

CHAPTER 5

DISCUSSION, RECOMMENDATIONS AND CONCLUSIONS

5.1 Introduction

The final chapter of the current research aimed to present the discussion about the finding from data analysis. It also highlights key practical and theoretical implications that can be drawn from this study. In addition, this chapter presents the practical and theoretical implications of the study. Finally, the chapter discussed the limitations of the study and provides useful suggestions for future research.

5.2 Recapitulation of The Study

This research was carried out to examine the effect of green supply chain management practices on competitive advantages and social performance. In addition, innovation capability was examined as a mediating variable in the relationship between green supply chain management practices and competitive advantages and social performance among manufacturing companies certified with ISO14001 in Malaysia. This purpose of this study aimed to fill the gap by contributing to the researchers on GSCM practices and the firm's competitive advantages with the improvement of social performance in the context of Malaysia, more specific in the green supply chain in the manufacturing industry.

Moreover, this research is holding significant development on the research models in the area of GSCM implementation, firm's competitive advantages and social performance by providing useful data to test the relationship between GSCM practices and competitive advantages performance and social performance; second the mediating effect of innovation capabilities in the relationship between GSCM practices and firm's

competitive advantages and social performance among Malaysian manufacturing industry. In particular, the research aimed to achieve the following research objectives:

1. To investigate the influence of GSCM practices on a firm's competitive advantages in the Malaysian manufacturing industry.
2. To investigate the influence of GSCM practices on social performance among the Malaysian manufacturing industry.
3. To investigate the contribution of GSCM on innovation capabilities in the Malaysian manufacturing industry.
4. To investigate the effect of innovation capabilities on the firm's competitive advantages performance in the Malaysian manufacturing industry.
5. To investigate the effect of innovation capabilities on the firm's social performance in the Malaysian manufacturing industry.
6. To determine the mediating effect of innovation capabilities in the relationship between GSCM practices and firm's competitive advantages and social performance among Malaysian manufacturing industry.

As stated earlier in chapter Four, data were gathered from the manufacturing industry in Malaysia. A total of 600 questionnaires were distributed via email, only 265 questionnaires were returned, resulting in a response rate of 44% and only 258 questionnaires were usable. Statistically, this study applied a quantitative method and tested the research hypotheses by employing a partial least square (Smart-PLS) software. Particularly, the acceptability or rejection of the hypotheses was determined at the critical significance level of 0.05. All of the details of the research findings had been shown in chapter Four. Notably, the results of the current research supported all formulated hypotheses. In addition, innovation capability was found to be a mechanism

mediating the relationship between GSCM practices and competitive advantages and social performance.

The results of this study are significant to operation managers and supply chain managers in decision making benchmarking the organizational progress in collaborating the green practices in their production process. Research findings will be useful in helping manufacturing firms to determine the effectiveness indicators of GSCM practices that can contribute to achieve competitive advantages and improve social performance. This study highlighted the importance of GSCM for manufacturing organizations in Malaysia to achieve competitive advantages and improve their social performance. Closer integration of the supply chain management could benefit policy makers and accelerate the efforts towards firm's competitiveness and social performance. This study will provide additional evidence on the related mechanism needed to strengthen the relationship between GSCM practices, competitive advantages and social performance through the mediation role of innovation capabilities. The studies on the mediating of green innovation between the relationship of GSCM competitive advantages and social performance are less debated.

5.3 Discussion

This section discusses the key findings of the present research in light of relevant findings from previous studies.

5.3.1 The Influence of GSCM Practices on Firm's Competitive Advantages.

The present study has six objectives, in which the first objective is to investigate the influence of green supply chain management practices on a firm's competitive advantages among certified manufacturing companies with ISO 14001 in Malaysia. In this study, green supply chain management practices have five dimensions namely:

internal environmental management, eco-design and packaging, green purchasing, cooperation with customers and investment recovery.

This study found that GSCM affects firm's competitive advantages in the Malaysian manufacturing industry ($\beta = 0.517$, $t = 9.738$, $p < 0.01$). This finding is aligned with prior findings reported in several prior studies (Jia & Wang, 2019; Sadurdeen & Sutha, 2019; Tan & Shaharudin, 2016; Wang, 2019). All these studies reported that GSCM practices have a significant effect on competitive advantages.

In details, the first dimension in green supply chain management practices is internal environmental management which play an important role in improving performance in terms of management commitment and cross-functional cooperation (Abu Seman et al., 2019). The result of this research revealed that internal environmental management has a positive association with firm's competitiveness which company's creation of its own environmental protection policies and environmental targets to ensure protection of the environment. In the year of 2002 Malaysia had only 367 certified EMS firms, currently this number has increased to 2,560 in 2021 and that reveals manufacturing firms in Malaysia are increasingly complying with environmental management system which become an important practice for enterprises competitiveness to reduces the ecological impact of firm's activity without sacrificing cost, quality and delivery and Malaysia has become one of the largest manufacturing bases in Southeast Asia countries.

The second dimension is eco-design and packaging that are involved in the design of products for reduced consumption of material and energy (Shang et al., 2010). Eco-design and packaging practices such as resource and energy saving, reduction of waste and using less packaging help manufacturing firms to develop their environmental performances, and since these are closely related to competitive

advantages, they are rapidly adopted by manufacturing firms. It was mentioned in the literature that eco-design and packaging practices aimed to reduce the negative impact of the products in the entire life cycle from acquiring materials to manufacturing and use and ultimately to its final disposal without compromising other essential product criteria, such as function, cost, performance, quality, or legal and technical aspects (Zhu, et al., 2008). In this study, eco-design and packaging is positively related to firm's competitiveness which is an important dimension of GSCM practices since this practice can be helpful for reducing material consumption and costs throughout the supply chain at the earliest inception of the product or process design. In this matter, many companies prefer recycled packages because these packages are cheaper than others.

