EXPLORING THE RELATIONSHIP OF INNOVATION AND FEATURES TOWARDS NEW PRODUCT DEVELOPMENT

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ABSTRACT

The manufacturing sector is the most important component in the economic development of a country. The effect of the explosion in development of the product manufacturing world generally, especially in Asia and in Malaysia, in particular, has led to a requirement of the importance of the study was designed to investigate the relationship between product strategy, design, innovation and features towards the development of new products in manufacturing industry. The sample of this study is among employees in the manufacturing industry in Kedah. The methodology used for this study is through the quantitative method which is through Pearson correlation analysis and multiple regression analysis in which the questionnaire was distributed among employees in manufacturing industries in Kedah, Malaysia. The statistical approach used to describe the data obtained in this study. Some of the studies have been conducted to analyze data such as factor analysis, reliability test, normality test, descriptive analysis, Pearson correlation analysis and multiple regression analysis. Factor analysis was conducted to determine the number of factors selected. Multiple regression analysis was used to examine the influence of product strategy, design, innovation and product features towards new product development. Pearson correlation analysis was performed to examine whether the dimension in product strategy, design, innovation and product features have a direct relationship with the development of new products. The results showed that the product strategy, design, innovation and product features have a direct relationship with new product development. In multiple regression analysis, there is a strong influence on the product strategy and innovation towards new product development. The results of this study also show that the theory of Key Success Factors (KSFs) can increase a company's production performance. The impact of this research will provide knowledge and better understanding among researchers and entrepreneurs of the manufacturing industries in developing the formula to develop new products.

Keywords: Product Strategy, Design, Innovation, Features, New Product Development.

ABSTRAK

Sektor perkilangan merupakan komponen terpenting dalam pembangunan ekonomi sesebuah negara. Pengaruh ledakan kemajuan pembangunan pembuatan produk diperingkat dunia pada amnya, khasnya di Asia dan di Malaysia, khususnya telah menimbulkan satu keperluan akan pentingnya satu kajian dijalankan untuk menyelidik hubungan di antara strategi produk, reka bentuk, inovasi dan ciri-ciri ke arah pembangunan produk baru dalam industri pembuatan. Sampel kajian ini dijalankan dalam kalangan pekerja-pekerja industri perkilangan di Kedah. Kaedah yang digunakan bagi menjalankan kajian ini adalah melalui kaedah kuantitatif iaitu melalui analisis korelasi Pearson dan analisis regresi berganda di mana soalan soal selidik telah diedarkan dalam kalangan pekerja dalam industri pembuatan di Kedah, Malaysia. Pendekatan statistik digunakan untuk menghurai data yang diperoleh dalam kajian ini. Beberapa pendekatan kajian telah dijalankan untuk menganalisis data seperti analisis faktor, ujian kebolehpercayaan, ujian kenormalan, analisis deskriptif, analisis korelasi Pearson dan analisis regrasi pelbagai. Analisis faktor dijalankan untuk menentukan beberapa faktor yang terpilih. Analisis regrasi pelbagai digunakan untuk menguji pengaruh antara strategi produk, reka bentuk, inovasi dan ciri-ciri produk terhadap pembangunan produk baru. Analisis Korelasi Pearson pula dilakukan untuk meneliti sama ada dimensi dalam strategi produk, reka bentuk, inovasi dan ciri-ciri produk mempunyai hubungan secara langsung dengan pembangunan produk baru. Hasil kajian menunjukkan bahawa strategi produk, reka bentuk, inovasi dan ciri-ciri produk mempunyai hubungan secara langsung dengan pembangunan produk baru. Dalam analisis regrasi pelbagai, terdapat pengaruh yang kuat antara strategi produk dan inovasi terhadap pembangunan produk baru. Hasil kajian ini juga memperlihatkan bahawa teori *Key Success Factors* (KSFs) dapat meningkatkan penghasilan prestasi syarikat. Kesan daripada kajian ini akan memberikan pengetahuan dan kefahaman yang lebih baik dalam kalangan penyelidik dan pengusaha industri pembuatan dalam merumuskan formula untuk membangunkan produk baru.

Kata Kunci: Strategi Produk, Reka Bentuk, Inovasi, Ciri-ciri, Pembangunan Produk Baru

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

New product development is a very complex task. Society is as end users need to back up ideas from the production of products that are on the market now that has gone through many stages, over a long period and it should be done according to certain procedures. The company should cooperate with each other with the user, mutual restraint, to make adjustments to the product development smoothly. Product development process is proposed product from concept to put into the entire production process. Due to the differences in production technology and characteristics different from the industry, new product development experience is not entirely the same.

To develop a new product, there are several aspects that need to be evaluated first which are product strategy, product design, innovation and also the product features. A company should make a long-term plan for the development of a new product by formulating several strategies including product strategy. The product strategy is a form of planning and implementation for developing a product in the industry. Products are created or produced by a company should implement an effective product strategy for ensuring the product can compete in the market.

The main reason why the product strategy should be implemented is to facilitate the user and the product is necessarily very useful. One of the reasons for a project to fail is due to poor implementation of the project strategy (Yang, 2012). Besides that, to develop a new product also requires an attractive design. The attractive product design not only makes the product a bestseller in the eyes of consumers, but it also can bring good returns to the company. Another aspect that the company should be focus is about the innovation. When a company to design their products, indirectly they have made a product innovation. The innovation was made is by making comparisons of their previous product and make a renewing with more sophisticated and more attractive in line with the needs and demands of users today.

Then, the features of a good product are also an important factor for the development of a new product. Actually, features of a product are closely related to product design in which features and design of a product is always in line with the development of new products. As an example, when a company produces cars, a design created must have the latest features from every corner of the car. Even the design can be evaluated only in terms of the external while features of the product even more depth and more detail.

In this chapter, will be discuss about the background of the study, problem statement, research questions, research objectives and lastly the significance of the study. In the background of the study, will be discuss about the fundamental of the variables in

this topic like product strategy, design, innovation, features, and new product development.

Then, discussion of the problems statement of this study which means there are problems involving the relationship between independent variables and dependent variables. Next, it will be discuss about the research questions and also research objective which would explain the questions and objectives of this study. Indirectly, it can understand what exactly the purpose of this study is. Lastly, will be cover about the significance of the study whether this study will further enhance the development of new products or otherwise.

1.2 Background of the Study

This study is conducted to measure the relationship of innovation and features toward new product development. This study is also conducted to determine the relationship between the innovation and features of the product which is focusing four important element or aspect that affected to the new product development. The four aspects are product strategy, design of the product, innovation and features of the product. In addition, each of these aspects is related and has a good combination in order to produce a new product. In this modern world, most of manufacturing industries are racing to produce the best of new products in order to maintain their position in the industrial market. Furthermore, to ensure that these companies are able to remain in the industry and compete with each other is to constantly produce new products that can attract the attention of consumers.

The importance of this new product is that it can ensure the growth and profitability of the company and also it is produced is to replace products that are old or worn out. In addition, the firm can obtain new products in several ways, namely through acquisition and new product development itself. What is meant by getting new products through acquisition is to buy the whole company, a patent or a license to produce someone else's product.

According to Link and Bauer (1989), in the study of Rindfleisch and Moorman (2001), they mention that through this relationship that is counted as a new product alliance, it can also be classified as a partnership between two or more companies to jointly acquire and use information and knowledge related to the research and development of new products or product innovation. Then, to get new products through new product development is a referring to the original products, product improvements, product modifications and a new brand developed from the firm's own research and development.

This study also conducted to explore about the relationship between product strategy, design, innovation and features towards new product development and how these aspects give the implication of the new products. The product strategy is very important to the company or firm to ensure they remain in a position of competitive advantage.

The implementation of the product strategy is very important for improving the new product development. In addition, there are several advantages in the implementation of the effective of products strategy which are the company can remain competitive in the industrial market, can generate profits, and can develop products that are new to the country and so on.

Hence, there are many views that give the explanation about the product in modern era. According to Kotler *et al.*, (2012), a product is something that can be offered to a market in order to fulfill the consumer wants and needs. There are several types of products that are marketed include services, experiences, events, physical goods, persons, places, properties, organizations, information and ideas.

To setting the product strategy, the strategy in the traditional marketing mix which is 4 P's are used to develop the products. The 4 P's theory was pioneered by renowned marketing experts in the 1960s that E. Jerome McCarthy. And so today, his theory still used by marketing experts around the world. In terms of marketing, the product is one of the important elements that can be offered in the market to meet the needs of consumers. Indirectly, the products offered in the market are to satisfy users.

From the other point of view, the new product strategy is an integral part of the marketing strategy for the entire organization (Lamb *et al.,* 2009). Furthermore, the new product strategy provides general guidelines and focus attention to generate, making screening and evaluating new product ideas .

Most of the emphasis is on the development of new products to sell more of their life cycle and then eliminate them at the appropriate time. Only some companies who plan to raise “dead” product (Pitta & Scherr, 2009). Therefore, the purpose of this study is to explore the relationship of innovation and features toward new product development.

1.3 Problem Statement

Based on the background described above, then the problem will be discussed related to how these four elements can give a relationship in order to develop new products. The problems can occur when the product that has been produced did not follow the planned product strategy. There are a lot of strategies that can be adopted by companies which are processes, competition from competitors' products, prices, location, threats of substitute products, the purchasing power of consumers, performances of the product and so on.

The market environment is constantly changing have been forced marketing experts to reconsider the way they carry out their duties. Indeed, consumer tastes, needs and changing from time to time and the emerging competition (Ahmad Hassanien & Dale, 2012). The product strategies has identified a number of issues relating to product, price, place and promotion, physical evidence, people, processes, performance in developing a new product.

