Does Customer Loyalty Impact on Operational Management and Product Market Performance?

A Malaysian Electronic Manufacturing Perspective

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DECLARATION

I hereby declare that the case study is based on my original work except for quotations and citations that have been duly acknowledged. I also declare it has not been previously or concurrently submitted for any other degree at Universiti Tun Abdul Razak (UNIRAZAK) or other institution.

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Abstract of the project paper submitted to the Senate of Universiti Tun Abdul Razak in partial fulfilment of the requirements for the Master of Business Administration

Does Customer Loyalty Impact on Operational Management and Product Market Performance? A Malaysian Electronic Manufacturing Perspective

By

Segar Nadason

This study aims to examine the mediating effect of customer loyalty in the relationship between quality management, inventory management, and supply chain management on the product market performance. Therefore, this study was very significant in explaining how effective inventory management, quality management, and supply chain management to the product market performance. This research was done in one of the electronic manufacturing companies which is in Penang, Malaysia. Therefore, the population in this manufacturing company was 700 employees. The questionnaire was prepared and administered to employees in this manufacturing company. Non probability sampling was applied on the population of 700 employees and to come up with a sample of 65 respondents based on PLS SEM model to study the relationship and impact of quality management, inventory management, supply chain management and customer loyalty on the product market performance. The research was done using various statistical methods and the data was analyzed using SMART PLS3. It was found that the aspects of quality management, inventory management, supply chain management, customer loyalty and product market performance have significant impact on the product market performance. The findings for seven (7) hypotheses showed a significant relationship for all variables. Therefore, it is recommended for business operators and related stakeholders to have serious enhancement of supply chain, inventory management, and quality management processes on their business or organizational activities to increase the customer loyalty and product market performance for the long-term viability.

CHAPTER 1: INTRODUCTION

1.1 Research Background

Malaysia is one of the countries that is performing very well in the manufacturing of different products which are consumed locally, and others being exported to foreign countries (Kee et al. 2022). This country is massively involved in the production of products such as electrical equipment, medical apparatus, mineral fuels, machinery such as computers, and many others. Malaysia's manufacturing sales in January 2022 stood at RM139 billion, growing 13.1% as compared to the previous year. The rise in sales value in January 2022 was driven by the increase in Food, Beverages & Tobacco Products (20.6%), Petroleum, Chemical, Rubber & Plastic Products (15.7%), and Electrical & Electronics Products (10.6%). (Monthly Manufacturing Statistic Malaysia, January 2022 by Department of Statistics of Malaysia). All these categories of products highly contribute to the increase of the Gross domestic product in Malaysia which directly results in economic growth. Hence, this study was motivated by the desire of investigating the impact of customers' loyalty on operational management and product market performance within the Malaysian manufacturing sector. There is a need to address the gap that exists between the operational management and product market performance within the Malaysian manufacturing sector, and customer loyalty. A variety of statistical techniques will be applied to study the influence of customer loyalty on operational management and product market performance within the Malaysian manufacturing sector.

Quality management is a very essential factor when it comes to the product market performance and the operational management within a given industry. There are several attributes that determine the rate of satisfaction among the customers that significantly affect the product market performance (Othman et al. 2020). One of the factors which can determine the level of loyalty among the customers is quality management. The quality of a given product or service matters a lot as far as the product market performance is concerned. When the is poor quality management over a given product or service the customers or clients can become not satisfied thus interfering with the market. Another element that significantly determines the loyalty of customers over a given commodity or

service is inventory management. Inventory consists of goods and materials which are owned by a given business or organization (Kee et al. 2022). Therefore, the discipline of enhancing proper management of the goods and materials within an organization plays a critical role when it comes to product market performance. Another essential element that influences the level of product market performance is supply chain management (Pérez-Morón et al. 2022). The practice of supply chain management involves the movements of goods and services between businesses and various locations. Hence, supply chain management is a very important factor of consideration in the product market performance.

There is a need to address the gap that exists between the operational management within the organization and product market performance within the Malaysian manufacturing sector, and the loyalty of customers. A variety of statistical methods will be applied to study the impact of quality management, inventory management, and supply chain management on operational management and product market performance within the Malaysian manufacturing sector.

1.2 Problem Statement

The aspect to do with quality management, inventory management, and supply chain management (operations management dimension) have got a significant influence on the customer loyalty and product market performance within the Malaysian manufacturing sector (Janahi and Al Mubarak, 2017). The aspect of quality has been one of the main concerns as far as the element of market performance is concerned. When the quality of a given product is poor, then the product market performance will be very low (Othman et al. 2022). Therefore, the quality management within the manufacturing industry directly affects its product market performance (Lee et al. 2022). When the quality of a certain product is low, then the loyalty of the customers will reduce (Othman et al. 2022). Inventory management is also one of the practices that needs a lot of attention (Tan and Kim, 2021). When the assets are not well-recorded, then the product market performance will be negatively affected (Janahi and Al Mubarak, 2017). The supply chain management also has significant impact on the product market performance and therefore when the

supply and distribution of product is not consistent, then the product market performance will be relatively low (Othman et al. 2020).

The aspect of product quality management has got positive effect on the product market performance (Mohamed et al. 2022). When the degree of loyalty among the customers is high, it implies that the organization will experience significant magnitude of sales on its product resulting to good product market performance (Jalloh, 2020). The retention of the customers is a key factor that will guarantee stable product market performance. The rate of product market performance increases with the increase in the level of customers' loyalty.

When manufacturing company produces low quality products, the level of customers loyalty will go down thus leading low product market performance (Janahi & Al Mubarak, 2017). The degree of quality management and customer loyalty are determined by the quality of products or services given by a company (Androniceanu, 2017; Lee et al. 2022). Poor quality products can be caused by poor manufacturing process (Lee et al. 2022). Manufacturing or production process is critical event that require well-balancing of raw materials in terms of quantity and proportionality with some good timing (Mandt et al. 2022). When there is efficient production process within the organization, then there is high likelihood that the quality of products will be good (Mohammed et al. 2022). On the other hand, ambiguous production process can interfere with the quality of given products (Mohammed et al. 2022). Therefore, this clarification clearly indicates that poor production process especially in manufacturing companies is the key cause of poor-quality products (Mutambo et al. 2022) that demises quality management. The diminished degree of customer loyalty in turn results to some negative impact on product market performance (Rego et al. 2022). Moreover, quality management also give impact on product market performance (Prajogo et al. 2022).

1.3 Research Objectives

The objectives of this research on the impact of the customers' loyalty on the operational management and product market performance within the Malaysian manufacturing sector are as follows:

RO1: To examine the relationship between quality management and product market performance in the Malaysian manufacturing industry.

RO2: To examine the relationship between inventory management and product market performance in the Malaysian manufacturing industry.

RO3: To examine the relationship between supply chain management and product market performance in the Malaysian manufacturing industry.

RO4: To examine the relationship between customer loyalty and product market performance in the Malaysian manufacturing industry.

RO5: To examine the mediating effect of customer loyalty on the relationship between quality management and product market performance in the Malaysian manufacturing industry.

RO6: To examine the mediating effect of customer loyalty on the relationship between inventory management and product market performance in the Malaysian manufacturing industry.

RO7: To examine the mediating effect of customer loyalty on the relationship between supply chain management and product market performance in the Malaysian manufacturing industry.

1.4 Research Questions

RQ1. To what extent does quality management have a relationship with product-market performance in the Malaysian manufacturing sector?

RQ2. To what extent does inventory management have a relationship with product-market performance in the Malaysian manufacturing sector?

RQ3. To what extent does supply chain management has a relationship with product-market performance in the Malaysian manufacturing sector?

RQ4 To what extent does customer loyalty has a relationship with product-market performance in the Malaysian manufacturing sector?

RQ5: Does the customers' loyalty has mediating effect on the relationship between quality management and product market performance in the Malaysian manufacturing industry?

RQ6: Does the customers' loyalty has mediating effect on the relationship between inventory management and product market performance in the Malaysian manufacturing industry.

RQ7: Does the customers' loyalty has mediating effect on the relationship between supply chain management and product market performance in the Malaysian manufacturing industry?

1.5 Scope and the limitation of the Study

This will involve the collection of data from a significant number of participants on the impact of quality management, inventory management, and supply chain management on the product market performance. This research will be conducted on electronic manufacturing industries in Malaysia. Different employees including the ones on the management board will approach to provide appropriate information concerning the factors influencing the product market performance in Malaysian manufacturing industry. This study will be conducted within a duration of one week. This study will only involve a population of 700 employees where a sample of participants will be used to collect data

analysis. A sample of 65 participants will be selected from the population of 700 employees to carry on with the research. From the selected sample of 65 participants, different categories of individuals will be selected in terms of gender, age distribution, work experience, and other related factors. The limitation of this study is that this study is only limited on Malaysian electronic manufacturing industries to study the factors that affect the product market performance. The information collected from one surrounding can lead to biased information.

