

Incremental or Radical Product Innovation: Overview of Food and Beverage Sector SMEs in Malaysia

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The objective of this paper is to present a profile of product innovation in the food and beverage SMEs in Malaysia. Besides that this paper aim to explore specific product innovation activities employed in the SMEs. A survey questionnaire was developed and sent to 687 Malaysian food and beverage manufacturing SMEs. Further, only 171 respondents that having better performance in new product development will be selected and analyzed using SPSS. This is to ensure the main objective of this study (to present a profile, activities and types of product innovation among food and beverage sector SMEs in Malaysia) can achieve. Most of the respondents that active in product innovation activities is medium-size organization and the organization has been established more than ten years. Although they realized the importance of producing new product continually, but they still show a slightly lower level investment in R&D. Food and beverage sector SMEs in Malaysia are more focused on incremental product innovation as opposed to radical product innovation. Although the food and beverage sector play an important role within Malaysia economy, product innovation in food and beverage sector SMEs has received little previous attention especially on study that concentrate on food and beverage sector SMEs in Malaysia. This paper contribute by present organization profile, product development activities and types of product innovation employee in food and beverage sector SMEs in Malaysia. The findings can be used in the development of public policy aimed at supporting and encouraging innovation among the food and beverage sector SMEs in Malaysia.

Keywords: Food and Beverage sector, product innovation, Small and Medium-size enterprise, Malaysia

1. INTRODUCTION

Food and beverage industry is an important sector for the development of Malaysia economic. The industry plays an important role in the processing of raw materials based on livestock and agriculture. The product produce by this sector not only marketed in the local market even managed to penetrate more than 200 overseas markets. In 2015 the food and beverage sector contributed RM11.9 billion of the export value. This value is double the value of exports last ten years¹.

community. At the same time SMEs become a major supplier of finished or semi-finished products to large sized organizations. Hence, it is very important to SMEs involved in innovation activities, especially in the production of new products in the market. The implementation of product innovation is recognized as an important instrument for SMEs to survive, compete and continuously meet customer needs.

Approximately 70% to 90% of new food and beverage products fail within the first year in the market⁴. There is a lot of literature available that deals with the product innovation activities in large-scale industries⁵⁻⁷. However, there is a lack of empirical research for SMEs⁸. Thus to the authors' knowledge, one study is needed to be conducted in Malaysian SMEs to identify product innovation implementation practices.

The main target of this paper is to present a profile of product innovation in the food and beverage SMEs in Malaysia. Besides that this paper aim to explore specific product innovation activities employed in the SMEs. Finally, the results obtained from this research shall have significant value to a large number of SMEs, as well as aiding in future research to develop a framework for product innovation practices which suits SMEs.

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Malaysia also recorded imports of food and drinks more than RM30 billion. Changes in people's lifestyles nowadays is believed to be the cause of increased demand for convenience products particularly ready-to-heat/eat meals and health foods. Forecasted demand for food and beverage products will increase by 10% year on year².

Majority business unit in Malaysia consists of 97.3% of Small and Medium Size Enterprises (SMEs)³. In fact, SMEs also offers large job opportunities to the local

2. LITERATURE REVIEW

Type of Product innovation: incremental and radical projects

New product innovation is defined by Linder et al. as "... implementing new ideas that create value". Classifications of product innovation can be divided into radical innovation, and incremental improvement. Radical product innovation known as producing a new product that is very different from anything previously to penetrate a new target market. Radical projects have been categorising as producing new to the world product concepts, and extended new product line⁹.

Incremental innovation was recognized as introducing relatively minor changes to existing products¹⁰. Incremental innovation incorporates product improvement into innovations to existing markets. The activities in producing new products are executed using existing technologies, resources, skills, and prior knowledge. In this study, the authors adjust past definition on radical innovation, as new to the world products concept and extended product line.

Small Medium Enterprises (SME) and Development of New Products

Manufacturing organizations particularly SME, need to be more innovative in the development of new products in the market. This serves to assist the manufacturing organizations in achieving competitive advantage, attracting new customers as well as retaining current customers, and consolidating relationships with the suppliers¹¹. However, there are several views which are sceptical of the SME capabilities. Among these views are from¹² in his article which criticized the SME capabilities by reviewing a number of weaknesses that impedes the SME ability to be more innovative. Furthermore, the size of an organization plays a role in influencing the success of the new products, which reflected into SMEs having minimal opportunity to succeed in new product development.