Many factors need to be seen and reviewed in advance by any company or organization that wants to develop their products, namely the first is in terms of the product itself, the product is very important because it is a key pillar in ensuring the needs of consumers guaranteed. The problem that arises is that if manufacturers or companies create and produce a product that does not meet consumer tastes, then the product will not receive demand from users, and indirectly, the company's sales will decline and loss.

A good design is a product that can function properly and efficiently. However, there are some constraints or problems that need to be considered in the implementation of this design which is cost, safety, performance, energy consumption and so on. Problems often occur in the production of the product design is a cost involved for implementation. A part from that, if producers want to produce products such as vehicles, for example an airplane, it necessarily requires high costs in line with the latest technology that is advancing. Besides that, the performance to design the product is also could has a problem where the amount of labor involved is insufficient, product manufacturing machinery not functioning properly, there was a problem of natural disasters that inevitably will lead to the sale and purchase process, product installation tools can not be executed and so on.

Next, in term of innovation, it is also bring in some rather serious problems in the manufacturing industry. The problem from the innovation of the product is the difficulty of community acceptance of something new and not well received. To

commercialize innovative products or to create innovative products that can be sold is not something very easy.

What is even more distressing, many industries that belittle product innovation without enthusiasm to help. This often happens to the heads of departments and the public. Everyone needs to know, of course, there are disadvantages of the new creation there and here. None of the new creation that perfect and can continue to be used. Thus, of course, product innovation need feedback from those who see or of prospective users. Unfortunately every time the feedback received is not to improve the product. On the other hand, the feedback received is for undermining the product with the aim of those products do not arrive or is not used. Thus, the feedback is no element build and motivate also. Therefore, because of this problem, the new product development can not be executed and this is the problem about the innovation of the product.

For the features of a product, it has been traditionally associated with the design of the products where when the the design of the products was created, the features of a product will be appear indirectly. The problem that always occur which are related to the features of the product is about the neatness of the product, the more features of the product that lead users confius and dificult to use and many more. The Company will not succeed and will not guarantee success by producing more feature of the product. They succeeded because of execution and the product is part of the execution.

On that context, when they are create too many features of a product will cause users to lose interest in searching for information, and what they want. As an example of using the online information system that provides a lot of info to the user, but the user does not know how to access it quickly because there are too many choices they have to choose. Users will be more comfortable if the product is simple and easy to use. Besides that, when some of product with more features, it will cost more expensive because of the function. So, the consumers would prefer a product that is cheaper and affordable compared to expensive products and do not know how to use.

Overall, it can be conclude that the main problem statement of this study is the new product development which is really need in Kedah because of the product competitiveness in market. Based on the statement of Menteri Besar Kedah, Datuk Mukhriz Mahathir in the Kedah Development Plan Report, in the five main thrust towards the development of Kedah, one of which is the government will allocate 1.5 million to various programs in order to produce new competitive entrepreneurs. He added, in Kedah also, Malaysia's Foreign Direct Investments with RM11.1 billion. This means that the government of Kedah will support through new product development because of the important of product competitiveness.

In addition, this study is to fill the gap in order to know what kind of the strategy is to be implemented in new product development to ensure the production of products can survive and sustain in the market industry. On that context, in Kedah, there has limited empirical study attempted to investigate the influence of product strategy, design, innovation and features to the new product development. This means that our

understanding of these variables and the way they are related will contribute knowledge to a better understanding on the product.

Besides that, the other gap for this study is the implications for manufacturing companies that have already been implementing strategy in producing new product development is failed to achieve the desired performance level. Based on the problem statement that has already describes, this study come out with the research question as below:

1.4 Research Questions

The subsequent research questions that this study wants to offer solutions to at the end of the research study are;

RQ1. Is there a relationship between product strategy, design, innovation and features towards new product development?

RQ2. Which dimension of product strategy, design, innovation and features that influence new product development?

1.5 Research Objectives

The aim of this study is to examine the relationship of innovation and features towards new product development. The specific objectives of this study are as follows;

1.5.1 To determine the relationship between product strategy, design, innovation and features towards new product development.

1.5.2 To examine the influences of product strategy, design, innovation and features on new product development.

1.6 Significance of the Study

The primary objective of the present study is to determine the relationship between product strategy, design, innovation and features towards new product development. This influence is also investigated through the relationship between of product strategy, design, innovation features towards new product development. By achieving these objectives, the study is believed to attain both theoretical and practical significance. The following sections address the theoretical and practical significance of the present research.

1.6.1 Theoretical Significance

This contributes to the body of knowledge in that the purported links between the variables (Product Strategy, Design, Innovation and Features) are grounded based on recent theory of key success factors and management. In addition, the present research is expected to add to the existing body of knowledge by providing empirical evidence within the context of new product development manufacturing industries in Kedah, Malaysia. Furthermore, in Kedah, there has limited empirical study attempted to investigate the influence of product strategy, design, innovation and

features to the new product development. This means that our understanding of these variables and the way they are related will contribute knowledge to a better understanding on the product which elements can be specify to the company or organization capability to maintain their product competitiveness in the market industry through the new product development.

1.6.2 Practical Managerial Significance

This study is also important for practical managerial significance. It can benefit to the shareholders of the manufacturing companies by identifying the critical success factors in manufacturing area, especially in developing new product development. This would also be valuable information and also serves as guide for future implement action of the important key elements of manufacturing product competitiveness success. The findings and results of the research are important for the companies in order to guide them on focusing which elements enable to develop their new product development in manufacturing.

This research also has implications for manufacturing companies that have already been implementing strategy in producing new product development but failed to achieve the desired performance level. They may use the results or findings of this research to consider the elements of this study that significant to reinforce their manufacturing product development.

In addition, it also assists manufacturing firms to make decision in prioritizing types of manufacturing strategy to be developed a new product. The findings of this study

are expected to provide important insight into the key factors such as product strategy, design, innovation and features which are both very important to gain more profitability and productivity in the market industries.

1.7 Scope of the Study

The study focuses on investigating product strategy, design, innovation, features and new product development among local manufacturers across industries in Kedah, Malaysia. Malaysia is one of the countries that received a good attention from manufacturing industries. The population of in this area are some 92 companies, has undergone an intensive and impressive process of industrial and technological transformation in product development on the past 30 years. Kulim Kedah had been attracted by the international investor to invest in new technology like Intel. Others like Bukit Kayu Hitam nowadays in process become a main production for aerospace manufacturing industries.

Kedah is the ideal sample for this study because based on the Kedah Development Plan reported through the statement by the Menteri Besar Kedah, Datuk Mukhriz Mahathir announced that in the five main thrust towards the development of Kedah, one of which is the government will allocate 1.5 million to various programs in order to produce new competitive entrepreneurs. In Kedah also, Malaysia's Foreign Direct Investments with RM11.1 billion is according to Menteri Besar Kedah, Datuk Mukhriz Mahathir. This study is cross sectional study using survey method and

individual as unit analysis. The employees from production department in manufacturing companies are considered as the element of unit analysis.

Compared to previous study, this study will investigate these companies across industries categorized under the industry of textile, paper and allied products, chemical and allied products, rubber and plastic products, basic metals and fabricated metal products, industrial machinery, electronic, electrical equipment and components, instrumentation, and motor vehicle and accessories are selected as the subject of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, will be discuss about the two variables which mean the independent variables and dependent variables. For the independent variables, will be discuss about the relationship of innovation and features that are consists four elements such as product strategy, design, innovation and features while for the dependent variables, will be discuss about new product development. In other words, the purpose of this chapter is to review the concept of all variables and followed by a review of relevant literature on previous study for this concept. All literature reviewed in this study are related to the relationship of product strategy, design, innovation and features towards new product development.

In a borderless world market today, companies need to expand their business by developing new products in order to remain afloat in the increasingly fierce market industry. So, the organization or company in manufacturing industries need to develop a successfully product which means in order to make their products successful, all four variables, namely product strategy, product design, innovation and features should be studied whether it affects the development of new products or otherwise.

2.2 Theoretical Underpinning

The Key success factors (KSFs) are the things that must be rightly explicit for business to flourish and for managers' goals to be attained (Bullen & Rockart, 1981). The other definitions for KSFs are the necessary ingredient in management, a unique characteristic, a heuristic tool for managers and a description of the major skills and resources required to be successful in a given market (Ketelhöhn, 1998). There are substantial researches that explore and utilize the KSFs in companies and industries. Those research fields include new product development, project management, supply chain, alliance strategy and organization performance. Sixteen papers published in international journals between 1984 and 2010 deal with the application of new product development with KSFs.

From the summary of those papers, the new product development of key success factors (KSFs) are superior skills in marketing research; strong market orientation and product innovation; strong sales force; high quality of sales effort; good launch management; excellent launch timing, high-quality and rigorous new product development process; clear and well-communicated new-product strategy; adequate resources for new products; senior management commitment to new products; characteristics of the new product; strategic focus and synergy; high-quality development teams; cross-functional teams; expert analysis skill; resource availability; new product design; expected profitability; technological opportunity and support; product superiority need; early and sharp product definition; focus and

project prioritization; organizational structure and processes; long-term view of product development and stable project vision.

2.3 Conceptual Definition

This part will discuss on the conceptual definition such as new product development, product strategy, design, innovation and features.

2.3.1 New Product Development

Product development is a process of designing, making and marketing of new products or services as a benefit to the customer. Sometimes it can be referred to as the development of new products which is a discipline that focuses on developing a systematic methodology to guide the process involved in getting new products to market.

Based on Hopkins (1981) in the study of Rashid (2010), he mention that, over the past few years, with new products, innovative ideas implemented by companies that work hard become a reality. Success in new product development is an important factor in the survival of many companies. In that context, company or organization depends on new products for long-term growth and in order to remain afloat in the industrial market. The new product can be conclude as the original product, product modifications, product improvements and brand new joint venture to develop internally or externally (Kotler & Amstrong, 1993).

