



New Product Development: The Perspective of SMES in Malaysia

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Abstract: Small Medium Enterprise (SMEs) are growing rapidly in Malaysia and are the backbone of economic growth. Until today, there are more than 1 million SMEs company registered. The purpose of this research is to determine the best competitive forces and the best practices of New Product Development (NPD). The Porter's Five Forces Theories or dimensions have been used to determine the competitive forces which is effective for new product development. The targeted population was the top level SME companies in the Southern Region of Malaysia and they are the producer of food and beverages. Data have been collected from 40 top level managers of the selected SME companies using quantitative method. The findings revealed that the best NPD practice is the commercialization, while the best sales competitive forces is threat of substitutes. The owners of the SMEs are recommended to transform their marketing strategies and product innovation to achieve their target and success in the future.

Keywords: Small Medium Enterprise, new product development, commercialization, threat of substitutes

1. Introduction

Small and Medium Enterprises (SMEs) in Malaysia play a significant role in the nation's Gross Domestic Products (GDP) performance and economic growth. In 2019, SMEs in Malaysia contributed 38.3% of the nation's GDP valued at RM606 Billion (Digital News Asia, 2019). Food processing based companies are a significant sub-sector in Malaysian SMEs mainstream, including all companies involved in the manufacturing and value-added activities utilising agricultural or horticultural products, production of cocoa and chocolate products, fishery products, cereals products and processing of fruits and vegetables.

SME Corporation Malaysia is the central agency which coordinates the implementation of development programmes, provides business advisory and assisted SMEs in resolving issues and challenges. According to research done by (Lohana, Zabri, & Ahmad, 2018), the main challenges encountered by the SMEs in Malaysia can be sum up as imperfect capability to meet market environment, technology management capacity limitations, knowledge acquisition, the constraint of skilled human resources and also limited access to financial funding.

The previous study has proven a direct correlation between sales turnover and new product development and innovation for SMEs. Nevertheless, only 51.4% of SMEs in Malaysia have produced or introduced new products within three years due to the burden cost of innovation (Bhuiyan et al., 2017). Current research and literature on best practices within New Product Development (NPD) almost exclusively focus on the processes and practices used within large firms (Barczak & Kahn, 2012). However, according to the European Commission, within the enlarged European Union

of 25 countries, 23 million Small Medium Enterprises (SME) provide 75 million jobs and represent 99 per cent of all enterprises.

For SMEs in Malaysia, it all began on 2 May 1996, when a specialised agency was established to spur the development by providing infrastructure facilities, financial assistance, advisory services, market access and other support programs. Known as the Small and Medium Industries Development Corporation (SMIDEC), it is aimed to develop capable and resilient Malaysian SMEs to compete in the global market (SMECorp, 2017).

This research seeks to understand and explain how small and medium-sized enterprises (SMEs) build a dynamic capability and what factor affecting them (Eisenhardt & Martin, 2000) to develop “new-to-market” products, i.e. products that offer new functionality to the market and thereby allow customers to do what they could not do before (Boer, Drejer, and Mosey, 2005). SMEs also urged to move from the usual focus on building businesses to a broader branding concept to grow further by their own (S.Iswaran, 2017). Therefore, in-house design and development activities provide an attractive option for small companies to improve their competitiveness and profit growth compared to the traditional low-added-value manufacturing route (Millward & Lewis, 2005).

According to the previous study (Freel & Robson, 2004), there are several barriers to new product development (NPD) in small UK-based manufacturing companies. First, entrepreneurs put too much emphasis on technology issues at the expense of effective marketing and commercial exploitation. Second, finance is not pivotal to innovation, but SMEs need access to genuine venture capital for long-term projects, and Internal skills need improving (e.g. employ more graduates) and a lack of trust to engage external services.

In Malaysia, much research has been conducted on the barriers to new product development. A recent study by (Abu, Huat, & Mansor, 2018) conducted on the barriers towards the implementation of green new product development has found that Financial problems, organisation culture, resources problems, lack of experts, lack of top management commitment, lack of government support and competition are the main the barriers to the green new product development. (Nallaluthan, Ram, & Hanaf, n.d.), in a study conducted among the Shin-ETSU Malaysia stated that while the company has the development engineering department that enables the employees to be well knowledgeable about the product development process, the real problem lies in the employees’ performance which is affected by factors such as salary, leadership, communications among others.