1.6 Significance of the Study

This study will help the organizations and employers to understand the impact of quality management, inventory management, and supply chain management (operations management) on customer loyalty and product market performance within the Malaysian manufacturing sector (Mahamed et al. 2022). Different stakeholders from the manufacturing industries in Malaysia will get to understand the importance of having proper supply chain management within the organization. Through this study, research will be conducted to find out how effective the aspect of supply chain management is on the customer loyalty and product market performance within the Malaysian manufacturing sector. This study will also provide room to research the influence of inventory management on product market performance within the Malaysian manufacturing sector. This study also enlightens the management of different manufacturing industries in Malaysia on the essence of quality product. The quality of a given product or service determines the performance of their market. The research of this study will also help to address how important the element of operational management towards customer loyalty and product market performance within the Malaysian manufacturing sector (Golkap et al. 2022). This study will also provide room to explain the aspect of customers' loyalty that mediate quality management, inventory management, supply chain, and product management performance in the Malaysian manufacturing industry (Jalloh, 2020). The manufacturing industry of Malaysia will be studied in an extensive manner in terms of the variety of products being manufactured. The research will be also conducted on the general performance of the manufacturing sector in Malaysia during different periods. The research on the product market performance and operational management will be done

by making some comparisons on the available statistics using different reports and journals. Through this study, appropriate application of statistical methods will be done to investigate the relationship between quality management, inventory management, supply chain, and product market performance in Malaysia. There will be also a study of the data collection methods and how sampling can be done on the collected information to come up with a reliable dataset.

Customer loyalty also plays a very significant role when it comes to the relationship between supply chain management and product market performance (Pérez-Morón et al. 2022). The aspect of customer loyalty has some influence on supply chain management which in turn affects the product market performance within a given organization (Lee et al. 2022). When there is a steady flow and distribution of products from the manufacturing center to the market, most of the customers demand will be met thus promoting their loyalty (Shinde et al. 2018). Having the fact that proper supply chain management plays a significant role on the product market performance, the aspect of quality management plays a significant role on the relationship between supply chain management and product market performance (Androniceanu, 2017; Lee et al. 2022).

The customer's loyalty to the company offerings (Torres-Moraga et al. 2008) based on the quality management of the company (Androniceanu, 2017). From the companies' perspective, implementing customer loyalty is helpful for companies' market performance as it is claimed that 5% increase in customer retention leads to an increase of profits by 25% to 95% (Sällberg, 2004). Customer loyalty strategy can help companies to save money and have better market performance on a variety of costs (Sällberg, 2004). It is seen that customer enhances marketing performance as repeat buying behavior by customer leads to increase sales, gain in market shares and improves profitability of the organization (Omodafe and Akparobi, 2013). Assael (1992) expressed the view that customer loyalty is a favorable attitude towards a product, resulting in consistent usage of the brand overtime thus enhancing and improving marketing performance.

1.7 Operational definitions

Quality Management has been known as a technique for improving organizational performance. The quality management method has been applied by a variety of organizations such as healthcare, public administration, manufacturing firms, and many others (Mandt et al. 2022). Hence, quality management refers to a practice that ensures the consistency of goods and services within the organization (Kee et al. 2022).

Inventory management is a very critical practice that is applied in business activities and even the Agricultural sector. Inventory management has highly been used to facilitate proper accountability of the available materials (Islam et al. 2020). Therefore, inventory management can be defined as the discipline that involves the management of goods and materials that a particular business or organization holds (Emmanuel and Priscilla, 2022).

Supply chain management is necessary in form of business organizations especially manufacturing companies as it enhances the supply of products to different destinations (Richey et al. 2022). Therefore, supply chain management is a practice that involves the management of the flow of goods and services between businesses and different locations (Gökalp et al. 2022).

Customer Loyalty is a customer's demonstration of faithful adherence to an institution or merchant despite the occasional error or indifferent service (Szűts and Tóth, 2008). (Anselmsson et al. 2007) asserted that customer loyalty offers several benefits: it creates entry barriers for competing brands; makes it possible to charge higher prices; gives the company time to react on competitors innovations; and function as a buffer in times of intensive price competition.

Product market performance is a core determinant of the performance of a particular organization as it provides a measure of business profitability (Mandt et al. 2022). Product market performance is a relationship between costs and selling price, the output of sales, production efficiency, products progressiveness, and many others (Mandt et al. 2022). Therefore, product market performance facilitates room for stakeholders to make

comparison on the selling price and costs incurred to acquire certain product (Richey et al. 2022).

1.8 Organization of Chapters

The proposed research shall be structured in five chapters.

The first chapter shall cover the introductory part with the inclusion of subheadings such as problem statement, research objectives, hypotheses, the importance of the research, and constrain of the research.

The second portion shall cover the literature review of the theories supporting the research variables. It will also cover the empirical view of the research intention and present the conceptual framework.

The third section will present the research philosophy and methodology as proposed in this study.

The fourth chapter shall present the data analysis results and discussions of the findings.

The fifth section shall present the research synopsis, conclusion, and commendation.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This study will enhance the investigation of three factors that enhances customer loyalty These three elements include quality management, operational management, and inventory management. Malaysia is one of the countries which has highly invested in the manufacturing sector, where a variety of products are produced (Emmanuel and Priscilla, 2022). The manufacturing of different products in Malaysia has highly contributed to increased Gross Domestic Product. The manufacturing sector also provides some employment opportunities to a significant number of employees. Therefore, it is necessary to explore the impact of customer loyalty on product-market management in relation to quality management, inventory management, and operational management. The market of a given product can only improve when the rate of satisfaction is high.

2.2 Research Variables

2.2.1 Quality Management

The quality of a given product or service matters a lot when it comes to their marketing. When the quality of a product is good, then the customers will get satisfied leading to a positive impact on the product market performance (Gökalp et al. 2022). However, when the quality of a given product is poor, the customers from the market domain will not get satisfied thus leading to some negative influence on the product market performance (Othman et al. 2020). The manufacturing sector in Malaysia has been actively involved in the production of quality products that attract the market even at the international level. There is a quality production of electronics, medical apparatus, medical apparatus, and many others this attracts customers from different destinations of the world (Kee et al. 2022). Hence, the aspect to do with Quality management has got a significant impact on the operational management and product market performance within the Malaysian manufacturing sector. Malaysia has been widely known on the production of Quality products especially from the manufacturing industries. A good example of quality

manufacturing in Malaysia is mineral fuel that include oil. The oil manufactured in Malaysia is of good quality making it attract several serous investors from different countries globally. Malaysia is also widely known on the production of quality machinery. There are variety of quality computers produced in Malaysia which have got huge market demand across the world. There is also a wider massive production of vegetables and animals' fats from the Malaysian manufacturing sector. The quality production or manufacturing of animals and vegetables fats also attracts most of the customers leading to high market performance. Quality medical apparatus are also produced in Malaysia which are usually exported to different medical centers across the world. Therefore, all these forms of productions in Malaysia clearly signifies that the quality product management is very important when it comes to product market performance.

2.2.2 Inventory Management

Inventory management is a discipline that involves the management of the goods and materials within an organization or business (Jalloh et al. 2020). When the goods and materials within a given business are not well managed or taken care of, some loss might be encountered resulting in a negative impact on the operational management and product market performance within the Malaysian manufacturing sector (Islam et al. 2020). Proper inventory management involves record-taking to enable one to track the availability of goods and resources. Therefore, the aspect to do with inventory management in customer satisfaction has got a significant impact on the operational management and product market performance within the Malaysian manufacturing sector (Tan and Kim, 2021). Hence, it is necessary for one to have proper practice of inventory management to promote product market performance. Some of the inventory that can be explained from the manufacturing industry in Malaysia include items such a raw material used during production such as mineral fuel (Mohammed et al. 2022). The raw material to do with mineral fuel is a raw material that is widely involved in the production of oil in Malaysia. Therefore, proper management of mineral fuel as one of the inventories in Malaysia plays a significant role when it comes to the market performance of oil. Another inventory that is very critical in manufacturing industry in Malaysia is warehousing. The

aspect of warehousing in Malaysia is very essential is it to provide room to enhance proper storage of the variety of produced goods from the manufacturing companies.

2.2.3 Supply Chain Management

Supply chain management refers to the practice of supplying products from the point of production to other destinations. The operation of industries in terms of movements or supply of products should be managed in an appropriate manner to ensure that the demands of the market are met in terms of delivery time and quantity (Mohamed et al. 2022). The appropriate supply chain management within the manufacturing sector can contribute to the timely production of products this meet the desires of customers. Most of the manufacturing companies in Malaysia have got good supply chain management which contributes to increased product performance (Richey et al. 2020). Hence, the aspect of supply chain management has got a significant effect on the product market performance within the Malaysian manufacturing sector. There are number of benefits because of proper supply chain management within the manufacturing industry (Gökalp et al. 2022). One of the benefits is that the practice of good supply chain management promotes good cashflow. Proper cashflow can be maintained when there is consistent supply of goods and services from the manufacturing center to the market or targeted destinations. Proper supply management process also promotes supplier performance within the manufacturing industry and other related industries since it guarantees visibility and communication (Mandt et al. 2022). The practice of proper supply chain management also promotes process efficiency. A unified database of supply chain activities and suppliers by enhancing connection of vendor management and automation of all repeatable steps.