In terms of product development, it can refer to several things which the original products, product improvements, product modifications, and new brands developed from the company or the firm itself. Product development process is a complex process that requires planning, development and management of a variety of products in a given period of time.

One of the main activities in most companies is to develop new products in order to ensure their businesses move in tandem with changes in the market or explore new opportunities in the market (Rashid, 2010). The new product is meant new goods or a new service that is produced by a company and the goods or services should never produce or manufactured by any company before. New product development is intended also includes terms of features, design, innovation and so on. The new products also have a brand, features or concepts that can reflect a country that produces the product.

On that context, the product can be divided into several types such as in terms of food, technology such as gadgets, clothes, business premises and many so on. In terms of product development, it can refer to several things which the original products, product improvements, product modifications, and new brands developed from the company or the firm itself.

To manage new product development outside the state is tougher than in the local market and customer needs become more sophisticated, advanced and complex (Darawong & Igel, 2012). According to Ford and Sterman (1998), they mention that an important asset for the success in the market is to develop the product faster, better quality and cheaper than the products produced by competitors. The product produced, whether it's an office building, packaging, software or computer chips. Indirectly, this will make the performance of product development has become more important in the area of competitive advantage.

Developing a new successfully product give the competitive advantage to the company and manufacturer. Other than that, besides manufacturer, expanding an innovative product that achieved the customer expectation and satisfaction in mass global market become priority to the global manufacturer. The new product development in the global scale market come with more challenging as there are many factor or risk are surrounding with the development.

In the global market, the multinational manufacturer must deal with the customer demanding on regional or global. Furthermore, the study from Ozer and Cebeci (2010) stated that the firm or company also needs to compete with other highly capable corporation and diverse set of suppliers. Even though the global product development is a complex and sophisticated task and challenging, the firms still expanding in order to meet global market needs and at the same time firm can seek and improves efficiency (Kuemmerle, 1998).

Furthermore, companies or firms itself that responsible for ensuring that new products developed to achieve performance objective or standards. Therefore, the relationship between the firm and product development should be exist. The increase in attention for both practice and research is through the relationship between product development and firms (Freng *et al*., 2011).

In his research also shown the study by Brown and Eisenhardt (1995) mention that there are several key success factors identified by the literature of new product development which is most of them are an important role and relationship between suppliers and customers. Not only across companies that develop products with different, but from within the company itself needs to develop the new product from time to time. And what was decided is looking to maintain a consistent level on abstraction stage (Krishnan & Ulrich, 2001).

2.3.2 Product Strategy

The first aspect is product strategy which is a form of planning and implementation for developing a product in the industry. The product strategy of high technology companies can be seen into three dimensions which are product platforms, product lines, and individual products (McGrath, 1995). Products are created or produced by a company should implement an effective product strategy for ensuring the product can compete in the market. There are several important factors that must be considered in the preparation of the company's product strategy.

The first factor is the strategic choice of market segments. Thus, the understanding of the nature of the product among of the consumers is the second factor. Then, the third factor is the combination of product strategy at the level of individual products, at this stage, the product and the level of overall product mix. The fourth factor is focus on marketing strategies at each stage of the product life cycle.

Among the factors to produce a product, the marketing strategy is the most effective and covers all the factors for the production of a product. By using a marketing strategy that focuses on the marketing mix contains four elements of product, price, place and promotion, companies or firms are able to develop their products. According to Gronroos (1994), in his research mention that the textbook about marketing today's was introduced around 1960 ago. The concept of marketing mix which includes the 4P's of product, price, place and promotion has been in marketing textbooks at that time. However, the concept of the 4P's used only for the final product was ready to be marketed to consumers. Hence, to develop products, promotional strategies need not be implemented yet because the product is still in the making.

A product is an item or service that we want to offer to customers. Products can be a physical objects or services and also can refer to one good or unit, a group of the same product and so on. As is known, the development of new products is very rapid pace with technological advances that exist. Therefore, any company or organization

that produces products in the market should maintain the performance of their product development to improve the product in order to achieve the development goals of new products.

Faced with rapidly shrinking product life cycles, these firms must aggressively pursue the quest for more effective new product development (Barczak, 1995). Most textbooks give the definition of a strategy that includes the addition of continuous product and product removal.

On the other hand, the product strategy that can be planned by the company to develop a new product must be a strategy in which each product is easy to use and should be very useful to users. In business world, the product is the goods or services that can be traded while in marketing view, the product is something that can be offered to a market and can fulfill the consumer's wants and needs. Besides that, in a wider use, the product can refer to an item or unit, the same group of products, a group of goods and services, or an industrial grouping for goods and services. A company that produces a product has the ability to maintain the reputation of the product depends on the situation of competition in the industry.

The product is a base thing in the brand because it has a relationship with each other that is, without a good product, the brand is not likely to last long. In the study Lee, Cheng, and Chen (2008), based on statement Doyle, Day and Farduhar (1990), usually through two angles, namely the quality and packaging (Keller 1998) studied

for product strategy. According to Coskun and Weber (2000), they state in their research about the ability of a firm to produce new products in the market which is will make a firm has a competitive advantage and therefore, if the firm is able to compete, the ability of firms to remain viable in the market will be high.

In addition, they also explain in their study that in order to develop a product that is really great special effects that have in the daily lives of users is difficult, risky and expensive. However, to develop new products that can be successful in the market is almost impossible.

2.3.3 Design

Design is an intelligent activity that begins with design requirements and ends with a product description (Zeng & Gu , 1999). In 1930, the business was helped by the design of the product to be very creative to get absolute power in a highly competitive global market. A survey was conducted in the market to investigate a new product which indicates that the product design is a key factor for a successful sale (Chang, Lin & Yu, 2007).

Product design is a field of world creation of products that continue to evolve with advancements in technology. All around us is a product designed by designer products such as cars, telephones, chairs, bicycles, decorative lighting and so on. The design is usually translated as applied arts, architecture, and other creative accomplishments. Product design means a process to create and recreate an object or

a new product. In other purposes, the design was largely used to describe the end result of a creative process, whether as a plan, papers, presentations, modeling or in the form of a real object.

Design process generally considers functional aspects, aesthetics and various other aspects, which usually data obtained from the study, thinking, brainstorming, neither a design that already exists (Suhaili, 2013). Affective design is an important design method in the field of engineering, when emotions and feelings of consumers to be emphasized to produce quality products and attractive.

Conventional methods used to identify affective design are observation. Now, users have a tendency to share the experience of using the product that has been used. With the review of new products on the market, it can be beneficial to designers and researchers to obtain design features affective through product reviews.

In order to produce a quality product, a user needs to be addressed. Users only express their will by design features either an interesting or not the desired product. Designers also need to figure out how to get customer satisfaction based on the design of a new product. Designers have to be more detailed and user-oriented design of new products (Arash, 2008). A competitive product and marketability in the future now have the functionality, price and good quality and also give a business high-return.

Besides being able to generate revenues, the designers have to comply with various regulatory standards, such as sustainability and safety for users of the faithful. Each design of new products to be developed, designers need to refer to user requirements in advance so that each product can be marketed and profitable.

According to Wang *et al.*, (2011), identify the needs of users is the point the beginning of the product design process. Most of the product design methods focusing on technical domain to determine the needs of users. Therefore, the success of product design at present highly dependent on the various aspects of the needs of users including a variety of needs in the areas of business in order to develop a new product for users.

By the way, a study from Jiao *et al.*, (2006), the needs of users have affective characteristics like the feelings and emotions of the product design. The product design which is produces based on information from users is very important for the company to generate ideas in the implementation of product design. Thus, a product prototype needs to be produced before the actual product is produced.

Based on study by Yazdani and Holmes (1999), they stated that product prototyping activities started earlier and overlapped with the manufacture of production equipment and started the renovation not only in product design, but it also needs to be modified in the design process. Therefore, companies need to produce a product prototype in order to obtain feedback from users so that the design products are more

interesting and achieve customer satisfaction and indirectly, the company can generate high profits in new product development.

2.3.4 Innovation

According to Rashid (2010), he stated on his study that in general, innovation is the successful commercial exploitation of new ideas and it is also an interactive process that can gain knowledge from a variety of sources, whether internal or external, or both. From previous literature, Joseph Schumpeter (1989) was the first scholar who coined the concept of innovation as gales of creative destruction (Felekoglu & Moultrie, 2014). According to Schumpeter (1989), innovation is reflected in novel outputs which are different from others. To meet customer needs, innovative companies can thrive because they are able to generate and utilize new technologies, products and processes faster and more efficiently than their competitors. Furthermore, in an economy that is constantly changing, the company can not remain silent.

For the purposes of the definition of new products, innovation is the use of a newly created or discovered, a feature adjunctive or superior sophistication that forms part of the product or category that is already well established (Gruenwald, 1985). Product innovation is a new technology or combination of technologies introduced commercially which aims to find the user and market needs in the industry (Utterback & Abernathy, 1975).

Innovation is a means of finding ways to produce products or services that better either through renovations or improvements. It is the brainchild of creative ideas and innovative in any aspect of work that can improve the quality and productivity of the organization. In other words, innovation also is a new invention that is different from existing or previously known. The person or entrepreneur who always innovate, then it is to say as an innovative entrepreneur. An innovative will always try to make improvements, to present something new or unique which is different with existing ones.

