multi-dimensional connections. According to the current study, manufacturing firms might acquire precise norms for recognizing and growing their strategic resources and skills [29]. However, when it comes to innovation practices contribution, analytical methods are typically used to monitor and assess the research context and performance. As a result, it is proposed that relevant collaboration, whether on an academic or business level, may be necessary to detect the right timing for manufacturing SMEs success. It was concluded that innovation capability mainly concentrates on generating new ideas for products or services in order to enhance the firm performance.

6.3. Limitations and Recommendation for Future Studies

Nowadays, manufacturing firms are facing various challenges regarding environmental and market changes. In this case, valuable resources in firms, like intellectual capital, are assimilated or used in various ways at different stages and activities. However, the integration of intellectual capital and innovation activates proved to be an essential resource in manufacturing firms to enhance performance. This could be one method for raising the profile of intellectual capital utilization in the manufacturing SMEs in Malaysia while also

providing a consistent platform for owner/managers to better exploit intellectual capital property's potential. This assertion can help manufacturing owner/managers design winning and realistic strategies in the competitive market scenarios, giving academics more information about the relationship between intellectual capital and firm performance. In order to achieve a high level of firm performance, future researchers are highly recommended to examine the integration of intellectual capital and innovation capabilities, particularly in the manufacturing sector. Future research could also examine other factors that could influence intellectual capital and innovation capabilities or intellectual capital against firm performance. Future research could also examine other mediating or moderating factors that could enhance present study theoretical framework. The present study was limited to one single country, and therefore, the findings cannot be generalized to other countries; thus, future studies could force on other countries than Malaysia. Future research could assess the mechanism through which firm sustainability-orientation innovation capability and research and investment decision affect firm sustainable innovation and financial performance [115,116]. Moreover, the study was based on a cross-sectional designed to access the causal relationship of the variable.

6.4. Conclusions

This study reaffirmed that in the competitive market scenarios, intellectual capital plays a paramount role to improving the firm's innovation capabilities and subsequently increasing the firm's performance. Additionally, this work addressed the previous research gaps and bridged them. The role of manufacturing SMEs' firm performance in Malaysian growth of intellectual capital resources was explored for the first time. The main limitation was related to identifying the internal capabilities and resources in enhancing the performance in developing countries especially in Malaysia, which was grounded under the resource-based view. Previous researchers did not fully explore the impact of innovation capability on the firm's performance in the Malaysian manufacturing sector. With this perception, we determined the critical role of innovation capability as a mediator, which disclosed that the innovation capability can enhance and strengthen the relationship between intellectual capital and firm performance of manufacturing SMEs in Malaysia. It was suggested that the owners and managers of manufacturing SMEs must invest more to enhance and develop the internal resources in firms, thus recognizing the problems and tendencies. It was demonstrated that in order to enhance the performance of the firms, managers should implement a new strategy to improve their daily routines and action to move the firms into a higher level of financial growth [29]. The findings strongly supported the role of intellectual capital and innovation capability in achieving better firm's performance [117,118]. Overall, our results are consistent with the reported state-of-the-art reported works. It was asserted that the difficulty of assessing intellectual capital components that affects performance of the Malaysian manufacturing SMEs must be surmounted; thus, future pilot studies are worth performing [21,29].

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Appendix A

Table A1. Research Variable's Measurements.

Variables Name	Code	Item's Measurement
Human Capital	HC.1	Our employees are highly skilled.
	HC.2	Our employees are well experienced in their job.
	HC.3	Our employees are creative.
	HC.4	Our employees are knowledgeable.
	HC.5	Our employees are quick in problem solving.
Structural Capital	SC.1	Our bank has efficient and relevant information systems to support business operations.
	SC.2	Our firm's overall operations procedure is very efficient.
	SC.3	Our firm responds to changes very quickly.
	SC.4	Our firm has an easily accessible information system.
	SC.5	Our firm has system and procedure support innovation.
	SC.6	Our firm's culture and atmosphere are flexible and comfortable.
	SC.7	Our firm emphasizes new market development investment.
Relational Capital	RC.1	Our firm discovers and solves problems through intimate communication and effective collaboration.
	RC.2	Our firm maintains appropriate interactions with its stakeholders.
	RC.3	Our firm maintains long-term relationships with customers.
	RC.4	Our firm has many excellent suppliers.
	RC.5	Our firm has stable and good relationships with the strategic partners.
Innovation Capability	IC.1	Our firm tries out new ideas.
	IC.2	Our firm seek new ways of doing things.
	IC.3	Our firm is creative in its operating methods.
	IC.4	Our firm develops new products and services.
	IC.5	Our firm's perception of innovation is not risky and therefore acceptable.
	IC.6	Our firm introduced new products/service in the last five years.
Innovation Performance	FP.1	Our firm's revenue is continuously increasing over the past five years.
	FP.2	Our firm's profit is continuously increasing over the past five years.
	FP.3	Our firm has been continuously reducing cost per revenue unit over the past five years.
	FP.4	Our firm's net return on assets has been increasing over the past five years.
	FP.5	Our firm's net return on sales has been increasing over the past five years.

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