Competitive forces can be divided into four forces which can shape industry competition (Porter, 2008). First, threats of new entrants, second, bargaining of power suppliers, third, buyers’ bargaining power, and the last one are substitutes for substitute products or services. These barriers and competitive forces have caused the unsuccessful implementation of NPD in SMEs. Therefore, it is worth exploring ways to acquire the best practices in developing new products in SMEs. Specifically, the study’s objectives are 1) to identify NPD best practices in SMEs in Johor, 2) to identify best sales competitive forces in SMEs in Johor.

2. Literature Review

Excellence in new product development (NPD) is vital for new product success (Isoherranen & Majava, 2018). Forward-thinking companies aim to continually improve their product development processes by benchmarking their current development practices against other companies (Dal Forno et al., 2016). NPD improvements can accrue by understanding what best practices should be adopted for the product development process, and subsequently adopting these practices to replicate the success and the process maturity of the best-performing companies (Barczak and Kahn, 2012).

2.1 Best Practices

There are many dimensions and criteria from different people from previous research. One of them is (Nicholas, Ledwith, & Perks, 2011) who stated that NPD practice across the dimensions of customer orientation and demand-pull, cross-functional cooperation, top-management support, and a champion’s existence, and quality of execution of a defined process with formal measurement (Nicholas, Ledwith, & Perks, 2011) used the dimensions of strategy and leadership, culture and climate, planning and selection, structure and performance, and communication and collaboration. (Barczak & Kahn, 2012) delineated NPD best practice across six best practice areas of strategy, portfolio management, process, market research, people, metrics, and performance evaluation. The following seven separate dimensions characterising NPD were proposed: strategy (including portfolio management), process, research, project climate (including team organisation), company culture, commercialisation and metrics and performance evaluation (Barczak, Griffin, & Kahn, 2009).

The framework developed by (Barczak & Kahn, 2012) was adopted as the research instrument for several reasons. First, the seven dimensions can be seen as validated for inclusivity following the Delphi methodology. Second, the framework provides definable plateaus of practices across increasing levels of performance via several recent benchmarking studies including the product development management association (PDMA) sponsored comparative performance assessment study (Adams-Bigelow, 2004) and the American productivity quality center NPD best practices study (Cooper, Edgett, & Kleinschmidt, 2004). The seven dimensions of the framework are defined as follows:

2.1.1 Strategy

It represents the defining and planning of a vision and focuses for research and development, technology management, and product development efforts including the identification, prioritisation, selection, and resource support of preferred projects (Barczak & Kahn, 2012). In the context of new product and development, the NPD must be in line with the mission. Strategy as one of the best components of the framework should involve some best practices that can include the well-established and shared goals, aligned projects, and balanced portfolio—more than that the NPD goals should be defined clearly and achieve the overall strategy.

2.1.2 Process

It represents the implementation of product development stages and gates for moving products from concept to launch (Barczak & Kahn, 2012). This process includes eight main steps for the product to be successfully launched without any product failure. The eight steps are the generation of the idea, the screening of the idea, the development and testing of the concept, marketing strategy, business analysis, development of the product, testing of the market, and commercialisation (Mishra, 2019).

2.1.3 Research

It represents the application of methodologies and techniques to sense, learn about, and understand customers, competitors, and macro-environmental forces in the marketplace (Barczak & Kahn, 2012). Previous research has demonstrated that a strong market and customer orientation, where a company focuses on customer needs and wants, results in more successful products.

2.1.4 Project Climate

It represents all human resources and team-related initiatives. It includes leading, motivating, managing, and structuring individual and team human resources (Barczak & Kahn, 2012). Employees from different areas of expertise contribute to the development and foster interdepartmental communication (Nicholas, Ledwith, & Perks, 2011).

2.1.5 Company Culture

It represents the company management value system that drives product development thinking and product development collaboration with external partners, including customers and suppliers (Barczak & Kahn, 2012). An external search is one of the fundamental steps in the companies' innovation theories or models nowadays (Usman & Vanhaverbeke, 2017). It allows the companies to develop what is needed by the customers and valued by the market rather than developing a product based on the research and development department's internal desire.