According to Rogers (1983), innovation is an idea, an idea, practice, object or thing that is recognized and accepted as a new thing by any person or group for adoption. Other point of view, innovation is often coupled with creativity. Most researchers agree that creativity is producing something from nothing while the 'innovation' is a modification to the design of products and services as indicated by (Cumming, 1998). According to Cumming (1998) also, innovation consists of generating new ideas and applied to new products, processes and services. Table 2.1 below shows the others innovation definitions

Table 2.1
The others Innovation Definitions

No	Source	Definitions
1	Ibrahim (1989)	The invention which may be an idea, items, events, methods were observed as something of a novelty for a person or group of people (society).
2	Robbins (1994)	Innovation as a new idea applied to initiating or improving a product or process and services
3	Amabile et al. (1996)	Innovation or innovation comes from the word to innovate the means to make changes or introduce something new.
4	Neeleman (2001)	Innovation is the process of trying to find ways to do things better than before

In order to develop a new product, the innovation is very important nowadays because the innovation of is a way to distinguish the products of the present and previous product. Based on the definition described, Robbins (1994) stated on his study that focus on three main things which are the first one is the new idea that is a process to think in observing a phenomenon that is happening, including in education, new ideas may include the discovery of an idea of thought, idea, until the system is likely to crystallize ideas.

Secondly, products and services are the result of the next step of the new ideas that followed up with a variety of activities, studies, research and experiments that

produce concept more concrete in the form of products and services that are ready to be developed and implemented as a result of innovation in education. Lastly, improvement efforts are systematic efforts to make improvements and make continuous improvement of innovation so that it can be useful.

The study of Veryzer (1998), they mention that the accumulated extensive knowledge about the process of continuous innovation and incremental. Therefore, to enhance the development of new products, a lot of effort and attention is directed to the process as it relates to the improvement of a product, upgrades and so on, but there is little research that focused on products that are completely new or new products radical.

Other than that, the innovation of the product should be based on the existing product that has been made. This is because, the successful innovations will be evaluated based on product enhancements, facilities and sophistication of the product compared to its predecessor. In innovation also has a strategy to be developed. Many scholars have argued and agreed that for new technology ventures, a very important strategy is an innovative product which can be classified as a company based on new technology that was eight years younger (Boeker, 1989).

In the meantime, a product performance should be emphasized in advance to ensure the ability to implement the innovation process goes smoothly. This is because the performance of the product in the market is very important for the company to see

how effective a level of the product before the process of innovation made. This statement support by a study from Utterback and Abernathy (1975), which stated that with an initial emphasis on product performance, the product will be developed over time in a predictable manner as was the case with the development process and the idea of innovation of the product itself.

Therefore, in order to develop a new product with innovation process, some aspect should be emphasize and there are related to each other like the product performance, product enhancement, the existing of the past product and so on.

2.3.5 Features

Features of a product are a function that is able to delight and satisfy users. It can also achieve target specific user requirements and can be seen as a favor to have the product. In the business world, the characteristics of a product is one of the distinguishing features of a product or service that helps to increase the demand for potential buyers and it can also be used to formulate a marketing strategy that emphasizes usability of the product to target potential consumers. On the other hands, the product has a unique feature has the advantage to attract users to buy without to think for long. Moreover, the unique characteristics of a product should be used as inputs in determining the product's marketing mix.

According to Zhai et al. (2011), they mention on their study that to produce a summary of the features of a product, the product features identified earlier as well as the positive and negative opinions will be collected. In addition, the product features are attributes, components and other aspects such as picture quality, battery life, "zoom" digital camera and so on. To describe the characteristics of similar products, a lot of reviews and people use different words. Furthermore, a study from Schumpeter (1989), he stated that the product features are the physical characteristics of a product sold and marketed by the company.

Product features include quality or variables such as shape, color, size, speed, durability and so on. Marketers always produce the difference between the product features and advantages of the product. Although the characteristics of a product resulting from the production itself, the advantage is a natural response by the consumer to the product based on its characteristics.

The advantages of the product depends on the features and on what is needed and appreciated by consumers even if the product features are the same regardless of where it is produced and by whom it is used. In fact, the product features is closely associated with product design. In other words, if there is no production design, there will not be exist features of a product. This means, if a company or organization produces a product, then indirectly, the product has a distinctive design and also has its own unique characteristics.

In addition, the good and unique of the features can give more advantage to the company in terms of marketing of the product. The finished product will be marketed to consumers and users would be interested in a product that has the design and features that appeal to their interests. Features of a product also help to determine the price of a product. Thus, premium features may be able to fetch a premium price. Therefore, from the features of the product, companies can put a price according to the type and capabilities of the product. To put a suitable price also is a risk to the company and pricing strategies need to be implemented. In other words, if the price is high, the demand for the product will decline and will cause businesses to fall.

In marketing decision process, price is the most difficult element to be determined. This statement is supported by the opinion of (Dolan & Simon 1996) in the study of Ingenbleek and Van der Lans (2013) which states that managers also found that price is the most difficult marketing decisions. Although the theory and practice of mutual interest in the price, however, the practice through company of making price decisions in the market and the theoretical price is totally different (Ingenbleek & Van der Lans, 2013). There are some elements in determining the price strategy which the credit term results, payment due date, price adjustments, discounts, new product positioning and pricing methods (Lee, Cheng, & Chen, 2008).

In addition, in the study of Lee, Cheng, and Chen (2008) also showed that the study of Roger, Gamans and Grassi (1991) states that over the years, competition has

increased and causing the difference between the product, and its impact, although the price change, but the change in the price still managed to attract customers.

Besides that, with good features as well, the company can make product promotion with effective and easier to attract consumer demand for such products. According to Lamb et al., (2009) in the study of Hafiz (2010), they mention about the promotion is a type of communication to potential customers that used by the seller to deliver something in order to increase the attractiveness of the customer directly to the product.

On the other views, promotion is divided into four types, namely sales promotion, publicity (free advertising), personal selling and advertising (Van Waterschoot & Van den Bulte, 1992). Therefore, there are many benefits to the company based on the good quality of product features which are can effectively market their products and can guarantee profits with new products.

2.4 Conclusion

Nowadays, most companies have issued a range of new products in generated of booming markets of sales of goods. This scenario can be seen especially in the motor vehicle market, consumer goods, telecommunications and packaging market. However most of the items on the market can not last long and attract buyers. This is because the continuous change in terms of functionality and technology of the product is always in effect from time to time. Consumers always prefer a goods and

services that can meet the needs, tastes and diversity to the maximum (Amirmudin, 2007).

In conclusion, knowledge about the relationship between product strategy, design, innovation and features are important for the company to develop a strategy to achieve success in selling products and services that is undertaken other than basic knowledge of business alone. A part from that, the knowledge of product strategy plays an important role in determining the success or failure of a business.

In addition, the ability to understand the relationship of product strategy, design, innovation and features are the basis of success for entrepreneurs to succeed in business in order to enhance the new product development. There are several measures for the development of new products besides develop a strategy in the product, such as idea generation, idea screening, concept development and testing, marketing strategy development, business analysis, product development, test marketing and commercialization. Therefore, that is the core of the product strategy, design, innovation and features are the selection of an appropriate through the efficient implementation. So, by discussing in this chapter, we will know the theory that discussing all the variables that are related.

In this chapter also, it can determine the relationship between product strategy, design, innovation and features whether these elements have relationship or not to the new product development. Lastly, it shows whether these relationships give the

positive influence or vice versa. As is known, products are goods or services to be sold to the buyer. Entrepreneurs must produce physical products that can attract and meet the needs of consumers, including aspects of product variety, quality, design, features, brands, packaging, size, service, warranty and return.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter will presents a particular steps used in the writing analysis and gathering of information for this proposed research. It also provides the various methods that will be used in analyzing the information obtained for better findings. In this chapter also, we will discuss all about the method that used in this research such as research framework, hypotheses development, research design, operational definition, data collection process, sampling design and data analysis technique

First and foremost, will be discuss about research framework which showing the relationship between independent variables and dependent variables. Next, the hypotheses will be developing in order to know the relationship between independent variables and dependent variables whereas the relationship of independent variables are significant difference or not significant different to the dependent variables. The research design objective is to help the researcher to find solution for the problem.

In addition, will be also discuss about the operational definition which mean the definition of each variables from authors that are measure of each variables. Furthermore, the data collection process is all about the steps or procedure how the

data will be collected and analyzed. Then, for the sampling design, will be cover five items that include in the sampling design like population, target population, sampling frame, sampling technique, the unit of analysis and type of study whether this study is conduct by quantitative or qualitative methods. Lastly, the data analysis technique will be discussed in order to give a briefly explanation about factor analysis, reliability test analysis, normality test analysis, descriptive analysis, Pearson correlation analysis and the multiple regression analysis.

3.2 Research Framework

Based on the chapter 2 previously were mentioned the literature review on innovation and features towards new product development. The construct of research framework below based on recent conceptual and empirical research embarked on the theory of Key success factors (KSFs) which are the things that must be rightly explicit for business to flourish and for managers' goals to be attained (Bullen & Rockart, 1981). Further, the literature review discussed about independent variables which are product strategy by McGrath (1995), design by Zeng and Gu (1999), innovation by Schumpeter (1989) and features also by Schumpeter (1989). Therefore, based upon the literature review and theoretical framework, there is a need to examine and explore the link between innovation and features towards new product development. The conceptual framework as shown in Figure 3.1 will provide the conceptual foundation.