2.2.4 Customer Loyalty

The element of Customer's loyalty is very important especially when it comes to the general performance of organization (Islam et al. 2020). Customers' loyalty is very critical as it provides measure of customers' likelihood to get back to a given brand of product or service provided by a certain company (Lee et al. 2022). The level of customers' loyalty

is determined by several factors such as the value of a given product or service, the degree of satisfaction, and customers' experience. These three determinants are mutually connected to one another as they play along with the take of the customers (Mandt et al. 2022). When customers get positive experience with the services provided by a given form or company, they end up being loyal to their products and services. Different stakeholders within the organization need to handle the customers with a lot of dignity, hospitality, and in an amicable manner. The positive experience by customers will motivate them to get back to the organization thus promoting their degree of Customers' loyalty (Golkap et al. 2022). The quality of a given product also play a very significant role on the level of loyalty among the customers. When the customers are contented and happy with the interaction, they have with the stakeholders from a given organization, they will end being loyal to that firm.

2.2.5 Product Market Performance

Marketing is an essential factor on the survival and continuation of a given organization. When the product market performance of a given organization is at the peak, then the higher rate of profitability will be experienced (Islam et al. 2022). The product market performance is influenced by some significant number of factors. The product market performance within a given industry is highly by the quality of a certain product (Golkap et al. 2022). High quality product management has higher likelihood of resulting to considerable magnitude of sales (Tan and Kim, 2021). However, when the quality of a given product is not appealing before customers then the product market performance willy relatively goes down. The aspect of inventory within the organization also has significant impact on the product market performance (Emmanuel and Priscilla, 2022). The inventory within the company widely covers the assets and raw materials necessary for production process. Therefore, when there is proper management of inventory supports efficient production of products that can lead to proper product market performance.

2.3 Literature Gaps

Studies on the effects customer loyalty had been conducted in Malaysia in the traditional marketing model in travel services (Othman and Harun, 2020) by integrating communication and after sales services. Studies also conducted on the effect of service quality on customer loyalty (Perez-Moron, 2020) in the case study of Starbucks in Malaysia (Kee, 2022) had studied the contributing factors to customer loyalty during the pandemic in the case study of Food panda of Malaysia and Nigeria. There are also studies done on the determinants of service quality and its effect on customer loyalty in private banking sector (Islam et al. 2020; Gokalp et al. 2022). According to the literatures reviewed, most of the researcher had done studies on the customer loyalty on various industries but there are limited studies specific on the customer loyalty impact on operation management and product market performance in a Malaysian manufacturing perspective (Kee, 2022). Therefore, there is a need to do research on the findings of customer loyalty impact on the operation management and market performance of manufacturing industries.

2.4 Underpinning Theories

2.4.1 Customer Loyalty Theory

The Customers loyalty theory attempts to address the factors which drive the loyalty of customers towards the services and products offered by organizations (Islam et al. 2022). This theory is commonly used to carry out evaluations on the determinants of customers loyalty and its impact on an organization or business with the regard to the product market performance. This theory suggests that the loyalty of the customers is influenced by extent of product quality. Therefore, good quality product attracts and retains more customers thus promoting customers' loyalty. Therefore, this articulation provides a concrete concern that there is significant connection between product quality management and the rate of customers' satisfaction. When the customers are not satisfied with the quality of a given product, then the product market performance will generally go down (Mandt et al. 2022). Through the Customers loyalty theory, it is also

evidenced that the aspect or supply chain management is very critical on the customers' loyalty. When there is steady supply of goods from the center of manufacturing, the customers will be highly satisfied thus encouraging them to keep on relying on the products. Proper supply chain process guarantees efficient supply of products to consumers due to reliability. Therefore, the Customers loyalty theory clearly supports that the aspects of quality management, supply chain management and inventory management are essential components that are directly linked with the aspect of customers' loyalty.

2.4.2 Consistency Theory

This Consistency theory states that humans generally like consistency in manner that they want values, beliefs, and attitude. People shun uncertainty since it leads to discomfort (O'Hern, Akdeniz and Du, 2022). When something is out of place, individuals tend to regain that balance and to get some sense of discomfort. Therefore, there theory can be applied on the product market performance especially where the supply chain management is concerned (Mandt et al. 2022). The supply of products should have high level of consistency to meet the daily demands of customers (Zhou et al. 2020). This theory also suggests that the management of different organizations should remain consistent with their product quality to promote good product market performance as when the quality of a given product is not consistent, the customers might end up developing some doubts thus resulting to poor product market performance (Othman et al. 2020). This aspect of consistency should also be upheld on inventory management (O'Hern, Akdeniz and Du, 2022). The raw materials and other related assets within the organization should remain consistent to maintain the required rate of production which can promote product market performance (O'Hern, Akdeniz and Du, 2022).

2.5 Conceptual framework

The conceptual framework (Figure 1) for the study of the impact of quality management, inventory management, supply chain management, and product market performance within the Malaysian manufacturing sector can be supported by the customers' loyalty theory. The conceptual framework provides an overview on the significant relationship between product quality management, supply chain management, inventory management, and the aspect of product market performance. The customers' loyalty theory states that there are basic factors that play a significant role in the market of a given product or service (Mandt et al. 2022). This study will involve three independent variables, one mediating variable, and one dependent variable. The dependent variable of this study will include the aspects of product market performance within the Malaysian manufacturing sector (Othman et al. 2020). On the other hand, the independent variables of this research will include quality management, inventory management, and supply chain management (Pérez-Morón et al. 2022). The consistency theory can also be used to provide link between customer's loyalty, supply chain management, and product market performance. When there is consistency on the supply of products, the level of customers loyalty will go high resulting to positive product market performance (Othman et al. 2020). This clarification from the consistency theory supports the claim that customers loyalty aspect plays a mediating role on the relationship between supply chain management and product market performance (O'Hern, Akdeniz and Du, 2022). Hence, the conceptual framework (Figure 1) over the impact of quality management, inventory management, and supply chain management on the product market performance can be represented using the diagram shown below:

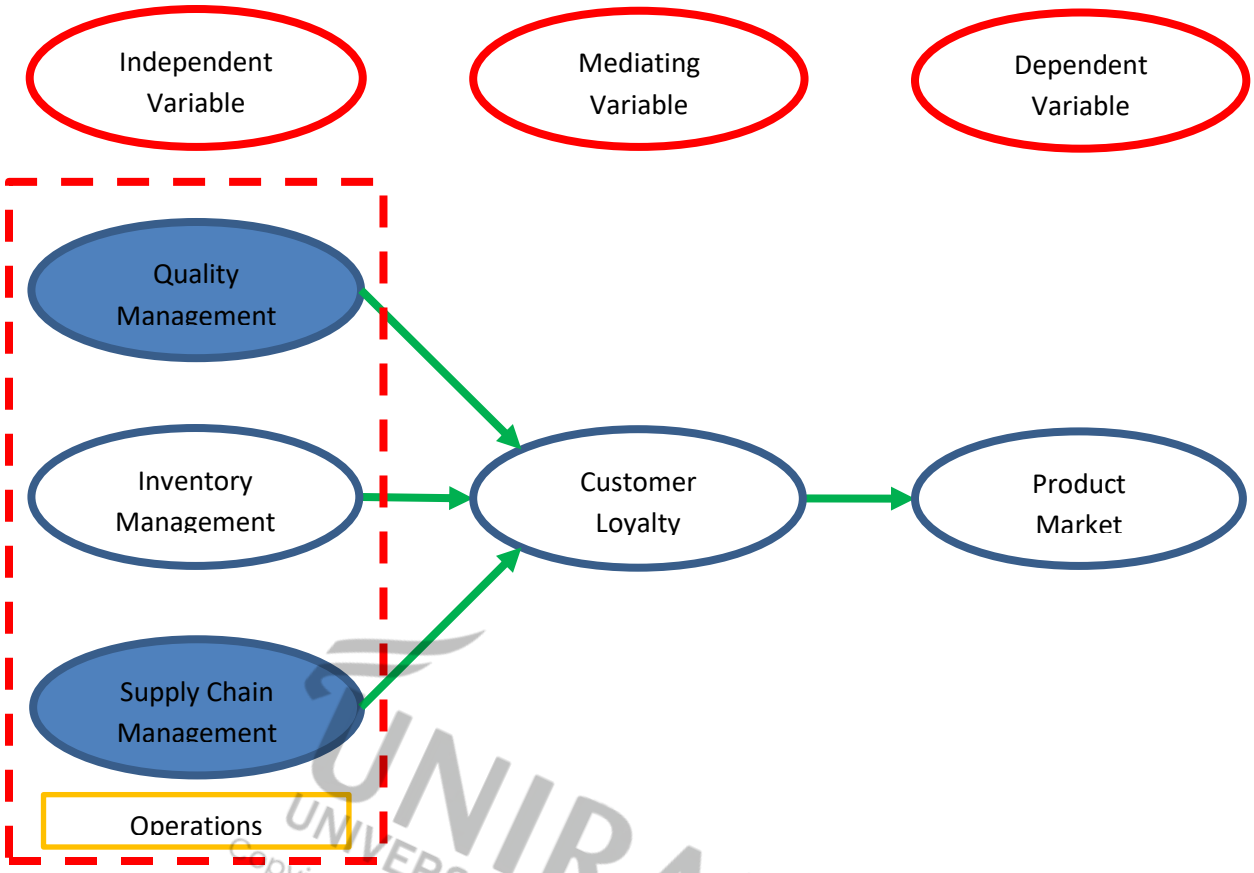

Figure 1: Does Customer Loyalty Impact on Operational Management and Product Market Performance? A Malaysian *Electronic Manufacturing Perspective*

2.6 Research Hypotheses

The research hypotheses over the study of the impact of customers' loyalty on the dimension of operational management and product market performance within the Malaysian manufacturing sector are as follows:

H1: Quality management positively relates to product-market performance

Quality Management is very critical when it comes to the product-market performance. A study conducted by Zhou et al. (2020) indicates that when the quality of given product from manufacturing company is excellent, then the product-market performance will automatically go high. When customers are satisfied with the quality of a given product, it will be a clear implication that the number of sales will go high leading to good product

market performance (Tan et al. 2021). Therefore, it is very necessary for management of manufacturing industry in Malaysia to practice proper management of the quality of their goods and services.