On the other hand, a number of researchers have deflected the criticism that were raised by¹² by claiming that although the SME face limited financial sources, capital, workforce and expertise, there are distinctive characteristics of SME that gives them the advantage to be successful in the product innovation activities¹³. SME possess different characteristics in comparison to the large sized organization in the new product development process. Therefore, a comparative study of the SME and large organizations, as well as the study of advantages and disadvantages of these types of organization in the new product development is critical to knowledge.

The Involvement of SME in Innovative Product Development

The significant difference in between both of the product innovation levels is highly dependent on the market needs and technology. Radical product innovation that develops product that is totally, targeted to customers and markets that are yet to be explored. Accordingly, to begin development of new ideas, the organization will have to invest in purchasing the technology and equipment, identifying the channel of distribution and advertising that is different than before. Apart from that, the leaders and subordinates in an organization will have to increase their knowledge and skills, not only in technical aspects but also in the latest concept of new product development. Although the radical path of developing new product concept is more innovative, it is highly risky for SME organizations. Other than requiring additional financing costs, the workers in the organization needs to increase their knowledge and skills in relation to the market and new technology. Due to this matter, there are not many SME organizations who will get involved in such radical innovation project. Nevertheless with the support of the development of the implementation framework with guidelines, and support of the critical factors such as the involvement of outside organizations, and training and development of SMEs will be able to assist organizations in their efforts to achieve a smooth and successful implementation of radical innovation projects.

3. RESEARCH METHODOLOGY

2.1 Research Approach

Questionnaire design

The data in this study were collected through a survey questionnaire. The first section comprises questions about the company background, and the second section consists of questions about SMEs practices in the product innovation activities.

Data collection and analysis

The target participants in the survey were chosen from the Federation of Malaysian Manufacturing Directory (FMM), and the SME Corporation Malaysia directory. A large-scale survey was conducted randomly among directors, owners, and managers of food and beverage manufacturing SMEs. Of the 687 questionnaires mailed, a total of 171 were returned giving a response rate of 25%, but seven were non-usable. The responses were entered into the SPSS database and analyzed using descriptive statistics to generate the finding.

4. RESULTS AND DISCUSSION

This section presents a profile of the respondents. Next section discusses about response activities in the product development process and the final section will discuss regarding engagement respondent with product innovation.

Respondent Profile

Profile	Criteria	%
Size (number of employees)	Less than 9	2.64
	10-50	31.66
	51-150	52.77
	151 +	12.93
Year of establishment	Less than 5	3.96
	6-10	27.70
	11-15	49.08
	16 +	19.26
R&D allocated	Less than 0.9%	8.71
	1.0-1.9%	56.20
	2.0-2.9%	34.04
	3.0 +	1.06

Table 1 Respondent Profile

Table 1 shows the respondent profile such as size of the organization based from the number of permanent employees, organization age and R&D allocation. The majority of respondent (52.77 per cent) are medium-size organization, whilst 31 per cent are small-size organizations and 2.64 per cent are micro. This compares well with the size distribution of food and beverage manufacturer in Malaysia that involve in product innovation activities.

In this study with regards to organizational age (derived from year of establishment), it is apparent that within this sample there are few organizations aged less than 5, but on the other hand, majority respondent (68.34 per cent) have been in business for more than ten years. The indication of this is that SMEs that have been in industry more than ten years are well represented, have vast knowledge and excellent practice of product innovation activities.

The majority of respondents (56.20 per cent) spent 1.0-1.9% of turnover on R&D, whilst only 1.06 per cent respondent allocate 3.0 from their budget for R&D activities. It illustrate that although respondent are keen to improve and continuously producing new product, they show a slightly lower level of commitment to allocating financial resources to R&D or product innovation activities.

Activities in product development	Criteria	%
Product	Beverage	29.19
	Perishable food	46.22
	Preserve food	24.59
market	Local	55.15
	International	44.85
Department involve in activities product development	Marketing	38.61
	Financial	14.75
	Engineering	3.49
	Quality	15.28
	R & D	19.57
	Operations/Production	8.31

Table 2 Respondent activities in product development

Table 2 shows the respondent activities in product development. The factors investigated were group of product produce, product market and department that involve in new product development process. The distribution of respondent by product group clustered into the following three categories:

- (1) Beverage such as carbonate, juice, copy, tea, herb, dairies, vegetable and etc. (29.19 per cent).
- (2) Perishable food such as chicken, meat, sea food processing and etc. (46.22 per cent).
- (3) Preserved food such as bread, cereal, biscuit, chocolate, cookies, cake, sauce, ketchup, canned food etc. (24.59 per cent).