2.1.6 Commercialisation

It represents the activities related to the marketing, launch, and post-launch management of new products that stimulate customer adoption and market diffusion (Barczak & Kahn, 2012). Commercialisation can also ensure that the newly developed product has value and can be commercialised in the market. The nature of the economy is different from the past; companies nowadays need to continually develop new products to maintain a sustainable competitive advantage in the market (Abd Hamid & Atan, 2018). More than that these new products must be appealing to the demand of the customers.

Based on the study (Barczak & Kahn, 2012), there are several NPD best practices according to the NPD dimension. Table 2.2 shows the best practices that were unique to either SMEs or large companies. Only minor differences are seen in the uniquely selected practices by either set of respondents except for strategy, commercialisation and metrics and performance evaluation where significant differences are to be seen.

Table 1 - The best practices that were unique to either SMES or large companies

Dimension	Firms	Best Practises
Strategy	SMEs	Mission and strategic plan help define strategic arenas for new opportunities
	Large	Organisational mission and strategic plan drive NPD project selection. There is a ranking or prioritisation of projects There is keen consideration for balancing the number of projects and available resources

Table 1 - The Best Practices that were Unique to either SMES or Large Companies (Cont.)

Dimension	Firms	Best Practises
		NPD projects are evaluated relative to other projects in a portfolio
Research	SMEs	Results of testing (concept, product, market) are formally evaluated
	Large	No unique best practices identified
Process	SMEs	Idea database is maintained An IT infrastructure with appropriate hardware, software and technical support is available to all NPD personnel
	Large	Project management software and techniques are used to manage projects Product champions are critical to NPD success
Project Climate	SMEs	NIL
	Large	NIL
Firm culture	SMEs	New products are developed with global markets in mind
	Large	NIL
Commercialisation	SMEs	NIL
	Large	The NPD process is tied to the S&OP process
	firm	A liaison is established between development and launch teams Salesforce training is an essential consideration before launch Customer service and support are part of the launch team A standard protocol for planning a launch exists within the company Before launch, various market tests are used when possible Policies for returns and replacement are considered

2.2 Competitive Forces

Porter's five forces model pays particular attention to five forces that influence any industry: the threat of new entrants, the intensity of rivalry, the threat of substitutes, bargaining power of buyers and bargaining power of suppliers (Porter, 2008).

2.2.1 The threat of New Entrants

Porter (2008) describes the threat of new entrants as directly related to the barrier to entry for that particular industry and argues that it is not necessarily the actual entry of new competitors but the threat of new entrants to the industry that drives competition and impacts the industry's profitability. The threat of new entrants will depend on whether the industry presents high or low entry barriers. According to (Mario Martinez & Wolverson, 2009), the potential for the entry of a new competitor into the existing higher education marketplace depends on several factors among them. First, economies of scale refer to an organisation's ability to increase productivity or decrease its average production cost by more efficiently employing resources over time. If existing providers can create economies of scale, new entrants' threat decreases (Prasad & Warriar, 2016). Second, capital requirements pertain to the economic infrastructure requirements needed to produce or deliver a good or service. The high level of capital investment required for traditional universities means that new institutions are less likely to enter the traditional higher education market. However, in some instances, technological investment (online delivery) can replace physical infrastructure and thus change the cost of doing business. Third, competitor reaction – competitors often react negatively to new or potential entrants. Lastly, buyer resistance – new market entrants face two forms of buyer resistance: a failure to accept the new goods and services as equal to as or better than current ones; and an unwillingness to bear the cost of switching to the new goods and services.

2.2.2 Bargaining Power of Suppliers

In industry analysis, suppliers are defined as those organisations or individuals that provide the materials, information or knowledge to allow an organisation to produce its goods and services (Mario Martinez & Wolverson, 2009).

The supplier involvement in developing a new product allows the suppliers to participate in their experiences and new ideas. However, this is sometimes unreachable because of the firms' problematic cooperation (Chiang & Wu, 2016).