H2: Inventory management positively relates to product-market performance

Research conducted by Tan and Kim (2021) found that proper management of assets within the organization promotes its product-market management. Research was also conducted on economic performance in Malaysia showed that proper management of raw menials result to good performance of the product from the market domain (Janahi et al. 2017). Good inventory management guarantees proper operation of the organization which facilitate its survival and continuation.

H3: Supply chain management positively relates to product-market performance

A study carried out by Othman et al. (2020) found that when there is consistent supply of products from the company to the market, there will be impressive product-market performance. Research conducted by Zhou et al. (2020) suggest that proper supply of products from the manufacturing firms to the market results to high product performance. Therefore, it is necessary for manufacturing firms in Malaysia to maintain a stable flow of goods and services from the manufacturing companies to consumers.

H4: Customer loyalty positively relates to product-market performance

Customer loyalty on a given type of product can lead to proper market performance (Richey et al. 2020). A study was also conducted by Jalloh (2020) that found when the degree of customers' loyalty is high, the product market performance increases. Therefore, this implies that customers' loyalty has positive effect on the product market performance.

H5: Quality management mediates the relationship between customer loyalty and product-market performance.

Good quality products promote customer's loyalty which in turn leads to high product-market performance (Zhou et al. 2020). Research conducted by Mandt et al. (2022)

indicates that the aspect of product quality management plays a mediating role on the connection between customers' loyalty and product market performance. Product market performance can increase when there is high degree of customers' loyalty which is highly influenced by the quality of a particular product.

H6: Inventory management mediates the relationship between customer loyalty and product-market performance.

When assets within the organization are properly managed to enhance quality service, the level of loyalty among the customers will go high resulting to high product-market performance (Pérez-Morón et al. 2022). Proper management and care of the raw materials or the asset within the organization enhances improved rate of customer's loyalty. When there is high rate of customers' loyalty, the number of sales will highly increase resulting to higher product market performance (Perez-Moron et al. 2022).

H7: Supply chain management mediates the relationship between customer loyalty and product-market performance.

When there is steady flow of products from the company to the market the demand of customers will be met thus promoting their loyalty which in turn results to greater market performance (Jalloh, 2020). It is also evidenced by the research done by Mandt et al. (2022) that the element of supply chain management plays a significant role on the connection between customers' loyalty and product market performance.

Supply chain management mediates the relationship between customer's loyalty and the product market performance since it determines the rate of supply of products (O'Hern, Akdeniz and Du, 2022). When customers get guarantee with consistent supply product especially in terms of quantity and time, the degree of customers' loyalty will go highly leading to positive impact on the product market performance (Pérez-Morón et al. 2022). However, when the supply of products is consistent as per the desires of customers, they will tend to go for other alternatives which means that the level of customers loyalty will have been reducing resulting to negative impact on the product market performance (Jalloh, 2022). Therefore, it is clearly evidenced that the element of supply chain plays a

significant role on the relationship between customer's loyalty and product market performance.

2.7 Chapter Summary

This research will facilitate the investigation of three factors that enhance customer satisfaction. These three elements include quality management, operational management, and inventory management. The manufacturing of different products in Malaysia has highly resulted in increased Gross Domestic Product. The market of a given product can only improve when the rate of satisfaction is high. The quality of a given commodity or service matters a lot when it comes to its marketing. When the quality of a product is good, then the customers will get satisfied leading to a positive impact on the product market performance. However, when the quality of a given product is poor, the customers from the market domain will not get satisfied thus resulting in some negative influence on the product market performance.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The research on the impact of the customers' loyalty on the operational management and product market performance within the Malaysian manufacturing sector will be done using quantitative methods. This section of the study will facilitate a platform to discuss the size of the population and the simple random sampling method. Simple random sampling is a method that will be used for coming up with the final sample for the study of the impact of the customers' loyalty on the dimensions of operational management and product market performance within the Malaysian electronic manufacturing sector. This section of the study will also discuss the method which will be used to collect the required information on the impact of the customers' loyalty on the dimensions of operational management and product market performance within the Malaysian electronic manufacturing sector. There are varieties of methods that can be used to collect the required set of information from the participants such as the use of observation method, questionnaire, interview, and many others. A clear discussion will be made over the instruments used to collect data and do data analysis using SMART PLS3. The methods of data analysis to be applied to the collected data over the impact of the customers' loyalty on the operational management and product market performance within the Malaysian electronic manufacturing sector will be also discussed intensively.

3.2 Research Design

The study on the impact of the customers' loyalty on the dimensions of operational management and product market performance within the Malaysian manufacturing sector will make use of the quantitative research design. To be more specific in the research design, the explanatory research design will be applied to study the impact of the customers' loyalty on the dimensions of operational management and product market performance within the Malaysian manufacturing sector (Tan and Kim, 2021). According to Sekaran and Bougie (2016), an explanatory research design is a type of research design that focuses on the variables that determine the mediating effect of the

relationships and it explained the cause-and-effect of the variables that define the phenomenon being studied. According to Saunders, Lewis, and Thornhill et al. (2019), a study design should include a systematic overview of how the researcher will perform the research to meet the research's objectives. The purpose of this study is to explain the research on the customer loyalty impact on operational management and product market performance in the Malaysian electronic manufacturing companies. The type of investigation adopted for the deductive study and quantitative-based relationship with the survey strategy in the bid to determine and explain the effect of customer loyalty in the studied context. By using quantitative data as supporting evidence, quantitative research is utilized in research to illustrate, forecast, form, and test theories (Saunders et. al., 2019). The non-contrived study environment aims to gather respondents' responses via an internet questionnaire at work (Sekaran and Bougie, 2016). Furthermore, Saunders et al. (2019) claimed that the best way is to carry out cause-and-effect study if the relationship between the variables can be identified. The research's findings will help Malaysian electronic manufacturing companies better understand how customer loyalty affects operation management and product market performance.

The survey results generated numerical data for the analysis, and the findings will serve as the foundation for deductive reasoning in nature to define, explain, and anticipate the phenomenon under study. Therefore, quantitative study technique was chosen for this study. Quantitative research analyses the connections between the many variables in this research study utilizing statistical methods and analyses.

3.3 Unit of Analysis & Time Horizon

It is crucial to decide on the unit of analysis before creating a sample for any investigation. The unit of analysis is what will be looked at or examined during the research process. Depending on the type of investigation, it might be a company or a person (Bougie and Sekaran, 2019). Because individuals have various viewpoints on how customer loyalty affects operation management and market product performance, individuals were used as the unit of analysis in this study rather than companies. Because each employee in the Penang, Malaysia-based electronic manufacturing enterprises received a

questionnaire, the data gathered is relevant for the study. The study's goal is to examine every single response to determine how the independent variables of quality management, inventory control, and supply chain management relate to the dependent variable of product market performance and how the mediating variable of customer loyalty relate to the product market performance. Given that they represent various organizational departments and levels of position structure, the findings of the data gathered from each of these respondents are likely to vary.

Next, the research's time horizon will be cross-sectional, also known as a one-time study because each employee of the electronic manufacturing company will only receive the survey once for the purpose of gathering research data at that specific time. A cross-sectional study, according to Saunders et al. (2019), is a study of a particular situation at a particular time. This definition aligns with the study's goal because cross-sectional studies typically use a survey strategy to describe the prevalence of incidence under studies at a particular time. As a result of the study's cross-sectional design, it is generally accepted that the data analysis's findings will change over time because survey respondents' replies frequently alter as external variables and their demographic profiles change.

3.4 Sampling Design

There are five steps to the sampling design. The first step is to identify the population, also known as the target population. The second step is to establish the sampling frame, and the third is to select the sampling method. The fourth step is to determine the sample size, and the final step is to carry out the sampling process. The population to be sampled dictates the sampling plan. The target group, as mentioned in the section above, is Malaysian employees, specifically those who work for one of the Penang-based electronic manufacturing companies. There are around 700 employees in this company. Hence, the target population is the 700 employees working in this electronic manufacturing company of Penang, Malaysia. Sampling is the process of choosing a sample from this community to analyses and anticipate the prevalence of a larger group's unknown information, circumstance, or outcome (Kumar, 2019). Due to the size of the population, a smaller

sample rather than a more thorough census was used in the study. Non probability sampling was the method of sampling utilized in this study.

3.4.1 Sampling Plan

Non-probability sampling is used in this study to get data from conveniently accessible target population participants (Sekaran and Bougie, 2016). The researcher can include persons who are easy to reach by using judgement when conducting a survey of people at their place of employment, and as a result, convenience sampling is used. It is not only less expensive than other approaches, but also reasonably easy to get a sample, and the volunteers are available. Convenience sampling may be used when probability sampling is impossible, as it is in this instance because we have a very tiny population to work with. Using non-probability convenience sampling, the researcher chooses participants based on their cooperation and high regard for taking part in the survey. Additionally, there are significant disadvantages to non-probability sampling, such as the inability to assess how well it represents the population and the possibility of under- or overrepresentation. Convenience sampling is the greatest approach to use for this study despite its flaws because it allows the researcher to collect data quickly, economically, and effectively by distributing online surveys to chosen respondents whenever there is a chance.