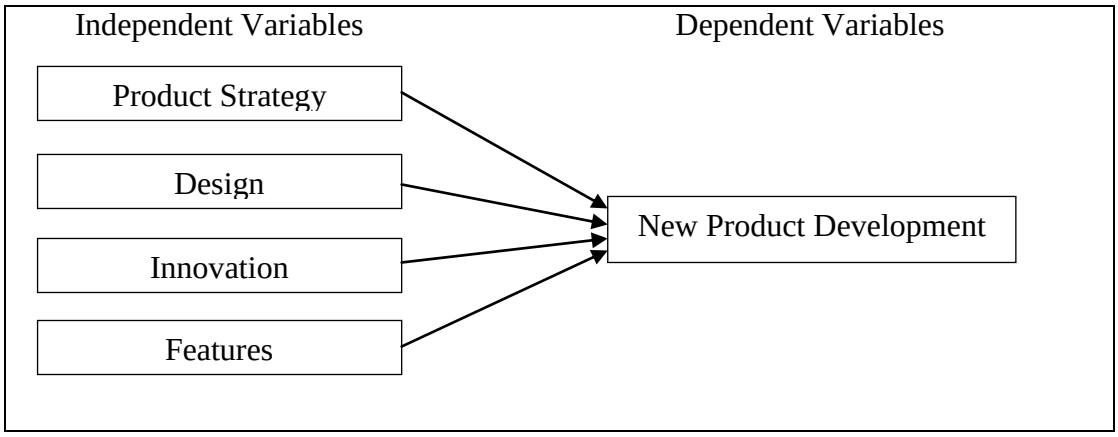

Figure 3.1. Research Framework

3.3 Hypotheses Development

A hypothesis is a statement of the relationship between two or more variables. It is always in declarative sentence form, and they relate either generally or specifically from variable to variable. They are guides for the investigation in the entire process of research endeavor and they keep the research on the main line of the study. It is importantly seen as the beacon that lights the path for the research work.

In this research, there had some hypotheses were developed and these hypotheses based on the developing the research model and also the literature reviews. Basically, there had independent variable that would be test which is consist product strategy, design, innovation and features. The independent variable would be test to know the relationship with the dependent variable which is new product development.

Based on the theory of Key Success Factors (KSFs), many authors have concluded that there are some ingredients that are needed to ensure success in the marketplace especially in the development of new products. The main source is required is product strategy proposed by McGrath (1995), which states that in order to ensure the products can compete in the market, product strategy needs to be implemented properly.

In addition, the study Chang, Lin and Yu (2007), they stated that the design of the product is a key to the success of new product development. In the study of Utterback and Abernathy (1975), they mention that, with an initial emphasis on product performance, the product will be developed over time in a predictable manner as was the case with the development process and the idea of innovation of the product itself. The last main source based on the KSFs theory is about good quality of product features which are can effectively market their products and can guarantee profits with new products highlighted by Van Waterschoot and Van den Bulte (1992).

Therefore, as a conclusion, all of the elements that highlighted by the scholars shows the strong relationship between product strategies, design, innovation and features towards new product development. In view of the above literature review and research questions, the following research hypotheses will suffice for this research work.

Therefore, based on the scholar statement, the eight hypotheses were developed as below:

Pearson Correlation:

H_1: Product strategy has a positive relationship with new product development

$H_{2:}$ Design has a positive relationship on new product development

$H_{3:}$ Innovation has a positive relationship with new product development

$H_{4:}$ Features has a positive relationship towards new product development

Multiple Regressions:

H_5: There is a positive influence between product strategy towards new product development

$H_{6:}$ There is a positive influence between design towards new product development

$H_{7:}$ There is a positive influence between innovation towards new product development

$H_{8:}$ There is a positive influence between features towards new product development

3.4 Research Design

In this study, a quantitative approach that conducted through a survey research by distributing the self-administrated questionnaire to the respondents are to be the most appropriate research strategies to be used in order to meet for the research objective of this study. The main reason of attempting the quantitative approach is because it is generally less expensive and time consuming than the other research strategies (Sekaran & Bougie, 2013).

Besides that, the survey research is the most popular method of data collection in quantitative approach and many researchers accepted this method as it provide a possibility and more truthful and unambiguous feedback or response then other form of research methodologies.

Additionally, most of self-administrated questionnaire will be keep totally confidential. Thus, the anonymity of the respondent will be high and almost 100% of response rate ensured (Sekaran & Bougie, 2013). Moreover, the purpose of this study is descriptive or explanation study. Since the researcher is interested to explore the relationship of innovation and features towards new product development, thus the descriptive study is designated to reveal the relationship between the variables. Next, the descriptive study also makes the researcher to think systematically about the factor that might influence the new product development.

3.5 Operational Definition

This part will discuss on the operation definition of the variables such as new product development, product strategy, design, innovation and features.

3.5.1 New Product Development

The new product is described as the newness to the organization and the newness to the markets. Based on these dimension, there are six categories have been identified

which are the cost reduction, repositioned product, additions to existing product lines, new product lines for firm to enter the markets and new to product world with the new markets (Illori *et al.*, 2000; Pujari *et al.,* 2003).

3.5.2 Product Strategy

The product strategy of high technology companies can be seen to consist of three dimensions which are product platforms, product lines, and individual products (McGrath, 1995). According to McGrath (1995), many people think that a product is intangible bid, but may actually be more than that. Product is anything that can be offered to the market to satisfy the desires or needs. The products marketed include physical goods, services, experiences, events, people, places, properties, organizations, and ideas.

3.5.3 Design

Design is an intelligent activity that begins with design requirements and ends with a product description (Zeng & Gu , 1999). In 1930, the business was helped by the design of the product to be very creative to get absolute power in a highly competitive global market. A survey was conducted in the market to investigate a new product which indicates that the product design is a key factor for a successful sale (Chang, Lin & Yu, 2007).

3.5.4 Innovation

Innovation refers to new outcomes either incremental or radical generated from implementation of creative ideas. From previous literature, Joseph Schumpeter (1989) was the first scholar who coined the concept of innovation as gales of creative destruction (Felekoglu & Moultrie, 2014). According to Schumpeter (1989), innovation is reflected in novel outputs which are different from others.

3.5.5 Features

A study from Schumpeter (1989), he stated that the product features are the physical characteristics of a product sold and marketed by the company. To produce a summary of the features of a product, the product features identified earlier as well as the positive and negative opinions will be collected (Zhai et al., (2011).

3.6 Data Collection Process

The study intends to source for data from secondary sources which various journals, literatures and books. Primary sources also be used to gather information related to the study subject matter like administering surveys with close-ended questions may considered in this regard.

3.7 Sampling Design

The sampling design can be classify such as population of interest, target population, sampling frame, sampling technique, unit of analysis and type of study.

3.7.1 Population of Interest

For the population of the interest, the researcher has selected respondents based on employees in the manufacturing industry, which is in states in Kedah, Malaysia. The population means that the entire group of people, events or things of interest that the researcher wants to study. For the example: Employees of factory. Therefore, this study aim is to examine the relationship of product strategy, design, innovation, features and new product development among employees in manufacturing industries. Therefore, the population of interest of this study is the total number of 120,493 employees in the manufacturing industries in Kedah (Department of Statistics Malaysia, 2013).

So, the target of this study will focus on the employees in manufacturing industries. Manufacturing firms were chosen as population of interest because they are mainly involved in new product development. Manufacturing firm in Kedah was chosen as research sample due to time constraint and budget limitation for data collection.

3.7.2 Target Population

The researcher is interested in collecting the data specifically toward the employees in manufacturing industries in term of their experience and knowledge about the product development in this country. This is to identify the influence factor of innovation and features towards new product development. Therefore the appropriate target population that has been targeted by the researcher in this study is the employees from manufacturing industries in Kedah. Additionally, in order to meet the objective of this study, the sample was selected according to the following criteria.

i) Sample must be from the employees including technicians, engineers, executives, managers and others from manufacturing industries.
ii) Sample must be from manufacturing industries in Kedah.
iii) Sample can be from various races, level of age and different position in company.

3.7.3 Sampling Frame

The sampling frame is the sample of 130 of employees takes from the population of 120,493 total numbers of employees in manufacturing in Kedah and chose by randomly. So, the sampling frame that would be most appropriate for the research questions is a stratified random sample. A stratified random sample is obtained by separating the population into non-overlapping groups (strata) and then selecting a

simple random sample from each stratum (Muhammad Awais & Kaliani Sundram, 2015). Random sampling also is used because to avoid the bias on the feedback.

Since the sample for this study are relatively small and target respondents are attached at various departments in the organization, the researcher decided to use disproportionate stratified simple random sampling. This means from the total number of 120,493 populations of employees in manufacturing industries, the researchers chose a sample size of 130 employees randomly based on Yamane (1967).

According to Yamane (1967), the number of sample size required for study is 100. However, in this study, the researcher distributed more than 200 sets of questionnaires in order to avoid from any difficulties such as unreturned form, invalid answers and blank responses. Therefore, the valid answers and the usable questionnaires that can be used to be the sample size are 130.

3.7.4 Sampling Technique

In this sampling frame, the researcher would use the probability sampling method while selecting the 130 respondents to represent the sample size. Therefore, the probability sampling methods would be used in this study because as is known, the probability sampling can be either unrestricted (simple random sampling) or restricted (complex probability sampling) in nature (Muhammad Awais & Kaliani Sundram, 2015). In addition, the researcher uses the probability sampling method

because the researcher has already known the total amount of respondent and also known the target respondent.

3.7.5 Unit of Analysis

For the units of analysis, the researcher has selected individual as units of analysis because it is appropriate with the concept that has been investigated. Why the researcher states that the individual unit of analysis is appropriate because of the respondents were among employees from manufacturing industries in Kedah. This is because when researcher collected data from each employee, the unit of analysis in that research will be considered as individual. In other words, when researcher treats each individual or employee as data source, the unit of analysis will be considered as individual.

3.7.6 Type of Study

The type of the study can be through two approaches such as quantitative and qualitative method. For this study, the researcher uses the quantitative method. The quantitative method is chosen because the measurement of this study is by surveys and the measures are systematically created before data collection and are standardized. This method also is chose because the suitableness with questionnaire that is distribute to the respondents. The quantitative research method is a process of measuring data by using statistical techniques (Muhammad Awais & Kaliani Sundram, 2015).

3.8 Data Analysis Technique

Statistical Package for the Social Sciences (SPSS) software version 20.0 will be used to statistical analyses the data which will be gathered from the respondents in Malaysian manufacturing sector for this study, the data gathering will extracted through the distributed questionnaire towards respondents in Malaysian manufacturing industries. By using SPSS 20.0 to analyze the data collected from the respondents, there is numerous analysis tools had been used technically to generate analytical information. Those analysis tools that will be applied in this paper are factor analysis, normality test analysis, reliability test analysis, descriptive analysis, Pearson correlation and multiple regressions to examine the data to achieve the research objective. As a result, the generated information may help to provide an overview which enables the researcher to analyze each hypothesis comprehensively. Table 3.1 shows the statistical analyses used to answer two main objectives of the study.