2.2.3 Bargaining Power of Buyers

In public and private higher education institutions, the buyer is the student or parent, in the sense that they purchase education from an institution. The student's power increases as the services offered become more standardised, which allows them to more readily compare offerings and make more informed choices, thus lowering the switching costs (Pringle & Huisman, 2011). The more options the buyer has to choose from, the more power the buyer has. New substitutes and new entrants erode traditional universities' monopoly (Mathooko & Ogutu, 2015). (Porter, 2008) argues that buyer power is needed, given that many buyers do not purchase volumes that are large relative to a single vendor's size, as is the case of the higher education industry.

2.2.4 Threat of Substitutes

A substitute performs the same or a similar function by a different means (Porter, 2008). The threat of substitute is high if the substitute provides a cost-effective trade-off compared to the original product (Ho, 2016). For the higher education industry, the most powerful and growing force is the threat from the number of substitutes, particularly from distance education and online programmes, which have increased and increasing in numbers and with ICT, the competition is a global one (Mathooko & Ogutu, 2015). The mode of course delivery often distinguishes a substitute offering from a duplicate offering. If the offering makes significant use of technology relative to existing delivery avenues or reduces the time it takes to complete the course, then it is distinct enough to qualify as a substitute rather than a new entrant. The threat of substitutes is defined by three attributes: time, convenience and application (Martinez & Wolverson, 2009).

2.2.5 Intensity of Rivalry

It can be brought about by price discounting, new product introduction, advertising campaigns and service improvements (Porter, 2008). In fairness, Porter does mention that government can exert legitimate influence in any given industry.

2.2.6 Other Forces

Porter (2008) acknowledged that additional factors like economic downturn and the rise in technology will directly affect the five forces, and by extension. An excellent example of the economic downturn is the Coronavirus and is the impact on all the sectors.

3. Methodology

This study employs a quantitative methodology. Quantitative was determined suitable because of the nature of the research following other similar studies. This method was also selected because it is simple and effective in terms of cost and time. It was helpful because it enabled the researcher to collect reliable data as the respondents answered all the structured questions.

Sampling is essential in the study because it is almost always impossible to study a large population. Purposive sampling technique is used in this research in which the researcher decides the tasks needed to be identified and find the people who can provide the information by knowledge voluntary (Millward & Lewis, 2005). The targeted population is the top level of the SMEs Company in Johor. Moreover, for this study, one of the essential criteria for purposive data sampling is that only SMEs that produce food and beverages were selected to increase data validation and reliability. Data were collected from 40 top levels of the selected SMEs Company using a survey questionnaire form.

This research develops two parts of the survey questionnaire on NPD best practices: contain 18 questions to measure NPD best practices' six dimensions. The second part of the survey questionnaire developed was competitive forces which consist of 15 items. Both parts utilise 5-point Likert Scale of measurement. The questionnaire was distributed by visiting the selected companies and giving the questionnaire to the respondents by hand.

4. Data Analysis and Results

This section is devoted to the data analysis of the study. It will show the results of the reliability and the mean analysis.

4.1 Reliability Analysis

Reliability test was conducted to determine the internal consistency of the entrepreneurial concept and manufacturing operations. The table below shows the guidance on the Cronbach Alpha that describes the strength of the relationship.

Table 2 - Size of Cronbach's Alpha coefficient

Alpha Coefficient Range	Internal Consistency
<0.6	Weak
0.6<0.7	Simple
0.7<0.8	Good
0.8<0.9	Very Good
0.9	Best

The Cronbach's alpha coefficient for NPD best practices and sales competitive forces questionnaires ranged are similarly based on general rules from 0.6 to 0.9. The overall Cronbach's alpha for NPD best practices was 0.917, while the competitive sales forces were 0.876. All the Cronbach's alpha values for all aspects exceed well the minimum limit of 0.6. This trend shows that the questions used in survey instruments possess high stability and consistency.

4.2 Mean Analysis

The first objective was to identify the best practices for the NPD. The mean analysis achieves this objective to measure the average of the answers. The mean scores are represented in the following table with the interpretation of the mean. Overall, the results showed that the mean of the variables was average and weak. It shows that the respondents' answers were mostly disagreed or natural.