In addition, eco-design and packaging integrate environmental aspects into the product design process, taking into consideration the entire flow of the product in its supply chain. This consideration is very important for Malaysian manufacturing firms, because most environmental impact arising from the production, consumption, and disposal of the product are direct consequences of decisions made in the design stage (Wei et al., 2016). With green design and packaging practices, businesses will be able to use their resources more efficiently. This will allow manufacturing firms to reduce their production costs and increase their efficiency. Similarly, reducing packaging materials will reduce not only packaging costs, but also transportation costs which lead to be a leader in the market and achieve competitive advantages.

Thirdly, green purchasing assists the manufacturing company to ensure the purchased materials are in line with the environmental aims of the corporation such as reducing sources of waste, reducing or eliminating hazardous items and promoting reclamation and recycling of purchased materials (Eltayeb & Zailani, 2010; Umar et al., 2016). It was mentioned in the literature that implantation of practices will have

additional cost to the firm and might discourage companies from applying them in the production process (Nguyen et al., 2017). Nevertheless, major market players such as Nestlé, Unilever, Pepsico and Danone promise customers to use recyclable, compostable or reusable products by 2025 (Keating, 2022). In addition, the demand for eco-friendly products has been increasing owing to increased environmental awareness. Therefore, Malaysian manufacturing firms required to shift their traditional supply chain to green supply chain process in order to increase their involvement in protecting the environment and that will result in improving company position among competitors and enable them to improve social performance.

In the same vein, firms that practice green purchasing will emphasise the balancing among quality, cost, delivery and environmental concept in the purchasing activities (Choi et al., 2018). In this study, there was a positive integration between green purchasing and competitive advantages which will encourage suppliers to develop green inputs, raw materials and promotes the collaboration of purchasing company and the suppliers. However, the raising awareness in the recent times regarding environmental protection has triggered more interest to ensure all purchased materials contain green attributes. Green purchasing products comprise added advantages for the firms to go towards global competitiveness. This finding concurs with the finding obtained from Tan (2016).

Meanwhile, cooperation from customers it has a big role that cannot be denied, manufacturing firms require working with customers to design eco-friendly products, cleaner production and green packaging. Moreover, cooperation with customers will influence entrepreneurs to use less energy during product transportation and develop environmental database of products to assist organization to achieve competitive advantages (Green et al., 2012). In this study, it can be seen that manufacturers value

customer expectations, and existing customers are well informed and majorly concerned about the environment for continuous improvement on the organizational performance to achieve competitiveness in the industry.

Furthermore, Malaysian customers are becoming very much aware of environmental issues and increasingly request environmentally friendly products that will create environmental awareness and helps carry out successful environmental programs that help to achieve competitive advantages in the market. Therefore, cooperation with customers will pressure manufacturing firm's management to avoid environmentally damaging operations and protect environment (Zhu et al., 2017). The result of this study confirms the significant impact of customers cooperation will assist industrial enterprises to minimize adverse environmental effects to achieve firm's competitive advantages. Besides, cooperation with customer proves to be beneficial in this respect as it enables the business management to keep an eye on customers' environmental requirements. Thus, general public can reshape their activities, procedures, and manufacturing to meet those requirements.

Lastly, investment recovery is driven by the different use for inventories, materials or scrap items which aim to minimize the amount disposed of in landfills waste (Zhu & Sarkis, 2014). Investment recovery does not only relate to the environmental aspects but also it relates to the economic aspects which benefit the manufacturing firms to achieve competitive advantages by sale of excess material/inventories, sale of scrap/used materials, sale of excess capital equipment and sales of by product and waste. Therefore, Malaysian manufacturing industry has to implement the practise of investment recovery which encourage them to sale surplus materials, reduces energy consumption from equipment machinery and recycles discarded goods. This practise will lead Malaysian manufacturers to add value in

reducing the waste of initial investment, thereby reducing the price of services and products offered to compete in the market among rivals to achieve competitive advantages.

Investment recovery practise has valuable impact to manufacturing company as well as to the environmental protection strategies which will reduce the cost of raw materials and compliance, attracting new customer and increase revenue (Zhu et al., 2013). As previously discussed, investment recover will provide benefit to the manufacturing firm an additional amount of income and prevent unnecessary storage of these assets. In other words, investment recovery consists of reusing products or goods, remanufacturing or recycling activities that will increase firm's contribution to the minimize the damage to environment and that will enable the company to be market leader comparing to other competitors in the industry.

Other studies which revealed the same results in various contexts, as mentioned in previous chapters, indicated that green supply chain management the benefits of GSCM practice implementation which can promote synergy and efficiency among business partners and their lead corporation and guide to enhance the performance of the environment by reducing the hazards and achieve cost-saving (Hassan, 2016). Additionally, Rao and Holt (2005), highlighted the benefits of GSCM practice implementation which can promote synergy and efficiency among business partners and their lead corporation and guide to enhance the performance of the environment by reducing the hazards and achieving cost-saving. As a result, GSCM practices is one of the prevalent strategies in this sector to manage the issues of the environment for the effectiveness of their productivity and achieve competitive advantages. Thus, the first hypothesis of the present study was supported.

Additionally, the findings of this study, also, were in line with Resource-Based View (NRBV) theory which assist organization to make better strategies to achieve competitive advantage as well enable the organization to enhance and develop the competitive position which will lead to create major important difficulties for other competitors to imitate, which could have resulted in a long-term and sustainable competitive advantage (Porter, 1989). In the other side, institutional theory will motivate manufacturers to implement green practices in their operations which aimed to assist firms to build or choosing effective strategies to gain competitive advantage (Shafique et al., 2017). Therefore, firms are required to implement green practices in their production to reduce cost, improve quality and achieve effective delivery among other competitors in the industry.