3.4.2 Sample Size

Assuming the commonly used level of statistical power of 80% and the maximum number of arrows pointing at a construct in the PLS path model, Cohen (1992) presents the minimum sample size recommended in a PLS SEM model to detect a minimum R2 values of 0.10, 0.25, 0.50, and 0.75 for a significance level of 1%, 5%, and 10%. In this study, the maximum number of independent variables and mediating variables in the measurement and structural models is four; therefore, the recommended minimum sample size would be 65 to achieve a statistical power of 80% for detecting R^2 value of 0.25 with a 5% of probability of error. Cohen (1988) asserts that R2 values for endogenous latent variables are regarded as substantial or high in the behavioral

sciences with a value of 0.26. Therefore, in this investigation, a minimal R2 value of 0.25 is adopted.

Exhibit 1.7 Sample Size Recommendation a in PLS-SEM for a Statistical Power of 80%

Maximum Number of Arrows Pointing at a Construct	Significance Level											
	1%				5%				10%			
	Minimum R^2				Minimum R^2				Minimum R^2			
	0.10	0.25	0.50	0.75	0.10	0.25	0.50	0.75	0.10	0.25	0.50	0.75
2	158	75	47	38	110	52	33	26	88	41	26	21
3	176	84	53	42	124	59	38	30	100	48	30	25
4	191	91	58	46	137	65	42	33	111	53	34	27
5	205	98	62	50	147	70	45	36	120	58	37	30
6	217	103	66	53	157	75	48	39	128	62	40	32
7	228	109	69	56	166	80	51	41	136	66	42	35
8	238	114	73	59	174	84	54	44	143	69	45	37
9	247	119	76	62	181	88	57	46	150	73	47	39
10	256	123	79	64	189	91	59	48	156	76	49	41

Source: Cohen, J. A power primer. *Psychological Bulletin*, 112, 155–519.

Figure 2: Sample Size Recommendation a in PLS-SEM for a Statistical Power of 80%

In place of the minimal sample size of 65, a total of 100 questionnaires would be distributed to respondents working in one of the electronic manufacturing companies in Penang because the respondents were mostly members of the same company. A 100% response rate was achieved by using the convenience sampling strategy to obtain samples in a deliberate manner. Samples were taken over the course of a 2-week period in May 2022. Checkboxes for informed consent, demographic questions, and a list of inquiries were supplied to the responders.

3.5 Data collection Method

Data collection can be done through primary or secondary sources in which primary sources associated with social whose viewpoints on the topics could be preferred such as questionnaires, focus group and others whereas secondary sources could be sought from publications, report, and others (Sekaran and Bougie, 2019). Self-administered online questionnaires will be employed in this study in which the respondents will receive

an access to the browser site to answer the survey in their own time without any interruption (Saunder et al. 2019).

3.6 Questionnaire Design

Through the questionnaire design process, respondents are assisted in giving the most accurate responses possible while answering questions (Bougie and Sekaran, 2019). The most practical and cost-effective method of data collection is through surveys in the form of questionnaires, which can be completed anywhere and at any time, regardless of location or time. According to Hair et al. (2018), the questionnaire consists of standardised inquiries or claims with present outcomes, such as the usage of a point scale. According to Saunders et al., a survey is more effective than a face-to-face interview since the respondent can answer the question without feeling forced by the interviewer (2019).

The method of data collection for this study was a self-administered internet questionnaire. They are provided together with a link to the online survey hosted by Google Forms to respondents via mobile messaging services like WhatsApp. There is a low risk of response contamination or distortion because the questionnaires are distributed to the targeted population using a convenience sampling technique through an instant text messaging mobile platform like WhatsApp, and there is a high degree of confidence that the right person has responded.

The two main categories of research questions are closed and open. In contrast to open questions, which allow respondents to respond in any way they choose, closed questions present the responder with two or more options from which they must choose. Closed questions are often quicker and simpler to respond to since they require little to no writing and have been present to let the responders give a more specific answer (Saunders et al., 2019). As a result, the closed question type will be employed in this study.

For the purposes of this study, the questionnaire's questions are closed, and the respondent's response is recorded using a scale tool. On a scale of 1 to 5, with 1 denoting strongly disagree and 5 denoting strongly agree, respondents are asked how strongly they agree or disagree with a list of statements in the survey, which employs the Likert

style of rating. The existence of a neutral point allows the respondent to select the middle "neutral or not sure" group when considering an intrinsically negative statement.

The survey is broken down into six sections, A through F. The respondents' gender, age, job title, and race are all covered in Section A. According to Saunders et. al., demographic profiles are important since they provide critical information about the study's population. (2019).

The questions in Sections B, D, and E are connected to the independent variable. By choosing the radio option next to the relevant response, respondents are asked to rate how satisfied they are overall with the following statement, which represents their opinion most accurately and completely.

Regarding the mediating variable, customer loyalty, respondents are asked about the assertions in Section C.

The questions in Section F are connected to the Product Market Performance, one of the dependent variables.

The following Table 1 shows a summary of the questionnaire design.

Section	Variable	Source	Items	Adoption / Adaptation
A	Demographic factors	Saunders, Leweis and Thornhill, (2019)	4	-
B	Quality Management	Van Bogaert et al. 2017	4	Adaptation
C	Customer's loyalty	Shinde et al. 2018	4	Adaptation
D	Supply Chain Management	Lee et al. 2022	4	Adaptation

E	Inventory Management	Gakwaya and Irechukwu, (2022)	4	Adaptation
F	Product Market performance	Shinde et al. (2018)	4	Adaptation

Table 1: Summary of the questionnaire design

3.7 Pilot Study

The pilot test was carried out to determine whether the statements of the constructs have an acceptable level of internal agreement. This was designed to determine whether the measurement tools were high to indicate that they were reliable and valid. The Cronbach alpha was used in determine whether the constructs were reliable. Table indicates that all the Cronbach alpha were greater than 0.70, an indication that the level of internal agreement. This is an indication that the construct had an acceptable level. Factor loading was one the other hand used to determine whether the constructs statements had an acceptable level of discriminant validity. Since all the factor loading were greater than 0.60, the statements shad high and excellent discriminant validity. The discriminant level and validity are expected to improve with increase the sample in the main study.

Table 2: Reflective Measurement Model Results Pilot test

Construct	Measurement Items	Outer loading	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
CL	CL1	0.717	0.768	0.789	0.853	0.595
	CL2	0.841				
	CL3	0.651				
	CL4	0.857				
IM	IM1	0.815	0.882	0.897	0.918	0.738
	IM2	0.878				
	IM3	0.876				
	IM4	0.865				
PMP	PMP1	0.838	0.913	0.915	0.939	0.795

	PMP2	0.899				
	PMP3	0.947				
	PMP4	0.88				
QM	QM1	0.786	0.75	0.754	0.842	0.573
	QM2	0.769				
	QM3	0.66				
	QM4	0.805				
SCM	SCM1	0.843	0.79	0.801	0.864	0.614
	SCM2	0.745				
	SCM3	0.742				
	SCM4	0.798				

3.8 Research Instrument

The Questionnaire sheet is the key instrument that will be used to collect the required information on the impact of the customers' loyalty on the operational management and product market performance within the Malaysian manufacturing sector. The Questionnaire instrument will have well-structured questions that will be very relevant to answering the research questions. Upon the collection of the appropriate information from the participants, the SMART PLS software will be used to conduct data analysis on the impact of the customers' loyalty on the operational management and product market performance within the Malaysian manufacturing sector. The SMART PLS instrument was preferred as it is a very powerful statistical instrument that can be used to do a variety of quantitative data analyses. The Questionnaire measure items include: 1: Strongly Disagree, 2: Disagree, 3: Neutral, 4: Agree, and 5: Strongly Agree. The actual items that will be used to provide measurement on questionnaire include the aspects of Quality product management, inventory management, supply chain management, customers' loyalty, and product market performance.