Table 3.1
Statistical Analysis

Main Objectives	**Statistical Analysis**
Objective 1: To determine the possible relationship between product strategy, design, innovation and features towards new product development	Pearson's Correlation
Objective 2: To examine which variables has most influences on new product development	Multiple Regression

3.8.1 Factor Analysis

Factor analysis was used to identify complex interrelationships among items and group items that are part of unified concepts. The results from factor analysis would be able to confirm whether or not the theorized dimensions emerge (Sekaran & Bougie, 2010). In factor analysis, the communality value, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy value, and Bartlett's Test of Sphericity significance have to be focused on where the communality value is considered as acceptable if the value is above 0.5, the KMO value must exceed the recommended value of 0.6, and the Bartlett's Test of Sphericity must reach statistical significance (Kim & Mueller, 1994). As for this study, interrelationship among items in dependent variable and independent variables had been tested.

3.8.2 Reliability Test

The reliability test was used to measure the goodness of data which includes the stability and consistency of the items. Cronbach's Alpha is the most common method used to examine the consistency of the data. Sekaran (2003) suggested that the closer the value of Cronbach's Alpha to 1, the higher the reliability of internal consistency. The Cronbach's Alpha value which is less than 0.60 is considered to be poor while those in the range of 0.70 are acceptable. Whereas, the value over 0.80 is considered to be good and having a higher internal consistency.

3.8.3 Normality Test

The most important assumption in conducting multivariate analysis is normality. The normality test was required to ensure normal distribution of data and inspection of the outliers (Hair *et al.*, 2010). They added that the outliers would be eliminated and the result could be obtained through the graphical analysis and statistical test of normality. Generally, the data normality can be evaluated through a straight diagonal line where the plotted data values are in line or parallel to the diagonal line (Coakes & Steed, 2007). In addition, normality also can be analyzed through skewness and kurtosis. The z-values for skewness and kurtosis between -2 and +2 are considered acceptable in order to prove normal univariate distribution (George & Mallery, 2010). The statistical value (z) for skewness and kurtosis can be calculated by dividing the value of skewness and kurtosis by the appropriate standard error of each skewness and kurtosis (Hair et al., 2006).

3.8.4 Descriptive Analysis

Descriptive analysis was carried out as the data analysis on the respondents and firms general information. This analysis was also applied to identify mean for every variable. Generally, descriptive analysis involves transformation of raw data into a form that would provide information to describe a set of factors in a situation (Sekaran, 2003). Descriptive statistics was focused on the frequencies and percentages.

3.8.5 Pearson Correlation Analysis

The Pearson correlation was used to examine the relationship between dependent and independent variables, to predict the strength of the relationship as well as the direction of the relationship. This test was mainly used to answer the first research question in this study. Gliner, Morgan, and Leech (2009) recommended that Pearson correlation can vary from -1.0, which considered as perfect negative correlation through 0.0, which is no correlation at all to +1.0, which is considered as perfect positive correlation. The coefficient scale and relationship strength of correlation has been lined out by Hair, Money, Samouel, and Page (2008) to interpret the relationship between two variables as shown in Table 3.2.

Table 3.2
The Coefficient Scale and Relationship Strength of Correlation

Coefficient Scale	**Relationship Strength**
± 0.91 - ± 1.00	Very Strong
± 0.71 - ± 0.90	Strong
± 0.41 - ± 0.70	Moderate
± 0.21 - ± 0.40	Weak
± 0.01 - ± 0.20	Very Weak

Source: Hair, Money, Samouel and Page (2008)

Based on table 3.2, in order to determine the significance between two variables, it can be seen through the significant value. If the significant value, $p<0.05$, therefore, there is correlation between the variables. If the value is above the sign value, it can

be concluded that the variable is not significant and there is no relationship between the variables involved (Coakes & Steed, 2007).

3.8.6 Multiple Regression Analysis

The purpose of implementing this test is to see how much of the variance in the dependent variables that are being affected by the independent variables. A value of R square is used to interpret the data in terms of variance explained of both variables (Gliner *et al*., 2009). This test was also required to achieve the second objective of the study. Multiple regressions analysis was applied to analyze the best predictor among the independent variables which are consist product strategy, design, innovation and features in influencing the new product development in manufacturing industries in Kedah.

To determine the influence of independent variables on dependent variables, it can be seen through the significant value provided in the regressions table. If the value is below the significant level of $p<0.05$, this means that the independent variable influences the dependent variable. In contrast, if the value is above the sign value, it indicates that there is no influence between the independent and dependent variables (Gliner *et al.,* 2009).

Therefore, the multiple regressions had been implemented in order to determine the strongest influence of innovation and features on new product development. Figure 3.2 shows the formulation of multiple regressions. It was assumed that β

(coefficient) was positive, meaning that all the variables positively influenced sustainable performance.

$$NPD = \alpha + \beta 1\ PS + \beta 2\ D + \beta 3\ I + \beta 4\ F + \mu$$

Where:

NPD	= New Product Development	μ	= Error term
PS	= Product Strategy	B	= Unstandardized beta coefficient
D	= Design		
I	= Innovation		
F	= Features		
α	= Intercepts (constant value)		
i	= respondent 1 2 …… 130		

Figure 3.2. Model Formula for Multiple Regressions

3.9 Conclusion

This research aims at contributing to the development of new product. It will also further add information and provide new input for future research. Therefore, using these elements that comprise of product strategy, design, innovation and features will help raising the quality and productivity of companies to compete with the other market players in industry.

In conclusion, in the research methodology that have been conducted by researcher, the researcher have chosen the simple random sampling for the sampling frame because of the respondents that researcher chose is among the employees in

manufacturing industries. So, the simple random sampling is the most suitable sampling frame that should be used. Other than that, the researcher used the individual as the units of analysis because of the respondents were employees in manufacturing industries in Kedah. In addition, the employees from manufacturing in Malaysia are divided into fourteen states. So, the researcher chooses the employees in manufacturing industries from the states in northern Malaysia which is Kedah.

Therefore, the respondents are among of the departments is an individual of units of analysis. This is because when researcher collected data from each employee in manufacturing industries in Kedah, the unit of analysis in that research will be considered as individual. In other words, when researcher treats each individual or students as data source, the unit of analysis will be considered as individual.

By using the methodology, indirectly, the researcher can gain knowledge about the product development in term of employees experienced and knowledge by using four elements that are related which are product strategy, design, innovation and features. The obtained results can help the researcher in his study.

This chapter also has explained on the methods applied in this study. All the stages starting from the collection of data until the types of tool used to analyze the data have been discussed. The results from the data analysis are presented in the next chapter. Based on the needs of the study, the next chapter explains about the findings or results obtained in this research.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Introduction

This chapter contains the findings of data analysis for this study. The result outcomes for data analysis were completed using SPSS programs. The data analysis involved pilot study, factor analysis, reliability test, and normality test. In addition, this chapter also addressed the findings from respondent's background which is analyzed by using descriptive analysis. Last but not least, the results obtained from the correlation and regression analysis were also explained in order to identify the relationship and influence among the variables. The analyses were based solely on the data furnished by the respondents through returned questionnaires.

4.2 Pilot Study

A pilot study was conducted in October 2015. The purpose of the pre-test was to identify ambiguous items in the instruments. A total of 30 questionnaires were sent online to the respondents in Malaysian manufacturing firms in Kedah. The pilot test requires around 30 to 50 respondents and is considered enough to identify any weakness or mistakes in a study (Bullen, 2014).

4.3 Factor Analysis

Table 4.1 shows the result of factor analysis for the independent variables consisted of product strategy, design, innovation, and features. The independent variables were measured using 20 items in four dimensions, which were subjected to Principal Component Analysis (PCA) using SPSS Version 20. Principal component analysis was performed to determine the factors of the construct (Hair et al., 2010). According to Hair et al., (2010), they stated in their study that the main objective of factor analysis is to reduce a vast number of variables into an interpretable and meaningful set of factors.

Communality value for each item of all four independent variables is more than 0.6 (see Appendix D) as suggested by Kim and Mueller (1994), therefore none of the 20 items had to be deleted in order to increase factor's loading. As shown in Table 4.1, the factor's loadings of every variable representing the NPD are above 0.7 and can be considered as excellent (Tabachnick & Fidell, 2007). The highest Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) value of innovation is 0.866, while the lowest KMO value is shown by design with 0.781.

These results exceed the recommended value of 0.6 (Hair et al., 2008) and Bartlett's Test of Sphericity also reach statistical significance, supporting the factorability of the dimensions. The PCA also reveals the presence of components with eigenvalues exceeding 1 for all four independent variables, respectively explaining percentage of variance for product strategy (73.302%), design (67.123%), innovation (72.705%)

and features (72.052%). Thus, all of the items used to measure independent variables were sustained.