5.3.2 The Influence of GSCM Practices on Firm's Social Performance.

To achieve the second research objective, the current study examined the effect of green supply chain management practices on a firm's competitive advantages within the certified ISO 14001 manufacturing industry in Malaysia. Bowen (1953), define social performance as implementing strategies and making decisions towards the organization to take actions to value society. However, social performance carried various benefits to the organization as well as a society such as customers, environment and stakeholders are also leading to various positive impacts to the organization such as the ability to attract talented employees Greening and Turban (1996), improvement in accessing finance, Cheng et al. (2014), improved risk management (Koh et al., 2014), and growing in recommendations from stock analysts (Luo et al., 2015). The changes and movements in a global market that been playing an important role in recent years which lead organizations around the globe to work on social responsibility and the

community has been required to approve the activities businesses carry out (Çankaya & Sezen, 2019). However, social performance abilities appeared to acquire significant value to firms to join the global market and able to compete in the related market.

This study shows that a positive relationship exists between GSCM practices and firm's social performance, which means that the implementations of green practices such as internal environmental management, eco-design and packaging, green purchasing, cooperation with customers and investment recovery will enable the manufacturing firm to improve customers satisfaction, develop its image in the eyes of its customers and investments on social projects. Moreover, practices of green supply chain management will motivate entrepreneurs to improve their relationships with community stakeholders such as non-governmental organizations (NGOs) and community activists. In terms of employees, a successful implementing green practices in the supply chain management will lead to have improvements in firm's social performance which will allow the company to engage in employees training and education, improvement if occupational health and safety of the employees (Tang, 2019). In the Malaysian context, the government is making effort to reduce the negative impact from manufacturing firms to protect the community and improve social performance (Chin et al., 2019).

However, the issue of social responsibilities in Malaysia are still in the improvement stage which still facing difficulties to reduce and prevent the waste occurred by the manufacturing companies that resulted to impact the society and general public health. There are many cases of environmental pollution that take place in Malaysia. For example, incident in Johor Bahru in the town of Pasir Gudang caused by the chemical waste from "Sungai Kim Kim" river where lorry tanker illegally through chemical waste into the river in the early morning before the victims been ill which is

very difficult to clean and remove these chemicals from the river where it has been exposed to rain and wind to start spreading and affect other places (Yap et al., 2019). This pollution led to a very negative impact on students and teachers and left them hospitalized for more than one week with health issues such as dizziness, breathing difficulties, nausea and vomiting also more than 100 schools were ordered to close as a result.

Furthermore, the going rapid industrial development in Malaysia and the negative impact that is driven by the outcome emissions of manufacturing companies' productions that will put the company in a position to follow and apply the required implementation to the society and community to avoid damage to the society. Therefore, collaboration with government and stakeholders towards the environment by improving the reputation of the company to the minds of suppliers and producers, assisting customers to have a better feeling about the quality of life, and bringing industry on a positive track for the societal good. However, the Malaysian government are aiming in minimizing the environmental impacts of enterprises involved in industry's emission which affect the health of general public and society. Providing a special programme to encourage the manufacturing firms to apply green practices, it will create a positive impact to the community and business.

In this case, the Malaysian government led by the Malaysian Investment Development Authority (MIDA), offered a special incentive to manufacturing companies that are following green practices in their supply chain practices they will be able to get tax incentives such as Pioneer Status (PS) and Investment Tax Allowance (ITA) (Singh, 2017). This special incentive will allow manufacturing companies to have tax exemption or income tax exemption equivalent of Investment Tax Allowance (ITA) for a period of five or ten years to companies that implement green practices and

technology in the field of renewable energy, energy efficiency, green building, green data centre and waste management to attract more green investments (MIDA, 2020). Therefore, implementation of GSCM practices will drive manufacturing companies to grab the opportunity to get the benefits of tax allowance supported by the government.

The result of this study approved that there is a significant influence of green supply chain management practices on social performance ($\beta = 0.454$, $t = 6.243$, $p = 0.001$). This result with the outcomes of some previous studies (Badri Ahmadi et al., 2017; Fernando & Saththasivam, 2017; Le, 2020; Luthra et al., 2016; Omar et al., 2019; Younis & Sundarakani, 2019). Such previous studies reported that green supply chain management practices have a strong predictive influence on social performance. Moreover, the results of this study have implications for the institutional theory by confirming that GSCM practices are a key antecedent of social performance.

In other words, this study found that manufacturing firms who implement green supply chain management practices at their manufacturing process will improve the reputation of the company in the eyes of society, stakeholders, customers, government and personnel (Zaid et al., 2018). Therefore, this positive impact of reputation is very valuable to both customer, loyalty and personal satisfaction. In summary, the successful implementation of green supply chain practices may strengthen firms' relationships with all stakeholders. Therefore, social performance abilities in particular appeared to acquire significant value to firms to join the global market and be able to compete in the related market. Thus, the result of the present study indicated that Hypothesis 2 was supported.

5.3.3 The Influence of GSCM Practices on Firm's Innovation Capabilities.

With respect to the third research objective of this study, it was found that green supply chain management practices influence firm's innovation capabilities. Table 4.13 revealed that GSCM practices have a significant effect on innovation capabilities in the context of Malaysian manufacturing companies that certified with ISO 14001 ($\beta = 0.454$, $t = 6.243$, $p = 0.000$). According to Huber et al. (2007), the integration between GSCM and innovation capabilities will assist to track the process of green initiatives practised in the company which leads automatically increase the opportunities and chances to archive the company's goals and objectives to enhance their performance in the global market. Innovation is playing a significant role as a tool to improve and enhance the performance of environmental management which allows the company to satisfy the requirement of regulations of environmental protection (Lai et al., 2003; Lin et al., 2019). However, the implementation of GSCM practice will enhance the innovation capabilities in the company which leads in improving major performance of the firm.