Table 3 - Mean analysis

NPD Best Practices	Mean	Interpretation
Commercialisation	3.49	Average
Research	2.84	Average
Company culture	2.76	Average
Project climate	2.39	Average
Strategy	2.31	Weak
Process	2.09	Weak

From the table, it is clear that the highest mean score was for the commercialisation (3.49), making it the best practice for NPD. The second and third variables were the research and the company's culture as they score 2.84 and 2.76, respectively. Project climate score was also average (2.39). However, two variables had a weak score. These variables are the strategy and the process, scoring 2.31 and 2.09, respectively.

The second main objective of the study was to identify the competitive forces for the NPD. This objective was also achieved with the mean analysis. The results are shown in the following table. Overall, the scores were almost similar to the NPD best practices scores, ranging between average and weak.

Table 4 - Mean for sales competitive forces

Sales Competitive Forces	Mean	Interpretation
Threat of substitutes	2.75	Average
Intensity of rivalry	2.74	Average
Bargaining power of suppliers	2.43	Average
Bargaining power of buyers	2.24	Weak
The threat of new entrants	2.13	Weak

Based on the table's data, it is clear that a substitute has the highest mean score as it scored 2.75, although this score is average. The second variable was the intensity of the rivalry was score 2.74, which is almost the same as the first variable. The third variable was the suppliers' bargaining power, scoring 4.43, which is also considered average. The other two variables scored weak mean, 2.24 for buyers' bargaining power and 2.13 for the threat of new entrants.

5. Results and Discussion

This section is devoted to discuss the results of this study.

5.1 Discussion on NPD Best Practices

Based on the analysis results, commercialisation was the best NPD practice as it scored the highest mean 3.49 among the other practices. It shows and emphasises the importance of commercialisation. This finding confirmed what has been stated by (Abd Hamid & Atan, 2018), and (Barczak & Kahn, 2012) discussed in the literature review. Thus, the finding is that it is essential for the companies currently operating in the present era as the product has no value nowadays if it cannot be commercialised and add value for the customers.

5.2 Discussion on Best Sales Competitive Forces

Based on the results, product substitute is the best sales competitive force for the SMEs in Malaysia as this force scored the highest mean score among the other forces, which was 2.75. This result is a reflection of what has been emphasised by (Mathooko & Ogutu, 2015). When this new product's function is similar, but make the work more comfortable, the customer will forget about the old product and move to the new product.

5.3 Recommendations

Although this research found that commercialisation is an NPD best practices, SMEs' company is recommended to improve their marketing to achieve its target and future success. Commercialisation is more important than the development of the new product. The company can develop the product and cannot commercialise it; then this product is worthless. Thus, more focus should be on the commercialisation strategies, by the companies, future research should also investigate more in this regard that can benefit the companies developing products that can be commercialised. Other than that, the study has found that product substitute is the best competitive force. Thus, companies should focus and invest more in developing substitutes. Moreover, future research also should involve more in exploring this area.

6. Conclusion

This study is essential to SMEs Company to determine which new product development best practices are useful. Therefore, this research also provided a better understanding and gave further information about the impact of competitive forces in their business. Therefore, this study can provide some contribution in term of additional to the knowledge of this field in Malaysia. Seven best practices examined in this study. First, strategy represents the defining and planning a vision and focuses on research and development, technology management, and product development efforts. Second, the process represents the implementation of product development stages and gates for moving products from concept to launch. Third, research represents applying methodologies and techniques to sense, learn about, and understand customers, competitors, and macro-environmental forces in the marketplace. Fourth, the projected climate represents all human resources and team-related initiatives. Fifth, company culture represents the company management value system that drives the product development thinking and product development collaboration with external partners, including customers and suppliers. Sixth is metrics and performance, and the last one is commercialisation which represents the activities related to the marketing, launch, and post-launch management of new products that stimulate customer adoption and market diffusion.

In conclusion, the research question is 'Which NPD best practices give the highest effect', and the answer is commercialisation. The second research question is 'Which competitive forces give the highest effect'. The answer to this question is product substitution. SMEs owners need to improve this to make sure their business success in the future.

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