Table 4.1
Result of Factor Analysis for Independent Variable

Items	**Component**		
Product Strategy 1	0.899	Eigenvalues	3.665
Product Strategy 2	0.819	Percentage of Variance (%)	73.302
Product Strategy 3	0.851	KMO	0.842
Product Strategy 4	0.853	Bartlett's Test of Sphericity	432.318
Product Strategy 5	0.857	Significance	0.000
Design 1	0.864	Eigenvalues	3.356
Design 2	0.818	Percentage of Variance (%)	67.123
Design 3	0.784	KMO	0.781
Design 4	0.759	Bartlett's Test of Sphericity	346.688
Design 5	0.865	Significance	0.000
Innovation 1	0.835	Eigenvalues	3.635
Innovation 2	0.871	Percentage of Variance (%)	72.705
Innovation 3	0.855	KMO	0.866
Innovation 4	0.873	Bartlett's Test of Sphericity	402.741
Innovation5	0.829	Significance	0.000
Features 1	0.854	Eigenvalues	3.603
Features 2	0.840	Percentage of Variance (%)	72.052
Features 3	0.836	KMO	0.859
Features 4	0.860	Bartlett's Test of Sphericity	389.904
Features5	0.854	Significance	0.000

Table 4.2
Result of Factor Analysis for Dependent Variable

Items	Component		
New Product Development1	0.910	Eigenvalues	3.975
New Product Development2	0.909	Percentage of Variance (%)	79.490
New Product Development3	0.856	KMO	0.851
New Product Development4	0.889	Bartlett's Test of Sphericity	550.735
New Product Development5	0.893	Significance	0.000

Table 4.2 shows the dependent variable, new product development, which is measured by 5 items in one dimension and was subjected to principal component analysis (PCA) using SPSS Version 20. Inspection of the factor's loading for the dimension reveals the presence of value above 0.7 and can be considered as excellent (Tabachnick & Fidell, 2007). Referring to Table 4.2, the KMO value for new product development is 0.851. The KMO value of this dependent variable exceed the recommended value of 0.6 (Hair et al., 2008) and Bartlett's Test of Sphericity reach statistical significance, supporting the factorability of the dimensions as suggested by Kim and Mueller (1994). The PCA reveals the presence of new product development with eigenvalues exceeding 1, which the dimension of new product development explains 79.490% of the variance. Thus, the 5 items used to represent new product development were maintained.

4.4 Reliability Test

The main purpose of reliability test is to measure the goodness of the data which includes the internal consistency and stability of the items (Hair et al., 2010). Table 4.3 represents the Cronbach's alpha for each variable.

Table 4.3
Cronbach's Alpha for each Variable.

Variables	Cronbach's Alpha
Product Strategy	0.908
Design	0.874
Innovation	0.904
Features	0.903
New Product Development	0.935

Table 4.3 indicates the Cronbach's Alpha for each variable in this study. As the results, the new product development states the highest rate with 0.935, followed by product strategy (0.908), innovation (0.904), features (0.903) and design (0.874). Based on the results obtained, the internal consistency among all items both of dependent variable and independent variables are considered as very good, which are above 0.8 as suggested by Sekaran (2003).

4.5 Normality Test

After applying the reliability test, the data must undergo a screening process which is known as normality test. The normality test was required to ensure normal

distribution of data and inspection of the outliers (Hair et al., 2010). As a result, the distributions of data in this study are normal. Besides, the assessment of normality had already proved that the data used in this study was also normally distributed by using the Q-Q plot (see Appendix F).

4.6 Descriptive Analysis of Respondent's Background

As for this part, frequency distribution was applied to summarize respondents' general information or background. Table 4.5 shows that the respondent's position in company where mostly technician and executives at 40.0% and 20.8% respectively. As the result, the table 4.4 also shows variance of positions such as engineer (17.7%), manager (10.8%), and also general manager at 10.8% respectively.

Table 4.4
Employee's Position in Company

Employee's Position	**Frequency**	**Percent**
General Manager	14	10.8
Manager	14	10.8
Engineer	23	17.7
Executive	27	20.8
Technician	52	40.0
Total	**130**	**100**

Table 4.5
Types of Department in Company

Types of Department	Frequency	Percent
R&D	17	13.1
Engineering	21	16.2
Production/Manufacturing	44	33.8
Quality Management	17	13.1
Purchasing	19	14.6
Planning Control	12	9.2
Total	**130**	**100**

Table 4.5 highlights the variance of department type in company among manufacturing firms involved as production or manufacturing tops with the highest percentage at 33.8%. Engineering comes second with 16.2%. Then, purchasing at 14.6%, followed by quality management and R&D share same percentage at 13.1% and the result also shows that the lowest percentage at 9.2% is planning control.

Table 4.6
Years of Employee's Working Experience

Years of Working Experience	Frequency	Percent
Less than 1 year	20	15.4
1-3 years	36	27.7
3-5 years	25	19.2
5-7 years	9	6.9
7-10 years	15	11.5
More than 10 years	25	19.2
Total	**130**	**100**

The result from Table 4.6 shows that 27.7% are years of employee's working experience are 1-3 years which the frequency is 36 out of 130. However, the year of employee's working experience at 3-5 years and more than 10 years are share same percentage in second place at both are 19.2% respectively. The working experience less than 1 year is 15.4% and experience between 7-10 years follow with 11.5%. Respectively, the working experience of employees between 5-7 years shows the least percentage at 6.9%.

Table 4.7
Employee's Educational Level

Employee's Educational Level	**Frequency**	**Percent**
Certificate	32	24.6
Diploma	21	16.2
Bachelor Degree	73	56.2
Master/PhD	4	3.1
Total	**130**	**100**

Based on Table 4.7, it is found that most of the respondents for the educational level are from bachelor degree has the highest percentage at 56.2%. Then, certificate in the second place at 24.6%, followed by diploma at 16.2% and lastly the educational level from master or PhD shows the least percentage at 3.1%.

Table 4.8
Employee's Experience with Design or Innovation of the Product

Employee's Experience	**Frequency**	**Percent**
Yes	80	61.5
No	50	38.5
Total	**130**	**100**

Table 4.8 shows the result where the highest percentage of employee's experience with design and innovation of the product said yes is 61.5%. This result shows that most of the employees in manufacturing industries in Kedah have experience with the design and innovation of the product which is the frequency is 80 out of 130. The percentage that the employees said no experience with the design and innovation is 38.5% which 50 total frequency.

Table 4.9
Employee's Experience in Engaging with New Product Development

Employee's Experience	**Frequency**	**Percent**
Yes	91	70.0
No	39	30.0
Total	**130**	**100**

Based on the table 4.9, the result shows the highest percentage at 70.0% which is shows the most employees experience in engaging with new product development in manufacturing industries said yes, followed by 30.0% said no experience in engaging with new product development.

Table 4.10
Company's Product Launch in Last 5 Years

Number of Products	Frequency	Percent
1-5 Products	38	29.2
5-10 Products	51	39.2
More than 10 Products	41	31.5
Total	**130**	**100**

The result from Table 4.10 shows that 39.2% are company's product launch in last 5 years is 5-10 products. The number of product launches more than 10 product follow with 31.5%. Respectively, the number of product launch between 1-5 products shows the least percentage at 29.2%.

Table 4.11
Percentage of Company's Expenditure towards R&D per Year

Company's Expenditure Percentage	Frequency	Percent
Below 1%	16	12.3
1-5%	28	21.5
5-10%	45	34.6
10-25%	29	22.3
More than 25%	12	9.2
Total	**130**	**100**

Lastly, from Table 4.11, the data of company's expenditure towards R&D per year percentage shows that 34.6% as the highest with 5-10% R&D per year. Then, 10-25% R&D per year took a second place at 22.3%, followed by 1-5% R&D per year at 21.5% in third place and below 1% R&D per year at 12.3%. The result also shows the lowest percentage of company's expenditure towards R&D per year is more than 25% years with 9.2%.

4.7 Pearson Correlation Analysis

The correlation analysis was carried out to determine the type and the strength of relationship exists between the variables in the hypothesis. In order to achieve the first objective of the study, the Pearson's correlation was used to examine the relationship between product strategy, design, innovation, features and new product development. One-tailed test was used since the statements of hypotheses stipulate the directions of the relationships are positive. One-tailed test allows to determine if one mean is greater or less than other mean but not both. In other words, one-tailed test tell the effect of a change in one direction and not the others. Table 4.12 represents the result of Pearson's correlation analysis:

Table 4.12
Correlation between Independent Variables and New Product Development (N=130)

Variables	**Pearson Correlation**
	New Product Development
Product Strategy	0.842
Design	0.833
Innovation	0.830
Features	0.810

** Correlation is significant at the 0.01 level (1-tailed)

According to Table 4.12, the correlation analysis shows that product strategy has positive correlations with new product development and it's at significance level of 0.01. The result also shows that the strength of the relationships is strong. Referring to Hair et al. (2008), when the coefficient scale is between ±0.41 and ±0.70, the relationship strength is considered as strong. Therefore, Hypothesis H_1 (Table 4.14) are supported.

Hypothesis H_2 (Table 4.14) is also supported. Based on Table 4.12, there are strong positive relationships between design and new product development at significance level of 0.01.

The innovation has also been found to have positive relationship with new product development. With correlation coefficients of 0.830, and the relationship is strength of innovation and new product development at significance level of 0.01. Therefore, hypothesis H_3 (Table 4.14) is supported.

Lastly, as for features, table 4.12 also shows that there are significant positive correlations between features and new product development at significance level of 0.01. The positive correlation implies that higher features to go with higher new product development and lower features to go with lower new product development. Thus, hypothesis H_4 (Table 4.14) is also supported.

4.8 Multiple Regression Analysis

Multiple regression analysis was applied to identify the best predictor influencing the new product development in manufacturing industries in Kedah. The variables of product strategy, design, innovation and features were tested using multiple regressions to achieve the second objective of this study.

If the value is below the significant level of $p<0.05$, this means that the independent variable influences the dependent variable. In contrast, if the value is above the sign value, it indicates that there is no influence between the independent and dependent variables (Gliner *et al*., 2009).

Table 4.13
Multiple Regression Result

R	**R Square**	**Adjusted Square**	**R Std. Error of the Estimate**	**F**	**Sig**
0.883	0.780	0.773	0.475	110.793	0.000
Dependent Variable: New Product Development					
Model		**Standard Coefficient Beta**		**T**	**Sig**
(Constant)				0.747	0.457
Product Strategy		0.352		3.864	0.000
Design		0.120		1.060	0.291
Innovation		0.315		3.655	0.000
Features	.	0.150		1.610	0.110

The regression result in Table 4.13 shows that product strategy, design, innovation and features jointly explain 78.0% of the variance in predicting new product development. The model proposed is significant at 0.00 level ($F=110.793$, $p=0.000$).

Two variables had been found to have statistically significant associations with new product development. The variables are product strategy (Beta=0.352, p=0.000) and innovation (Beta=0.315, p=0.000). The largest beta coefficient obtained was 0.352 for product strategy and this corresponds with the highest t-statistic of 3.864. This means that this variable makes the strongest unique contribution in explaining the dependent variable, new product development when the variance explained by all other predictor variables in the model was controlled for.

It suggests that one standard deviation increase product strategy is followed by 0.352 standard deviation increase in new product development. The Beta value for innovation was the second highest with 0.315. However, design and features do not contribute toward new product development as the significance value for these two independent variables are bigger than 0.05. Therefore, product strategy and innovation are the strongest predictors in influencing new product development in manufacturing industries in Kedah based on the findings of this analysis.

Table 4.14
Summary of All Hypotheses (N=130)

Hypotheses	Hypotheses Statements	Remarks
H_1	Product strategy has a positive relationship with new product development	Supported
H_2	Design has a positive relationship on new product development	Supported
H_3	Innovation has a positive relationship with new product development	Supported
H_4	Features has a positive relationship towards new product development	Supported
H_5	There is positive influences between product strategy towards new product development	Supported
H_6	There is positive influences between design towards new product development	Rejected
H_7	There is positive influences between innovation towards new product development	Supported
H_8	There is positive influences between features towards new product development	Rejected

4.9 Conclusion

This chapter outlines the analysis from the data of 130 respondents. For the multi item scale, the set of items that match up to each theoretical construct was initially subjected to the result of Cronbach's Alpha. In addition, there are also items of a total correlation and regression test. All the measurement appeared to be one dimensional, internally consistent, reliable and valid for analysis of the mode. Furthermore, the relationship between four independent variables which are product strategy, design, innovation and features towards dependent variable which is new product development also has been determined. The result of a Pearson Correlation analysis has shown that each of the variables has positive and significant relationship with the new product development. Hence, this has providing the initial proved and supported to the previously developed research hypothesis.

This chapter also deliberates on the findings congregated from the data analyses. The validation of instruments was conducted through factor analysis. After testing the reliability and normality of data, descriptive test was prepared. Finally, correlation test and multiple regression tests were done to answer the research questions and to achieve the research objectives. Most of the findings under Pearson's correlation were as expected and in concurrent with previous findings. More recommendation and conclusion in the next chapter elaborates further on the result and their implication to the theory and management.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter is divided into five sections. This section will discuss on the objectives of this study are recapitulated, , summary of the findings, significance of the study, limitation of the study, recommendation of the future research, and the conclusion of the study. This chapter also will evaluate the objective of this study as follow: a) to determine the relationship between innovation and features towards new product development; b) to identify which of the independent variables which are consist of product strategy, design, innovation and features has the most influences on new product development. The research framework of this study was based on Key Success Factors Theory.

5.2 Summary of the Findings

There were 130 respondents in this study which encompassed from various departments and position in the manufacturing industries in Kedah. All of them have obtained the secondary education level which begins from certificate until master/PhD level. Hence, from this background, the respondents are able to answer the questionnaire properly as the questionnaires are almost fully related to the new product development process.

The independent variables of this study were product strategy, design, innovation and features. Furthermore, this study aimed to measure the relationship of this independent variable towards dependent variable which is the new product development.

The descriptive analysis shows that, all the independence variables which are product strategy, design, innovation and features are very important factor in determining the success of every new product development. The result of correlation and multiple regressions in assessing the variables or the empirical relationship between independence variable contribute positively related to new product development. The positive association between combinations among all independent variables to dependents variable are fully supported.

Data was collected through survey method. The sample used for this study is in manufacturing industries. The unit of analysis was individual with the level such as general manager, managers, engineers, executives, and technicians as the respondents. Around 200 questionnaires distributed by mail and online, the author received back a total of 130 questionnaires from the respondents. Table 5.1 summarizes the hypotheses testing results of this study:

Table 5.1
Summary of All Hypotheses Testing Result (N=130)

Hypotheses	Hypotheses Statements	Method of Analysis	Remarks
H_1	Product strategy has a positive relationship with new product development	Pearson's Correlation	Supported
H_2	Design has a positive relationship on new product development	Pearson's Correlation	Supported
H_3	Innovation has a positive relationship with new product development	Pearson's Correlation	Supported
H_4	Features has a positive relationship towards new product development	Pearson's Correlation	Supported
H_5	There is positive influences between product strategy towards new product development	Multiple Regression	Supported
H_6	There is positive influences between design towards new product development	Multiple Regression	Rejected
H_7	There is positive influences between innovation towards new product development	Multiple Regression	Supported
H_8	There is positive influences between features towards new product development	Multiple Regression	Rejected

Based on the table 5.1, the researcher found that the entire hypotheses are accepted and significant. The most influential critical factors on successful new product development were new product strategy, follow by innovation, features, and lastly the design.

5.3 Significance of the Study

The primary objective of the present study is to determine the relationship between product strategy, design, innovation and features towards new product development. This influence is also investigated through the relationship between of product strategy, design, innovation features towards new product development. By achieving these objectives, the study is believed to attain both theoretical and practical significance. The following sections address the theoretical and practical significance of the present research.

5.3.1 Theoretical Significance

This contributes to the body of knowledge in that the purported links between the variables (Product Strategy, Design, Innovation and Features) are grounded based on recent theory of key success factors and management. In addition, the present research is expected to add to the existing body of knowledge by providing empirical evidence within the context of new product development manufacturing industries in Kedah, Malaysia. Furthermore, in Kedah, there has limited empirical study attempted to investigate the influence of product strategy, design, innovation and features to the new product development. This means that our understanding of these variables and the way they are related will contribute knowledge to a better understanding on the product which elements can be specify to the company or organization capability to maintain their product competitiveness in the market industry through the new product development.

5.3.2 Practical Managerial Significance

This study is also important for practical managerial significance. It can benefit to the shareholders of the manufacturing companies by identifying the critical success factors in manufacturing area, especially in developing new product development. This would also be valuable information and also serves as guide for future implement action of the important key elements of manufacturing product competitiveness success. The findings and results of the research are important for the companies in order to guide them on focusing which elements enable to develop their new product development in manufacturing.

This research also has implications for manufacturing companies that have already been implementing strategy in producing new product development but failed to achieve the desired performance level. They may use the results or findings of this research to consider the elements of this study that significant to reinforce their manufacturing product development. In addition, it also assists manufacturing firms to make decision in prioritizing types of manufacturing strategy to be developed a new product.

The findings of this study are expected to provide important insight into the key factors such as product strategy, design, innovation and features which are both very important to gain more profitability and productivity in the market industries.

5.4 Limitation of the Study

The difficulty faced in completing this research is in getting the information. This study had a problem to obtain the number of sample sizes of the employees in manufacturing industries in Kedah because of the several constraints encountered during data collection process. The constraints encountered are lack of cooperation from the respondents, budget limitation, and time constraints have led into a small sample size, which might influence the results. Therefore, the findings of the study have to be taken with caution due to these limitations.

5.5 Recommendation of the Future Research

The research and result from this paper confirmed the relationship between the all variable which are product strategy, design, innovation and features towards new product development in the view of Malaysian manufacturing sector focus in Kedah. These variables which contain product strategy, design, innovation and features are important in ensuring the success of every new product development projects.

For further learning and future research, other researcher might explore the other factors contains in the independent variables such as marketing, networking, supplier involvement, technology, research and development (R&D) or others. Moreover, future researcher might look further into advance level of product development that available in Malaysia either by local or international companies. In the era of globalization economy, the further studies might look into the external factors that

might contribute towards the new product development process and progress, and new product introduction.

The future research also may use this research as a guideline to go further deeply analysis on the specific Malaysia industries such as in electrics and electronics, automotive, robotics or others industries. With the specific industries and the large number of sample, the result might be more accurate and can be use specifically by the respective industries in Malaysia as a general guideline.

Apart from that, based on the findings, the result shows that the most dimension that are influence to the new product development are product strategy and innovation. For the future research, many companies can use the strategy to develop new products in order for remain afloat in the industrial market. Companies are constantly competing with each other to attract consumers to their products and also to increase market share in the industry.

In this study has shown that the product strategy is very influential on the development of new products. Similarly, product innovation is the element that influenced the development of new products. Companies can implement product innovation by recruiting employees who are skilled and able in order for boost productivity and achieve goals. This is because most companies nowadays are less highly skilled workers that have creative thinking and innovative.

Therefore, to develop new products in the future, employees who are capable of great importance to be recruited for help the company achieve the objectives set. Lastly, it is also the need to consider the qualitative methods of study for this issue.

The qualitative method which is attempts to get the non-numerical description and could provide better result and feedback from the respondents through series of interview and deep observation.

5.6 Conclusion

New product development is the process by the companies in using its resources, manpower and capabilities to developed, created and produce the new product or improving their existing product in the market. This product development can be seen as the process for survival and maintaining the competitive advantages for the firm in the nowadays challenging markets. Therefore, the important of new product development can't be neglected by the firm. There are several factors that affect the progress and successfulness of the new product development. In order to eliminate the problem, companies must identify and take a serious consideration on these factors.

In this study, several factors or variable that might affect the process of new product development are studied and being tested. By using the questionnaire and data analysis using the statistical analysis, this study has successfully answered all the research questions and has tested the entire hypothesis that being constructed before.

The findings give the empirical evidence that new product development success is influenced by the several factors which are product strategy, design, innovation and features.

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