The positive relationship between GSCM practices and innovation capabilities means that manufacturing enterprise who are implementing green supply chain practices become more capable in terms of innovation. This result is an agreement with previous findings of (Asadi et al., 2020; Lin et al., 2019; Tariq et al., 2019; Yang & Roh, 2019; Yao et al., 2019; Lin et al., 2019) which showed that GSCM practices is positively related to innovation capabilities. This result could be explained by the resource-based view theory which indicate that utilizing the resource of the company by implanting green practices in the manufacturing operations are likely to enhance the innovation capabilities that result in improving the elements of operational performance

in the company will lead to improving product quality and consequently makes the products more attractive to customers Kafetzopoulos and Psomas (2015).

In a comparison with the previous studies in Malaysia has been reporting the implementation of green supply chain management practices has to be examined more to investigate the impact on innovation capabilities (Singh & Chan, 2020). The objective result of this study came to confirm that there is a lack in GSCM in the Malaysian manufacturing industry and it needed for more sustainability in the manufacturing process. On the other hand, Lee et al. (2014) discovered that Malaysia GSCM procedures had considerable impact on innovation capabilities among manufacturing enterprises in Malaysia. Internal environment management, eco design and packaging, investment recovery has substantial and positive impact on innovation capabilities. While cooperation with customers and green purchasing has a mild and minor negative impact on innovation capabilities among manufacturing enterprise in Malaysia. However, GSCM practices will provide to manufacturing enterprises the ability to integrate in key capabilities and resources of firm successfully stimulate innovation.

There are various classifications of types on innovation capabilities, among the other elements. OECD (2005) distinguished into four types of innovation four innovation capabilities: process innovation, product innovation, organizational innovation and marketing innovation. In the other hand, these dimensions have been used by (Camisón & Villar-López, 2014; Lee et al., 2018; OECD, 2018). The other types were not considered in this study due to the given complexity to the model and it is beyond the scope of this study. However, innovation is a result in the lessening of ineffectiveness and natural sustainability resources, establishing the main source of cost reduction (Calza et al., 2017). On the other hand, companies are forced to consider the

increase of human consumption and raise the awareness among them of the environmental impact of consumer choice, the environmental attributes of new products and services which can be used for marketing differentiation (Ma et al., 2017; Orsato, 2006; Porter & Linde, 1995).

This study revealed that green supply chain management practices played an important role in improving innovation capabilities in the manufacturing companies. One of the reasons is due to implementation of new strategies and practices in the supply chain tend to provide technological innovation and this will be company's competence to acquire as well as to assimilate novel knowledge and to transfer this knowledge in new products or services (Aas & Breuing, 2019). In addition, green supply chain management practices will encourage manufacturing company to adjust and develop their innovation capabilities in order to transform firm's knowledge and ideas into new products, processes and systems for the benefit of the firm and its stakeholders.

The growing importance of innovation capabilities is becoming a promising area in the GSCM in which firms can eliminate the indirect and direct organizational and environmental impact of an organization's final product. Few studies explored the relationship between GSCM practice and innovation capabilities. Seman et al. (2018), conducted a study among Malaysian manufacturing firms to examine the relationship between GSCM and innovation in a green concept. The study discussed the linkage between GSCM and innovation where several empirical studies that described the literature implied GSCM has a significant relationship on green innovation, but few studies grab the attention on this relationship cannot boost better understanding for academics and practitioners. The findings of this paper show that GSCM leads to innovation. Another study by Yang et al. (2019), tested the relationship between GSCM and innovation capability with information and communication technologies. The study

was conducted among managers training centres in China. The results of the study found that GSCM has a direct role it plays in innovation capabilities to enhance operational efficiency and reduce environmental footprint through different activities. Thus, the results demonstrated that the third hypothesis of the present research was supported.

5.3.4 The Influence of Innovation Capabilities on firm's Competitive Advantages

The fourth objective of this study was to determine the influence of innovation capabilities on a firm's competitive advantages. As presented in Table 4.13 innovation capabilities demonstrated a significant influence on a firm's competitive advantages in the context of the Malaysian manufacturing industry with ISO 14001 certification ($\beta = 0.211$, $t = 0.298$, $p = 0.003$). These findings were consistent with a few prior studies that had obtained similar results (Kafetzopoulos & Psomas, 2015; Y. Wang et al., 2019; Yam et al., 2011).

Innovation in the manufacturing operation is having significant role in developing and creating new products. Drucker (1985) considered innovation as to give resource new ability to create wealth. It generally needs to combine present resources in a new and productive way. Innovation capabilities help factories to avoid loss and maximize profits which were otherwise a time-consuming process (Ageron et al., 2020; Aftab et al., 2018). However, the integration of innovation results voluntary and proactive strategies to achieve competitive advantages. The outcomes imply the importance of innovation as well as giving an advance step to the organization to enable them to be more capable in technology, it could enhance the long-term competitive position of the company.

In the current trend of innovation and technologies advancement, Malaysian entrepreneurs are in need to adapt the on-going improvement in technology to be more innovation. However, innovation capabilities it can create developed products through the adoption of technological application within new design and, new ideas of technological advancement and implementation of new technological innovation capabilities (Assumpcao et al., 2022). In the same times, innovation will make the company capable to compete in the market to earn more business performance than its competitors in the same industry area by utilizing its assets or competencies.

Schumpeter (1934), argued that the development of economic is driven by innovation through a dynamic process called “create a distraction” where the old process will be replaced by technology. Moreover, innovation in organization it concentrates mainly to gain competitive advantages by improving productivity and reducing cost; thus, it is the leading factor for sustaining the value of the business (Cool & Schendel, 1988; Juniati et al., 2019). Manufacturing company it could enhance its performance through the activities of innovation to develop new products and processes (Armbruster et al., 2008). Additionally, Ryu (2016), holds the view that a service economy environment where many companies concentrate on innovation capabilities as an approach to apply in the traditional manufacturing sector to understand innovation in the organization.