3.9 Measurement Item

Section	Variables	Items	Source	Likert Scale
A	Quality Management (Independent Variable)	1. I believe that proper quality management facilitates high product market performance. 2. The quality of a given product matters a lot when it comes to market performance. 3. When the products of a given organization is of poor quality, then the product-market performance will go down. 4. The management of a given organization should have close monitoring of the product process to ensure high quality products.	Van Bogaert et al., (2017)	5 Likert Scale
B	Inventory Management	1. Proper recording of assets within the organization stabilizes the product market performance. 2. Most of the organizations in Malaysia have got good inventory management system. 3. Proper inventory management facilitates survival and continuation of organization.	Gakwaya & Irechukwu, (2022)	5 Likert Scale

		4. Quality production process is promoted by proper inventory management process.		
C	Supply Chain Management	1. When there is good supply chain management, customers will always rely on the services and products of a given company. 2. Reliability is guaranteed among the customers by proper supply chain management. 3. Sufficient supply of products from one point to another promotes product market performance. 4. Proper supply chain management significantly Influences the market of given product.	Lee et al., (2022)	5 Likert Scale
D	Customer's loyalty (Mediating variable)	1. When the customers are loyal to certain product or service, the magnitude of sales will automatically go high. 2. The aspect of customers' loyalty on a given product has got some influence on product market performance.	Shinde et al., (2018)	5 Likert Scale

		3. Customers' loyalty mediates the connection between supply chain management and product market performance. 4. The aspect of Customers 'loyalty mediates the relationship between product market performance and inventory management.		
E	Product Market Performance (Dependent variable)	1. There is high degree of product market performance in Malaysian manufacturing sector. 2. Product market performance play an essential role when it comes to survival and continuation of manufacturing industry. 3. The manufacturing industries in Malaysia are having significant number of sales yearly. 4. Proper management skills promote product market performance in Malaysian industries.	Shinde et al., (2018)	5 Likert Scale

Table 3: Measurement Items

3.10 Chapter Summary

In summary to this section, the population of individuals which will be used to collect the necessary information on the impact of the customers' loyalty on the operational management and product market performance within the Malaysian manufacturing sector will be from both male and female gender. Statistical software tool Smart PLS software is used to test the hypotheses through the structural model, after the reliability and validity of the constructs are verified through the measurement model and the reliability and validity of the constructs are verified through the measurement model. The research findings will be discussed in depth in below chapter 4 after the completion of data analysis by using PLS-SEM.

CHAPTER 4: RESEARCH FINDINGS

4.1 Introduction

This study is designed to assess how when customer loyalty is moderated, quality management, operational management, and inventory management affect the product market performance. Therefore, this chapter contains the data analysis results. The first section contains the demographical distribution of the randomly selected employees.

4.2 Response Rate

The responsiveness of the questionnaire is imperative as it shows the number of usable responses from the eligible target sample. The higher the response rate the better, and it makes the results valid as it reduces the non-response bias (Weaver, Beebe, and Rockwood, 2019). Table 4 shows that out of the 70 distributed questionnaires, 65 were filled and returned and were all usable. Thus, the response rate was therefore 92.86%.

Table 4: Response rate

Total Questionnaire Distributed	Total Questionnaire obtained	Usable questionnaire	Unusable questionnaire	Response Rate
70	65	65	0	92.86%

4.3.1 Demographical Respondents

Demographic	Category	Frequency	Percent
Gender	Female	29	44.6
	Male	36	55.4
	Total	65	100.0
Age	18 to 24 years	8	12.3
	25 to 31 years	32	49.2
	32 to 38 years	19	29.2
	39 years and above	6	9.2
	Total	65	100.0
Position	Manager	9	13.8
	Supervisor	12	18.5
	Staff	38	58.5
	Others	6	9.2

	Total	65	100.0

Table 5: Demographical Respondents

Table 5 shows the distribution of 65 randomly selected employees in electronic manufacturing companies in Penang, Malaysia. Out of the 65, 29 (44.6%) were female and 36 (55.4%) were male employees. Therefore, most of the employees in this electronic manufacturing company were males. Table 5 indicates that of the 65 sampled employees, 32 (49.2%) which is almost half of the employees were aged between 25 and 31 years old. 19 (29.2%) of the employees are aged between 32 and 38 years, 8 (12.3%) are aged between 18 and 24 years, and 6 (9.2%) are 39 years and above. This shows that most of the employees in this manufacturing firm are aged between 25 and 31 years. The results indicate that out of the 65 randomly selected employees, 38 (58.5%) were firm staff, 12 (18.5%) were supervisors, 9 (13.8%) were managers and 6 (9.2%) were in other positions within the firm. Thus, most of the employees within the firm hold a position of staff. The table further deduces that 38 (58.5%) of the employees were Malay, 22 (33.8%) were Indians, three (4.6%) were Chinese and two (3.1%) were from other races. This shows that most of the employees in the selected manufacturing firm are Malay followed by Indians.

4.4 Reflective Measurement Model Results

4.4.1 Reliability Analysis

The primary aim of carrying out the reliability test is to determine whether the data has an acceptable level of internal agreement between the statements measuring a given construct. The reliability was assessed to determine whether the variables have an acceptable level of internal consistency. The Cronbach alpha was used and the rule of thumb was used that when the coefficient is greater than 0.70, the constructs are deemed to have an acceptable level of internal agreement (Bujang, Omar, and Baharum, 2018). If the coefficient is less than 0.70, the construct has low reliability and could lead to an invalid conclusion.

Table 6: Reflective Measurement Model Results

Construct	Measurement Items	Outer loading	Cronbach's alpha	rho_A	Composite reliability	The average variance extracted (AVE)
CL	CL1	0.785	0.827	0.829	0.885	0.659
	CL2	0.865				
	CL3	0.789				
	CL4	0.805				
IM	IM1	0.794	0.857	0.864	0.904	0.701
	IM2	0.893				
	IM3	0.862				
	IM4	0.797				
PMP	PMP1	0.858	0.891	0.892	0.925	0.754
	PMP2	0.883				
	PMP3	0.881				
	PMP4	0.852				
QM	QM1	0.856	0.823	0.825	0.883	0.654
	QM2	0.820				
	QM3	0.765				
	QM4	0.791				
SCM	SCM1	0.833	0.797	0.798	0.868	0.623
	SCM2	0.801				
	SCM3	0.770				
	SCM4	0.750				

The constructs were found to have an acceptable level of composite reliability since coefficients were greater than 0.70. Also, the Cronbach alpha value was greater than 0.70 indicating that the construct internal reliability was good. Thus, the results demonstrate high internal agreement between the statements. In addition, the outer loading of each of the statements towards the construct was high which shows that they were all important in measuring the construct.

4.4.2 Construct Validity

In addition, to checking the internal agreement between statements, Table 6 was used to determine whether the measurement model converged. The AVE scores are used to determine whether construct validity was achieved in the variables (Rosa, Brazão, and Carvalho, 2022). Construct validity measures the degree of the preciseness of the measurement in the study in regard to what it was intended to measure. The concept of convergent validity which is measured by the use of intercorrelation between the statements and discriminant validity are used in regard to construct validity.

The AVE is used to determine whether the measurement had acceptable level of construct validity. A value greater than 0.50, also the factor loading could be used to assess construct validity. The coefficient of the factor loading greater than 0.60 is considered ideal. In this case, all the AVE values are greater than 0.50 and the facto loading greater than 0.60. customer loyalty has an AVE value of 0.659, inventory management value is 0.701, whereas that s supply chain management was 0.623. This is evident that the AVE and factor loading scores are all above the required threshold.

The discriminant validity is further assessed using the Fornell-Larcker Criterion. The Fornell-Larcker Criterion indicates the level of correlation between the statements of a construct. The results in Table 7 shows that apart from the quality management (0.836) which has higher values that the customer loyalty (0.812) and product market performance (0.809) all the values are all right, deducing that there was discriminant validity.

Table 7: Discriminant Validity – Fornell-Larcker Criterion

	CL	IM	PMP	QM	SCM
CL	0.812				
IM	0.783	0.837			
PMP	0.800	0.693	0.868		
QM	0.836	0.788	0.821	0.809	
SCM	0.821	0.690	0.754	0.7600	0.789

The cross loading was assessed to check if the statements of a given construct were loading towards other constructs. This is important since it helps in determining whether the statements had more weight on a different construct or what it was intended to measure. In case, of cross-loading it is advocated to delete the statements that suffer cross-loading.

Table 8: Cross-Loading

Statements	CL	IM	PMP	QM	SCM
CL1	0.785	0.591	0.552	0.684	0.623
CL2	0.865	0.588	0.656	0.713	0.663
CL3	0.789	0.760	0.685	0.651	0.651
CL4	0.805	0.597	0.691	0.668	0.722
IM1	0.625	0.794	0.529	0.573	0.527
IM2	0.709	0.893	0.659	0.717	0.637
IM3	0.696	0.862	0.595	0.746	0.610
IM4	0.583	0.797	0.530	0.589	0.526
PMP1	0.716	0.624	0.858	0.702	0.675
PMP2	0.713	0.540	0.883	0.687	0.593
PMP3	0.662	0.650	0.881	0.744	0.720
PMP4	0.683	0.598	0.852	0.720	0.635
QM1	0.715	0.637	0.671	0.856	0.655
QM2	0.664	0.650	0.659	0.820	0.606
QM3	0.690	0.641	0.651	0.765	0.581
QM4	0.630	0.623	0.674	0.791	0.615
SCM1	0.668	0.543	0.656	0.590	0.833
SCM2	0.626	0.565	0.573	0.607	0.801
SCM3	0.628	0.538	0.499	0.563	0.770
SCM4	0.666	0.531	0.644	0.636	0.750

Table 8 shows that the loading of each of the statement towards its latent variable is greater than that of the other constructs. This supports the discriminant validity of the data used.

4.5 Structural Model Results

The structural equation modeling entails a system that shows relationship between constructs. The aim of such a model is to determine whether there exists a significant

relationship or effect between the dependent and independent variable or even mediating effect. There are several ways that the goodness of fit of the structural model could be assessed. Similarly, such approaches were considered herein to test the relationship between inventory management, quality management, and supply chain management with the product market performance.

4.5.1 Collinearity Assessment

The inner VIF is used to assess whether there is the issue of multicollinearity between the variables. In most cases, a VIF less than 5.00 is an indication of low collinearity between independent variables in a structural equation.