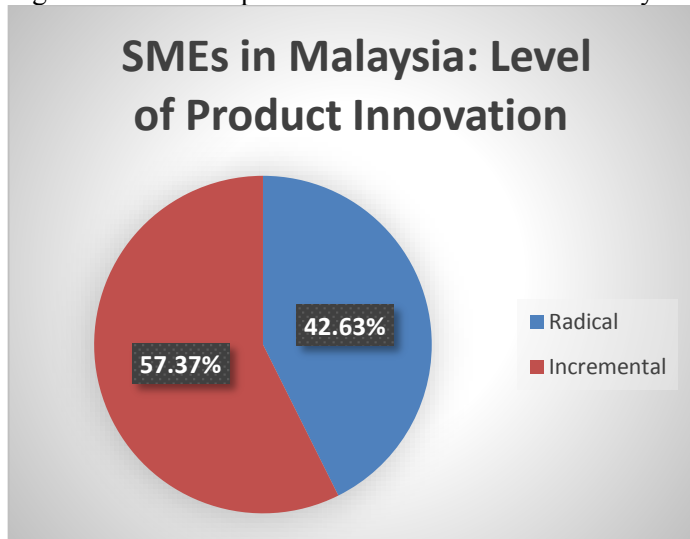
The results revealed that the respondent were mostly producing perishable food such as chicken, meat, sea food processing and etc.(46.22 per cent), most of respondent market their product locally (55.15 per cent) compare than international market (44.85 per cent) and marketing department is mostly involve and responsible in new product development activities.

This is evidence that the food and beverage sector SMEs in Malaysia is dominate by the perishable food manufacture and the SMEs are not only marketed they product locally even managed to penetrate international level. Various departments involved in product development process in food and beverage sector SMEs but marketing department is often involved in such activities.

Types of product innovation

This section focuses on the respondent engagement with different types of product innovation (Table 3). There are two types product innovation, radical and incremental product innovation as mention detail in session two. Respondent shows a stronger engagement with incremental product innovation as opposed to radical product innovation. For example 57.37 per cent indicated that they produce a new product based from a modification of features, process, ingredient, and packaging of the existing product in the market (Figure 1). Besides that 42.63 per cent respondent producing new product which is entirely new in market and manufacturing. The results of this study confirm the past literature on the incremental product innovation focus of SMEs in general and food and beverage sector.

Figure 1: Nature of product innovation SMEs in Malaysia



In conclusion, the respondent illustrates a good level of engagement with both incremental and radical product innovation, but the level engagement with incremental product innovation is higher than radical product innovation.

Category	Product innovation practices	Types of innov.	%
Product innovation characteristic	A product entirely new in market	Radical	16.89
	A product similar to one in the market, but new to the manufacturing	Radical	25.74
	A product not new in kind, but with some distinguishing features	Incremental	36.46
	A product not new in kind, but made by a novel process	Incremental	15.28
	A product not new in kind, but made from a novel ingredient	Incremental	3.75
	A product not new in	Incremental	1.88

Table 3 Engagement respondent with product innovation

5. CONCLUSION

The purpose of this paper is to present a profile of product innovation in the food and beverage SMEs in Malaysia. Besides that this paper aim to explore specific product innovation activities employed in the SMEs. The results revealed that most of the respondents that active in product innovation activities is medium-size organization and the organization has been established more than ten years. Although they realized the importance of producing new product continually, but they still show a slightly lower level investment in R&D. Food and beverage sector SMEs in Malaysia are more focused on incremental product innovation as opposed to radical product innovation. Although the food and beverage sector play an important role within Malaysia economy, product innovation in food and beverage sector SMEs has received little previous attention especially on study that concentrate on food and beverage sector SMEs in Malaysia. This paper contribute by present organization profile, product development activities and types of product innovation employee in food and beverage sector SMEs in Malaysia. The findings can be used in the development of public policy aimed at supporting and encouraging innovation among the food and beverage sector SMEs in Malaysia.

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