There are various studies in the last few years argued on the fact that due to a fast-moving market, traditional technology it cannot be effective anymore and is no longer meeting the new trends of technology advancement to achieve company's growth in competition and sustainable development among rivals (Cheng & Chen, 2013; Stock et al., 2002). Additionally, manufacturing companies in Malaysia are in need to follow and apply innovation in their operation which lead to high contribution

in the firm and market to be successful and achieve greater performance than other competitors (Wang et al., 2019). For example, an electronic firm produced product to oil industry, but due to reduced demand from oil industry the firm must find new market or product to align and adjust their products and produce them to other industry such as car manufacturers. This innovation is considered incremental since the changes in the existing products may be minor (Aas & Breuing, 2019).

Innovation and technology advancement in the manufacturing sector is playing a vital role in the growth of the world economy. Emerging manufacturing trends include innovations that improve the productivity and sustainability of entire production processes. Simultaneously, manufacturing firms are shifting to sustainable materials and green energy sources to reduce the carbon footprint of manufacturing facilities and the final products. According to Distanont and Khongmalai (2018), reported that leaders of companies need to adapt and be ready to face the economic changes and technological advancement in the global, regional and regional market. Moreover, innovation capabilities are a significant weapon that can be implemented to develop and strengthen a business to achieve a competitive advantage to or greater than those of international businesses and hereby realize sustainable economic development.

The findings of the study show that the integration of innovation capabilities and green initiatives do indeed make a supply chain more efficient which enables the company to create competitive advantages among rivals. Moreover, the integration of technology and innovation can enhance financial performance and operations efficiency with a significant linkage to all financial, operations and marketing efficiency in the company. On the other hand, scholars argued the lack of effective innovation will lead to a low contribution to the firm and market failures in practice (Wang et al., 2019). In this case, manufacturing companies are in need to follow the growth trend in innovation

and failure to follow these trends will lead to negative consequences. For instance, Kodak at one time it was the world's biggest film manufacture, Kodak could not keep up with the digital revolution and missed the chance of digital transformation due to the lack of effective and dynamic innovation capability. This result to declare bankruptcy in 2012 and loss competition in the market and allow other competitors such as Canon to grab this opportunity and has consequently outlived the giant (Wang et al., 2019). For all that, manufacturing companies must be more vigilant than ever in remaining innovative and compete in the industry.

Innovation in terms of technology becomes the strategic tool in the aggressive competition for creation, enhancement and improvement of business companies to create competitive advantages equal to or better than those in other countries to realize sustainable development. Therefore, the finding is not surprised because manufacturing companies who utilize their resource and capabilities for the development of innovation such as new products, services or processes can lead to achieve competitive advantage among rivals (Hill et al., 2015). In other words, innovation capabilities is the ability to continuously transform knowledge and ideas into new products, processes and systems for the benefit of the firm and its stakeholders and this has been explained by the resource-based view theory. Therefore, the current study discovered that innovation capabilities significantly has a positive influence on operational performance which in return the company can create competitive advantages. Accordingly, Hypothesis 4 in this study was supported.

5.3.5 The Influence of Innovation Capabilities on Firm's Social Performance.

The fifth objective of this study was to examine the influence of innovation capabilities on a firm's social performance. As outlined in Table 4.14 the results of the

study illustrated the significant impact that innovation capabilities on a firm's social performance within the context of the certified ISO 14001 manufacturing industry in Malaysia ($\beta = 0.310$, $t = 5.437$, $p = 0.000$). However, Szeto (2000), defined innovation as the continuous improvement of the overall capabilities of organizations to create and gain innovation to develop new products and service to meet the needs of the market. However, innovative companies tend to increase their social responsibilities more than their less innovative rivals (Broadstock et al., 2019). Therefore, increasing the social responsibilities in the organization without implementation or practice in innovation will lead the organization to face difficulties to be socially responsible where innovation capabilities will increase the creativity and efficiency in the company.

The literature highlighted that the relationship between innovation capabilities and firm's social performance could achieve a successful social improvement (Zhang et al., 2019). Moreover, Zhu et al. (2018) stressed that innovation is needed or even necessary to gain social performance. Apart from that, Canh et al. (2019) pointed that innovation is important and even essential to achieve better performance in the organization by making more focus on innovation manufacturing companies have more capability to be successful in gaining social performance by innovation. The findings of the current study are consistent with several prior studies that found similar result regarding the relationship between innovation capabilities and firm's social performance such as (Canh et al., 2019; Bamgbade et al., 2022; Feng et al., 2019; Rothenberg et al., 2017).

Moreover, innovation in business could also increase efficiency in terms of quality improvement and social improvement which will make greater share in the market and achieve client satisfaction (Luo et al., 2015). Referring to Chen et al. (2016) in his study in the leading construction and manufacturing firms have also indicate that,

in green building and sustainability create new business models in developing countries from time to time. Nevertheless, they are also the early adopter of the innovative business system as a way of improving their social sustainability performance in order to meet the needs of clients, stakeholders and implemented government regulations.

It is vital for managers and decision maker of the important manufacturing organizations that control the manufacturing process in the country to be led by effective innovation capability. This implies that investment in innovation activities in process, product, marketing and organization innovation require time to make positive changes in profitability, but it will help with winning customers loyalty and improve social performance. This has been suggested by Hart and Moore (1988), if a firm is unstable, investment is likely to be wasted in long term, and stakeholders would be hesitant to cooperate with the firm.

Manufacturing firms that possess these capabilities by having the ability to integrate key capabilities and resources of their firm to successfully stimulate innovation. Accordingly, attempts to define innovation capability have overlapped with the institutional theory by forcing companies to generate new product or service into their operation in order to be socially responsible. In addition, firm's that have the capability to be innovative will be an advantage in sustainability adoption where firms are recognized as an important dimension to adequately address the production and consumption problems (Bamgbade et al., 2022). Moreover, since sustainability consideration is not limited to the environmental and economic issue alone, social sustainability considerations are important to achieve long-term progress in social performance among community. Therefore, society may expect firms to assume more social responsibility and to help alleviate environmental pressure through innovation capabilities.