Table 9: VIF Values for the Structural Model

	CL	IM	PMP	QM	SCM
CL	0	0	1	0	0
IM	2.784	0	0	0	0
PMP	0	0	0	0	0
QM	3.458	0	0	0	0
SCM	2.496	0	0	0	0

The VIF coefficients are all less than 5.00 which shows that collinearity between the constructs in the structural model is not critical. The quality management has the largest VIF score (3.458) towards customer loyalty and since it is less than 5.00, it is evident that there is low multicollinearity issue.

4.5.2 Path Coefficients

Testing the hypothesis about the path coefficient necessitated the use of bootstrapping. This helped determine whether the coefficients were statistically significant. Table 9 shows that the structural equation model supports all the hypothesis. That is, it was established that the effect between inventory management and customer loyalty was significant (β = 0.235, t = 2.483, p < 0.05). Thus, H1 was sufficiently supported and so was the other hypothesis. From the coefficient summary, the customer loyalty has the largest effect towards the product market performance (β = 0.800, t = 18.343, p < 0.05).

Table 10: Path Coefficients

	Hypothesis	Path coefficient	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
H1	IM -> CL	0.235	0.251	0.095	2.483	**0.013**
H2	QM -> CL	0.355	0.349	0.094	3.775	**0.000**
H3	SCM -> CL	0.389	0.38	0.086	4.531	**0.000**
H4	CL -> PMP	0.800	0.803	0.044	18.343	**0.000**
H5	IM -> PMP	0.188	0.201	0.074	2.529	**0.011**
H6	QM -> PMP	0.284	0.282	0.081	3.482	**0.001**
H7	SCM -> PMP	0.311	0.305	0.07	4.444	**0.000**

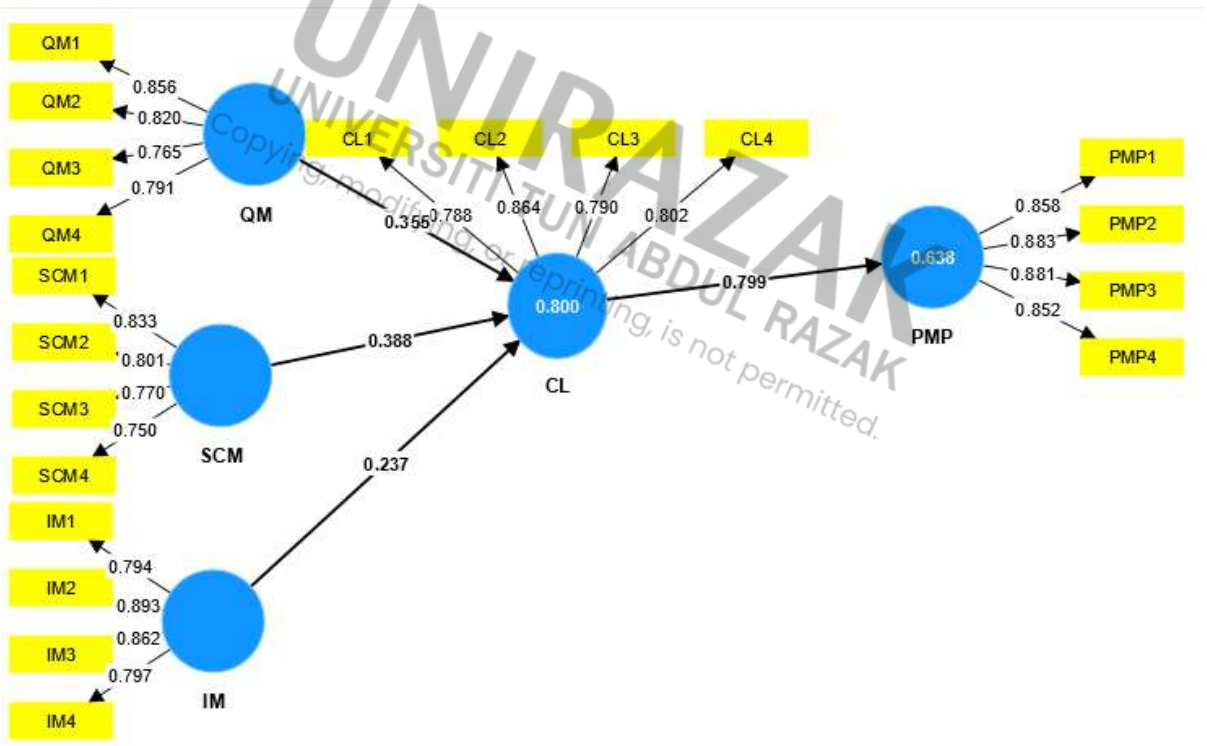

Figure 3: The Structural Model – Path Coefficients

4.5.3 R-Squared

The r-squared value is also regarded as coefficient of determination and is mostly the most common measure of goodness of fit of regression model. This coefficient indicates the proportion of variation accounted by the model. In this case, the model that is used to predict the mediating effect of customer loyalty accounts for 80.0% of the latent variable. This shows a very strong effect of inventory management, quality management and supply chain management towards the customer loyalty. On the other hand, product-market performance is well fitted since the model accounts for 63.9% of the total variation. This shows a very strong effect.

Table 11: R-squared

	R-square	R-square adjusted
CL	0.800	0.79
PMP	0.639	0.634

4.5.4 f-squared

The f-squared value is used to show the effect size of the independent in the model. An ideal f-squared value should be greater than 0.15, as it shows the size of each of the independent variables towards the dependent variable (Abid, Benlaria, and Gheraia, 2022). Herein, the effect of customer loyalty is very high on the product market performance (f-squared = 1.773). The effect of quality management is low although significant (0.182) and that of supply chain management (0.303). Nonetheless, the effect of inventory was low although significant. From the results, the customer loyalty f-squared value is the largest supporting that its effect is large.

Table 12: f-squared

	CL	IM	PMP	QM	SCM
CL	0.000	0.000	1.773	0.000	0.000
IM	0.099	0.000	0.000	0.000	0.000

PMP	0.000	0.000	0.000	0.000	0.000
QM	0.182	0.000	0.000	0.000	0.000
SCM	0.303	0.000	0.000	0.000	0.000

4.5.5 Model Fit

The model fit is assessed using the SRMR (<0.1) and NFI (>0.70). The model fitness is deemed ideal if the SRMR is less than 0.10, and NFL greater than 0.70. herein, these thresholds are met, an indication that the fitted structural equation fitted has a good fit.

Table 13: Model Fit

	Saturated model	Estimated model
SRMR	0.067	0.077
d_ULS	0.949	1.24
d_G	0.744	0.805
Chi-square	237.578	249.088
NFI	0.760	0.749

4.6 Summary of the findings

The result in this chapter yields the following results from the test of hypothesis.

Table 14: Summary of the findings

Item	Hypothesis	T statistics (|O/STDEV|)	P values	Decision
H1	Quality management positively relates to product-market performance	18.343	0.000	Accepted
H2	Inventory management positively relates to product-market performance	2.483	0.013	Accepted
H3	Supply chain management positively relates to product-market performance	3.775	0.000	Accepted
H4	Customer loyalty positively relates to product-market performance	4.531	0.000	Accepted

H5	Quality management mediates the relationship between customer loyalty and product-market performance.	2.529	0.011	Accepted
H6	Inventory management mediates the relationship between customer loyalty and product-market performance.	3.482	0.001	Accepted
H7	Supply chain management mediates the relationship between customer loyalty and product-market performance.	4.444	0.000	Accepted

4.7 Conclusion

This chapter was designed to give the main research findings from the data analysis using the Smart PLS software. In assessing the research hypothesis, the results supported all the hypothesized relationship. Thus, it was established that there was a significant relationship between inventory management, supply chain management and quality management with product-market performance. The mediating effect of customer loyalty was also found to be significant.

CHAPTER 5 : DISCUSSION AND CONCLUSION

5.1 Overview

This chapter was designed to give insightful presentation of the findings from the data analysis. Apart from providing the summary related to each of the hypothesis, recommendations contribution of the study and suggestion if the future research are addressed.

5.2 Discussion of the Study

The research purpose was to assess the effects of inventory management, supply chain management and quality management on the product-market performance when the customer loyalty is mediated. A sample of employees from manufacturing firms were sampled and recruited into the study.

Hypothesis 1: Quality management positively relates to product-market performance

Table 9 deduces that there was a significant effect of quality management towards the product-market performance. In particular, the evidence was sufficient to conclude that quality management was positively related to product-market performance (β = 0.284, p < 0.05). That is, the evidence supported the rejection of the null hypothesis. Therefore, from the fitted structural equation, when all factors are held are constant and the quality management increased, the product-market performance score is expected to increase by 0.284 points.

These results are like Gökalp et al., (2022) which pointed that the quality of the product or service are imperative when it comes to marketing. For a good product, the customers are more likely to be satisfied and consequently this influences the product market performance (Othman et al., 2020). Similarly, a poor product would not attract more customers, and this will negatively affect the product market performance. The summary of the factor loading shows the QM1 has the largest weight towards the product-market performance.