The finding of this study is representing that manufacturing companies in Malaysia that espouse innovation within their operation will lead to improve their social performance. Zhu et. (2018) suggested that innovation capabilities will boost corporate reputation, satisfy stockholders and improve the social image through the involvement of community development and environmental practices at the same time. Thus, the consequence of environmental pressures implies changes in the firm's technical systems that require innovative capabilities through supply chain operation. Innovation in process, product, organization and marketing will enable the manufacturing company to follow the changing markets and the idea that it is necessary for a firm to be flexible and adapt services and products offered.

Notable, Schumpeter (1934), stated that innovation plays a critical role in corporate strategy and is recognized as one of the great potentials for a firm's source of sustained growth in the market by making changes in products, processes, business models and/or organizational structures. However, Delgado-Verde et al. (2016), studied the relationship between innovation and firms' social performance among Spanish high and medium high-tech manufacturing firms. The findings of the study confirm that innovation has a positive relationship to company social performance which create a better reputation of the company to the social performance. Therefore, hypothesis 5 in this study was supported.

5.3.6 The Mediating Effect of Innovation Capabilities on the Relationship Between GSCM Practices and firm's Competitive Advantage and Social Performance.

To achieve the research objectives, the mediating effect of innovation capabilities on the relationship between GSCM practises and competitive advantages and social performance was investigated. The results of the study revealed that innovation capabilities partially mediate the relationship between GSCM practices and competitive advantages. Similarly, innovation capabilities mediate the relationship between GSCM practices and social performance among manufacturing companies in Malaysian. This implies that manufacturing firms that implement green practices in their manufacturing process show a higher level of performance to improve innovation capabilities among other competitors in the industry. As a result, they were more engaged in their implementation of green practices. However, the objective was supported in the analysis in chapter four with a significant mediation influence of innovation capabilities between the independent variable and the dependent variable.

This finding is consistent to some extent with the result of a study by Aljuboori et al. (2021) which indicate the influence of innovation capability as mediator between intellectual capital and firm performance to achieve competitive advantages in Malaysian manufacturing firms. Khan et al. (2022) also found that innovation capability had a partial mediation effect on the relationship between GSCM practices and firm competitiveness. Other study has provided empirical evidence that innovation capabilities can play a role as a mediator in different industries and markets. Another study conducted by (Yang et al., 2019), on examining innovation in form of the informal alignment between green supply chain management and green information systems. The finding show GIS enhances innovation capability through its informal alignment

with GSCM, which have direct impacts instead which are conducive to social performance development.

Under innovation capabilities, the results of the present study indicate that innovation will allow firms to establish and explore many new ways to produce, supply and distribute. Therefore, Kaufman et al. (2000), believed that firms can improve their ability to be involved in product innovation and process innovation, provided they carefully manage their relationship with both suppliers and customers. In this matter, innovation capabilities can play an important role in improving and delivering greater performance in the company by engaging in the green supply chain management process which improves the overall performance of the company. The current finding of this study was supported by the assumption of resource-based view (RBV) theory by utilizing the innovation capabilities resources will lead to highly competitive advantages for better performance.

The findings of previous studies indicate that there is a mediating effect of innovation capabilities on the relationship between GSCM practices and competitive advantages (Distanont & Khongmalai, 2018; Gunasekaran et al., 2017; Kafetzopoulos & Psomas, 2015). Moreover, Abu Seman et al. (2019), confirmed that innovation had a partial mediation between GSCM practices and a firm's performance. Another study by Wang (2019), confirmed that innovation capability has a partial mediating effect on the relationship between organization green culture and competitive advantage under environmental pressure. Meanwhile, innovation capabilities will not only enhance the environmental performance, which can not only minimize production waste and environmental pollution but also strengthen the overall corporate green image and reputation. Therefore, this indicates that innovation capabilities mediate the relationship between GSCM practices and social performance.

Even though there are many studies had investigated the relationship between several structural factors and competitive advantage, the model of the present study is the first to examine the structural factors in one model. Moreover, the mediating effect of innovation capabilities on the relationship among the study variable was also investigated in the model to meet the study objectives and answer the research questions. The results of the current study revealed that innovation capabilities is a mechanism that explains how the implementation of green supply chain management practices influence company financial, environmental and social performance. Hence, hypothesis six in the present study was supported. Besides, these results were aligned with Huber et al. (2007), indicated that the integration of technology innovation in GSCM assist to track the process of green initiatives practised in the company which leads automatically increase the opportunities and chances to archive company's goals and objectives to enhance their performance in the global market.

Lastly, the findings of the present study showed that innovation capabilities is an important mechanism in mediating the relationship between GSCM practices, competitive advantages, and social performance. Moreover, it can improve the performance of the company through implementing green practices in the manufacturing process. The current study enhances the knowledge and understanding regarding the effect of innovation capabilities as a mediator between GSCM practices and competitive advantages and social performance in Malaysian manufacturing industry. In short, firms are required to pay more attention to the latest technologies to improve and change their traditional process in the implementation of GSCM practices to improve innovative and effective production and process to achieve higher performance than other competitors.

This study achieved its objectives and the results show acceptance of all hypotheses. Equally, the results presented in this study are of great value to the manufacturing industry of the study. Accordingly, the findings could provide insights on how to increase green supply chain management practices which will benefit the organization to achieve competitive advantages and improve social performance. The results of the study including the main findings of the fourth chapter are shown in Table

5.4 Implications of the Study

The present research has both practical and theoretical implications that are presented in the next sections.

5.4.1 Theoretical Implications

Theoretically, the current study was designed to investigate the potential relationship through a complex model that comprises four main variables, namely green supply chain management practices as independent variables, comparative advantages and social performance as the dependent variable and finally innovation capabilities was considered the mediating variable. There are only a few studies which have examined the role of innovation capabilities on the relationship GSCM practise and firm's competitive advantages as well as social performance far (Shafique et al., 2017). Thus, the present study adds to the existing body of knowledge by investigating mediation role of innovation capabilities in the relationship between GSCM practices, firm's competitive advantages and social performance.

The background of this study encompasses the combination of the theory of resource-based view and institutional theory. Theory of based view was first employed by Penrose in 1959 which emphasizes the internal resources of a company where company growth will be based on the company's resources and limited managerial

resources (Penrose, 2009). This theory is frequently used in scientific research to identify and describe the utilization of resources in the company to gain competitive advantages (Shafique et al., 2017). In this study, it adds to the growing body of research literature for manufacturing entrepreneurs and managers to get a better understanding regarding their fundamental role in achieving competitiveness and improvement in social performance through implementing green practises and the capability to be innovative.

Resource based view theory is aimed to identify and analyse firm's resource and capabilities to develop their based on their assets to gain competitive advantage (Fikru, 2016). However, by knowing the capabilities and resource of the company, it allows them to realize their strength and weakness in the industry and that will add value to make good strategy to win competitive advantage (Rivard et al., 2006). In this study, GSCM practices enables Malaysian manufacturing companies to understand and analyse their assets in effective way which make their procedures easy to gain competitive advantage. Furthermore, theory of RBV can help the positive impact of green technology innovation on firm's competitiveness. Thus, having the knowledge and capabilities for firm innovation and its resource that falls well within the RBV dimension (Sarkisa et al., 2010). However, implementing green supply chain management through innovation capabilities will further support the value, rarity, inimitability and no substitutability aspect of the RBV theory which enable manufacturing firm to achieve competitive advantages.

On the other hand, institutional theory reflects the pressure of stakeholders such as the community, government, investors, suppliers, customers, and employees (DiMaggio & Powell, 1983). Consequently, these pressures drivers the company to adopt green supply chain management initiatives and practices that strive to achieve

social legitimacy (Chen et al., 2012). Thus, the current study adds to the growing body of research literature for future managers and employees to get a better understanding of implementing green supply chain management practices which help the company to grow their performance among rivals and their level of willingness to improve social aspects among customers, government and stakeholders.

Furthermore, in this study institutional theory examines how external pressures influence a firm to adopt an organizational practice that can be used to study how a company addresses green issues in the supply chain operation. The theory will assist manufacturing firm to gain trust and support from external institutions and key stockholders by considering the interest of external parties rather than just the firm's economic goals (Prakash, 2021). In addition, the theory will offer overarching as how to respond to institutional pressure in the perspective of the environment to improve social performance. Therefore, the growing demand for sustainable products and the changes in technology will force the manufacturing company to be flexible and adopt changes enough to be innovative in the manufacturing process and that will lead to protect the environment and people (Chen et al., 2012). Institutional pressure and innovation capabilities are not constant which they are rapidly changing. Therefore, manufacturing firms in Malaysia are in need to align their practices with the institutional pressure and innovation to enhance their performance.

Many studies in different organizations had investigated the relationship between GSCM practices and competitive advantages (Jabbour et al., 2016; KAFA et al., 2013; Luthra et al., 2016; Mitra & Datta, 2014; Qorri et al., 2018; Rasit et al., 2019; Seman et al., 2018; Shamsuddin et al., 2017; Tramarico et al., 2017; Wan Mahmood et al., 2012; Younis et al., 2019; Zhu, Sarkis, Lai, et al., 2008). Nevertheless, the literature lacks studies that utilize innovation capabilities as a mediating mechanism in the

relationship between the implementation of GSCM practices, competitive advantages, and social performance. However, the findings of this study addressed this gap by proving that green supply chain management practices also indirectly affect competitive advantages and social performance through innovation capabilities.

Despite the consistent results of previous studies on the influence of GSCM practices on firm's competitive advantages and social performance in the Western region (e.g Vanalle et al., 2017; Kumar et al., 2018; Qorri et al., 2018), there have been lack of empirical evidence in Malaysian manufacturing industry. Thus, testing the proposed hypothesis of the study among manufacturing firms in Malaysia added additional knowledge and contribution of literature to that area of study.

5.4.2 Practical Implications

From a practical perspective, the results of the current study have important implications for the managers of the manufacturing companies in Malaysia. The current study has delivered many practical perceptions regarding GSCM practices, innovation capabilities, competitive advantages and social performance in Malaysian manufacturing industry. In line with that understanding, the results of the current study have important practical implications for developing the traditional supply chain management process which it will help to reduce the environmental load that will lead increase innovation and achieve a better position in the manufacturing industry among other competitors and allow the company to improve their social performance.

The current results of this study it will provide practical implication for both practitioners in the manufacturing context and policy makers. Most producers' priorities in developing country such as Malaysia are to improve their economic situation and avoid economic risks. Hart (1995) argued that it is not possible for business owners that

pursue short-term profits to be successful in the long run by ignoring the environment. This study reports the importance of acting for both parties to have win principle where profit objectives overlap with not only achieving competitiveness and profit maximization but also considering social benefits. Furthermore, with this study, managers will be able to obtain information about the relative benefits of each green practice

In terms of innovation capabilities, the industry the Ministry of International Trade and Industry “MITI” from 2019 to 2021 the government is allocating a large amount of money to enhance and assist the transition and migration to Industry 4.0., which aims to transform the manufacturing sector and related services within the period from 2018 to 2025 to smart manufacturing and investment in the high technology industry, Therefore, the implementation of GSCM practices will contribute to the utilization of the technologies which will allow the company to bring connection between machine and human begins in the cyber-physical systems and smart manufacturing.

GSCM is gaining acceptance among manufacturing firms in Malaysia in their quest to improve their market position among other competitors and improve their social image. Therefore, the current study also suggests that managers of Malaysian manufacturing companies could adopt a strategy that enhances the implementation of green supply chain management practices in their manufacturing process to reduce the negative impact to the environment which in turn, will enhance the performance of the company to achieve competitive advantages improve social performance.

Furthermore, the results of this study are more relevant to the manufacturing industry in Malaysia, which is responsible for the development and strengthening of the impact on the environment, social and economic performance. However, the Malaysian

government proposed the Twelfth Malaysia Plan, 2021-2025 (12MP), which aimed to encompass three dimensions, namely environmental sustainability, economic empowerment and social re-engineering which will be supported by governance and policy tools which indicate that Malaysia is aiming to go green in the coming years to improve the economic, environment and social performance.

Concerning the result of this study, if managers of manufacturing companies in Malaysia utilize these findings by setting up strategies to promote green supply chain management practices and maximize innovation capabilities, this will enhance the manufacturing process to achieve competitive advantages and improve social performance. The results can be also useful for supporting the Malaysian manufacturing industry to increase their level of protecting the environment which also helps to achieve better financial outcomes and eventually to assist Malaysia to achieve its Twelfth Malaysia Plan 2021- 2025.

5.5 Limitations and Suggestions for Future Research

Although all objectives of this study are achieved, some limitations should be addressed and useful suggestions should be offered for future research. However, through the stages of data collection, researchers usually would be facing some obstacles. In this section, the researcher will discuss some of the obstacles that were faced in this study. First, with the huge assistance of FMM and SIRIM, the data were collected through questionnaires distributed online to the manufacturing companies certified with ISO 14001 in Malaysia. Therefore, due to the Covid-19 pandemic, the researcher was not able to interview the sample of the study and there were many issues faced during data distribution and collection where some of the manufacturing companies were forced to close in lockdown for a specific period. Moreover, states

travel restrictions in Malaysia creates difficulties to visit the factories to distribute and collect data which left the researcher to communicate with factories only through emails and calls. This issue led to a delay in data collection which effect the selected time for data collection.

Furthermore, the limitation in the current study applied a cross-sectional design, rather than longitudinal design methodology by which the data were gathered at one point in time. This type of research limits the ability to establish a fundamental relationship of all the variables in the study because it is not possible to make causal inferences from the population. Therefore, future researchers may consider a longitudinal study to validate the current findings concerning the relationship between GSCM practices, innovation capabilities, competitive advantages, and social performance.

Next, based on the descriptive findings, another limitation is the high number of male respondents which constituted approximately 74% of the data, while the female respondents were only approximately 26% of the data collected. The gender composition in the manufacturing industry may reflect bias in the results due to the effect of gender on actual behaviour. Therefore, the findings of the current study should be considered and interpreted cautiously.

Additionally, future researches could employ similar variables for the independent and dependant variables but using different perspective and dimensions. In this regard, it has been affirmed that implementation of GSCM practices effectively will add value to business and it allow them to achieve competitive advantages and improve social performance. Indeed, investigating the different perspective could give different findings of firm's performance innovation capabilities mediation that could be either significantly or insignificantly firm's competitiveness and social performance.

Similarly, both researchers and practitioners should investigate the importance of implementing green practices in the manufacturing process as the global market demand for sustainable products is increasing remarkably and that will lead to improve firm's performance among other competitors. Accordingly, the challenges faced by the Malaysian manufacturers to move green, it is, therefore, imperative for the Malaysian manufacturers to consider adopting the GSCMP to enhance manufacturing competitiveness and improve social performance especially through the variables of GSCM practices with the mediation of innovation capabilities

Lastly, this study only concentrated on the manufacturing companies in Malaysia (specifically the certified companies with ISO14001) and did not include other industries such as hospitality, service sector, and trading industry. Thus, future research may in the results of this study not be generalized to employees in other industries as they might have different characteristics and work culture which may require different types of green supply chain management practices and different innovation capabilities approaches to enhance social performance and to achieve competitive advantages. Therefore, future studies should go for a more diverse sample, such as extended to the service industry because manufacturing firms might have different GSCM practices and outcomes compared to service firms.

5.6 Conclusion

Organizational leaders in today's world have to be aware of the importance of successful implementation for sustainable production in order to improve organization performance. To that end, the demand for sustainable and recyclable products is growing significantly due to the compliance with legal regulations and growing environmental awareness. In line with this understanding, the current study focused on

the complex impact of impact of green supply chain management practices as exogenous variable, on firm's competitive advantages and social performance as the endogenous variable. Furthermore, it investigated the role of innovation capabilities in mediating the relationship between green supply chain management practices, competitive advantages and social performance.

This study found that the relationship between green supply chain management practices and competitive advantages was significant. However, green supply chain management practices significantly influence social performance and green supply chain management practices were found to have a significant influence on innovation capabilities. In addition, innovation capability is found to have a significant influence on both competitive advantages and social performance. Moreover, this study found the mediating role of innovation capabilities as a mechanism that explains the relationship between green supply chain management practices and competitive advantages and the relationship between green supply chain management practices and social performance.

The study has some contributions to the theory development. First, this study provides empirical evidence about the role of innovation capabilities as a mediator in the relationship between green supply chain management practices and competitive advantages and social performance. Second, this study has provided empirical evidence about the link between green supply chain management practices, innovation capabilities, competitive advantages and social performance in the context of the manufacturing industry in Malaysia.

In practice, the current study suggested that managers of manufacturing companies in Malaysian have to adopt a strategy that enhances the innovation capabilities of the manufacturing process to achieve competitive advantages and improve social performance, which in turn, will enhance the performance and effectiveness of Malaysian manufacturing industry as well.