Hypothesis 2: Inventory management positively relates to product-market performance

The findings indicate that there was sufficient evidence to conclude that inventory management positively relates to product market performance (β = 0.188, p < 0.05). The model deduces that, holding all factors constant and increasing the inventory management by one unit, the product market performance is expected to increase by 0.188 points. Therefore, enhancing such a factor is vital towards boosting the product market performance.

The inventory management encompasses managing all goods and material within an organization, and when taken good care of, the losses are reduced which fosters the operation management (Islam et al., 2020). Therefore, these results are in support of Islam et al., (2020), Tan & Kim, (2021) among others. The inventory management through record taking to keep track of available products/goods or resources which has a significant impact on the operational management and product market performance. Therefore, businesses should adopt the utilization of the inventory management.

Hypothesis 3: Supply chain management positively relates to product-market performance

Table 9 shows evidence supporting that supply chain management positively relates to product-market performance (β = 0.311, p < 0.05). The results mean that when all other factors are held constant and the supply chain management score increased by one unit, the product market performance is expected to increase by 0.311 points. The higher the score of agreement of how sufficient supply of products from one point to another the higher the likely that the product market performance would be promoted.

Supply chain management helps in supplying the products or services from one point to the other in a timely manner and of desired quantity (Mohamed et al., 2022). This has been closely associated with the product market performance which is also evident in this research (Richey et al., 2020). Thus, a firm should set up an appropriate supply chain management within the manufacturing sector to facilitate timely delivery which is expected to increase the product market performance.

Hypothesis 4: Customer loyalty positively relates to product-market performance

The summary of the structural model shows that there exists a significant positive relationship between customer loyalty and product market performance (β = 0.800, p < 0.05). From the model this factor has the largest effect on the product market performance. The path coefficient indicates that as the customer loyalty is increased, the product market performance is expected to increase by 0.80. Similar results in terms of direction of association between these factors has been established by different scholars (Islam et al. 2020; Lee et al. 2022). Lee et al. (2022) established that customers loyalty determines how likely the customer would get back to buy a product which in turn affects the product market performance.

Hypothesis 5: Quality management mediates the relationship between customer loyalty and product-market performance.

Table 9 and Figure shows a significant relationship between quality management and product market performance when customer loyalty is mediated. The evidence indicates that quality management has a significant effect even after controlling for customer loyalty. These results are like Golkap et al. (2022). This scholar established that positive experience on product/service quality is highly influential of product market performance.

Hypothesis 6: Inventory management mediates the relationship between customer loyalty and product-market performance.

The test results in table 9 pointed out that there was a significant positive relationship between inventory management and product market performance when customer loyalty is used as a mediator (β = 0.188, p < 0.05). The results are vital since they indicate that although customer loyalty plays a vital role in product market performance, inventory management has a vital indirect effect. When inventories in the organization being properly managed to enhance quality of service, the level of loyalty among the customers will go high resulting to high product-market performance (Pérez-Morón et al. 2022).

Hypothesis 7: Supply chain management mediates the relationship between customer loyalty and product-market performance.

The summary deduces a strong positive mediated effect of supply chain management towards the product market performance when customer loyalty is mediated as stated in table 9 (β = 0.311, p < 0.05). Thus, as supply chain management increases, product market performance is expected to increase. This result coincides with Mandt et al. (2022), as they identified a significant effect of supply chain management. Nonetheless, herein, the effects mediated with customer loyalty.

5.3 Recommendation

The analysis points out that quality management positively influences the product market performance, both directly and when the customer loyalty is mediated. These results are in support of Gökalp et al., (2022) findings. Thus, since it was established that the proper quality management facilitated high product market performance strategies should be adopted to enhance it. This could be done through consolidation of quality control (Portabella et al., 2021), vary the QC approaches based on product market performance and settling on the best approach (Ilieva-Tonova, Pencheva, and Serbezova, 2022) and rolling out or applying a consistent quality and compliance standard to all the products or services (Backhouse and Ogunlayi, 2020). Therefore, when these factors are adopted, even when the customer loyalty is controlled or mediated, the effect of quality management would be significant towards product market performance.

The structural model further indicates a significant positive effect of inventory management towards the product market performance. There are several ways the inventory management could be improved such as setting the minimum stock level before restocking. Stock taking would help keep the products sufficient or just enough stock. Too much could cost the firm in storage and too little could lead to inadequate sales. Also, the first could try and understand their supply chain to avoid throwing inventory management into chaos. The management could further move slow-moving and dead stock out. This aspect could be coupled with proper inventory management software that is cost and time efficient. In doing so, the firm is guaranteed to increase not only product performance by also customer loyalty.

The findings were also vital as they indicated a significant relationship between supply chain management with product market performance, both direct and indirect effect when customer loyalty is considered. Therefore, it is recommended that the manufacturing firms should optimize their inventory to ensure that both products raw materials are readily available among other resources. The firm could further improve their distribution network or at least set up a supply chain council which comes up with strategies to make the supply functional and efficient. Also, the use of technology could help in the distribution and communication with customers which would build a healthy relationship with both customers and suppliers.

5.4 Contribution

This research was designed to give practical implication on how firms would improve product market performance using the quality management, inventory management and supply chain management regardless of the customers loyalty. Therefore, the research had both academic and industry contribution.

5.4.1 Academic Contribution

Throughout this study, the aim was to fill the existing research gap of understanding the effect of quality, inventory and supply chain affects the customers purchase behavior. In addition, on controlling the customers loyalty, it was tested whether the effect customer loyalty when controlled for, the quality management, inventory management and supply chain management had significant positive effects toward product market performance. This research is reach in literature of this relationship.

5.4.2 Industry Contribution

The research further has identified some practical implications and recommended some of the strategies that the firms could adopt to increaser the quality management, inventory management, and supply chain management which consequently increase the product market performance. The implications were found to cut across both manufacturing, and service firms. The recommendations leaned towards ensuring quality products and steady supply of both factors of production and finished products.

5.5 Future Research

Despite the care the researcher takes in ensuring spotless research, there were some limitations. First, there was limited time in completing the research paper which then necessitated collection of small samples of approximately 65 employees from one firm. Thus, in the future, the research could explore the model using a larger sample and from different firms or industries.

Notably, the model core focus was on the relationship between the dependent and independent variable with one mediator without consideration of demographical factors. Thus, on further analysis the researcher could include these factors in the model.

The research also used solely questionnaire as the only tool to collect the data despite existing different data collection tools. Future research could consider other data collection techniques such as interviews, focus groups among others. Such approach would increase the research scope and thus an in-depth understanding of the research topic.

5.6 Conclusion

This chapter was the last part of the research which was designed to provide a discussion of the research findings, give well-articulated recommendations, and the contribution of the research. In here, the researcher established several issues. Quality management, inventory management, and supply chain management were found to have both direct and indirect positive linear effect towards the product market performance. Therefore, firms should strategize on improving these factors if they were to increase their market performance. This chapter has highlighted both academic and industrial contribution of the research.

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APPENDIX

Questionnaire

Section A: Demographic factors

1. Gender

- Male
- Female

2. Age.

- 18 to 24 years
- 25 to 31 years
- 32 to 38 years
- 39 years and above

3. What is your position within the firm?

- Manager
- Supervisor
- Staff
- Others

4. Race?

- Malays
- Indian
- Chinese
- Others

Section B: Quality Management (Van Bogaert et al., 2017)

5. I believe that proper quality management facilitates high product market performance.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

6. The quality of a given product matters a lot when it comes to market performance.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

7. When the products of a given organization is of poor quality, then the product-market performance will go down.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

8. The management of a given organization should have close monitoring of the product process to ensure high quality products.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Section C: Customer's loyalty (Shinde et al., 2018)

9. When the customers are loyal to certain product or service, the magnitude of sales will automatically go high.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

10. The aspect of customers' loyalty on a given product has got some influence on product market performance.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

11. Customers' loyalty mediates the connection between supply chain management and product market performance.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

12. The aspect of Customers ‘loyalty mediates the relationship between product market performance and inventory management.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Section D: Supply Chain Management (Lee et al., 2022)

13. Sufficient supply of products from one point to another promotes product market performance.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

14. Proper supply chain management significantly Influences the market of given product.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

15. Sufficient supply of products from one point to another promotes product market performance.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

16. Proper supply chain management significantly Influences the market of given product.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Section E: Inventory Management (Gakwaya & Irechukwu, 2022)

17. Proper recording of assets within the organization stabilizes the product market performance.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

18. Most of the organizations in Malaysia have got good inventory management system.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

19. Proper inventory management facilitates survival and continuation of organization.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

20. Quality production process is promoted by proper inventory management process.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Section F: Product Market performance (Shinde et al., 2018)

21. There is high degree of product market performance in Malaysian manufacturing sector.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

22. Product market performance play an essential role when it comes to survival and continuation of manufacturing industry.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

23. The manufacturing industries in Malaysia are having significant number of sales yearly.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

24. Proper management skills promotes product market performance in Malaysian industries.

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

APPROVAL PAGE

TITLE OF PROJECT PAPER	**: Does Customer Loyalty Impact on Operational Management and Product Market Performance?** **A Malaysian Electronic Manufacturing Perspective**
NAME OF AUTHOR	**: Segar Nadason**

The undersigned certify that the above candidate has fulfilled the condition of the project paper prepared in partial fulfillment for the degree of Master of Business Administration.

SUPERVISOR Signature: _____

Name:

Date:

ENDORSED BY:

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Dean

Graduate School of Business

Date: