Sustaining Competitive Advantages in Malaysian Electrical and Electronics Industries Context

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Abstract— Electrical and electronics (E&E) manufacturing industries is one of the major resources in boosting overall Malaysian economic growth. In general, innovation and development of new product in E&E companies involved the changes in the finished goods, products or services offered by the company. However, Malaysia E&E industries are lagging behind in terms of technological research and development and corporate strategy in adopting organization’s flexibility in facing fierce market competition. In this technology advancement era, most multinational electrical and electronics (E&E) conglomerate has introduced research and development (R&D) in product technology to be integrated in manufacturing system in order to sustain competitive advantages. The research is conducted to investigate the relationship between sustainable competitive advantages and new product performance. Present study is predicted to serve as a catalyst for Malaysia to move forward towards advanced economy through integration of manufacturing flexibility in new product development in current global competitive environment. Contributions included literature enhancement in the integration of sustainable competitive advantages in new product development and operation management knowledge, particularly in dynamic environment conditions. Besides, outcome of the study would serve as a guideline for firm’s decision makers.

Keywords— Sustainable Competitive Advantages, New Product Performance, R&D, Value Creation

1. Introduction

The low value-added Malaysian electrical and electronics industries are directly linked to the weak development of new product and technology cluster [35]. Despite this sector is performing excellent in the past two decades, electrical and electronics industries in Malaysia confronted substantial challenges in sustaining growth. The growing competitive environment has forced most organizations to integrate marketing strategy and business strategic orientation during the development of new product [5], [50] to sustain competitive advantages.

In addition, [8], [19] further clarify that, with the intention of sustaining competitive advantages, firms need to stem its strong commitments to R&D program such as development of new product to obtain products that have superior quality as compared to those provided by the rivals. Previous studies, [37] debated the mediation impact of sustainable competitive advantages on financial performance of the company, instead of new product performance that also include non-financial expectation of business perspective. [5], [20] further advocated that in order to achieve superior business performance in both financial and non-financial aspect; the firm should develop and sustain competitive advantage. A firm could sustain superior performance on the new product development that incorporated overall performance of business, satisfaction of customer, business’ profitability, overall technical performance of the products and sales revenue [5].
2. Literature Review

A summary of definitions and past empirical studies explaining sustainable competitive advantages and new product performance were discussed in the next section.

2.1 Defining Sustainable Competitive Advantages

Sustainable competitive advantages are the long-term competitive advantage, which is not simply superseded by the rivals [47]. Based on [1], sustainable competitive concept hunts for explaining the degree where a business is being able to prolong a competitive advantage situation. Sustaining competitive advantages position is heavily depended on the tenure of firm-specific assets and resources, which are "valuable, rare, inimitable and non-substitutable (VRIN)". Generally, manufacturing business environment encounters rapid alteration [49]. Consequently, adoption of effective business level strategy, which is able to achieve greater organizational business performance for manufacturers that encounter dynamic and complex environments, is relatively important [56]. [13] stated that business strategy helps a company to be able to compete in industry or market. [27] suggested that globalization has improved the capacity of market prospects, yet it changes the business nature, majorly due to shorter product life cycles that requires a more hastened retrieval of investment. Hence, managers need to utilize the resources within the firm in creating sustainable competitive advantage under this dynamic market environment [30]. According to [32], [39], to build up and sustain competitive advantages, manufacturing firms should constantly focus on producing differential products, reshaping or building core competencies, attaining distinctive expertise and growth in intellectual properties that enables competitive positioning decisions and core for a company to be successful in a highly competitive marketplace.

A firm is considered retaining competitive advantages over its rivals if it upholds profits, which exceed the standard for its organization and objective of the business strategy is to attain viable competitive advantages [29]. Besides, based on [3], businesses that are able to initiate competitive activities are preferably gaining more market share and profits as competitors are not capable to react efficiently in neutralizing the impact of the action. Company need to emphasize in reviewing capabilities and resources that focus in attaining competitive advantages due to the cut-throat external environment and growth of high customer demand [32], [39]. Besides, [11] further stressed that the organizations that are not aligning their business policy to achieve competitive advantage are less successful than those organizations that aligned. According to [1], arguments existed on methodological significance and practical difficulties in recognizing connexion between firm’s resource inheritance and attaining competitive advantages. [1] further advocated that resource-based theory failed to clarify on the capability of certain organization to respond in timely and flexible approach to the external environment changes by repositioning of the external and internal competences to sustain competitive advantage and gain greater performance over the competitors.

![Figure 1. Basis of Sustainable Competitive Advantages](Source: Mukesh et. al. (2013))
According to [37], competitive advantages were measured using the specific dimensions covered cost leadership and product differentiation.

2.1.1 Lower Cost Advantage

Lower cost advantage (or known as cost leadership) concerns with the firm’s ability to generate economies of scale through effective large production volume [21]. Cost leadership emphasizes on the business activities that aimed to become a low-cost producer, which preserved quality and value of the product [38], [39]. It is the ability for an organization in competing with their competitors based on low price. [39] further advocated that a firm is required to have effective scale facilities, cost reduction throughout experience and cost effectiveness in research and development activities [41] to position themselves in cost leadership. In addition, cost leadership provides an opportunity for organization to attain cost advantage that can position their business value, besides of providing mitigation plan from the threats in Porter’s Five Forces [18], [41], [39]. A company can benefit from setting the market pricing below average when a cost leadership business achieves lower cost advantages that are not easily replicated by competitors [38], [42] concerns on the extend of lower cost advantage that a new product offers distinctive benefits and to which it is better-quality to the rival products and it is the crucial expect of new product performance.

In general, according to [7], lower cost advantage helps the organization to obtain the whole cost position and obtain larger market share in the industry. Manufacturing firms that pursue for lower cost advantage will experience precise demand prediction, greater capacity consumption, and economies of scale, technological advancement, outsourcing and product innovation such as new product development [22], [16], in contrast, suggested firms should emphasize on the lower cost advantage from economies of scale to economies of scope. An economy of scope differs from economies of scale, where economies of scope include dispersing the cost of a set of resources over two or more products [14]. Conversely, economies of scale spread the fixed cost over mass production of the same product [2]. Besides, most literatures [9], [10] agreed that manufacturer could attain lower product cost by ensuring the managerial procedure most cost efficient, utilizing existing resources such as machinery and equipment, products and facility within the manufacturing plant.

2.1.2 Differentiation Advantage

Differentiation is difficult terminology to be defined. Differentiation advantage denotes a firm’s ability to create a good that is niche orientated and difficult to be replicated by the rivals [38]. According to [39], a business differentiates itself from their competitors by concerning on modifying, upgrading or producing superior, different and unique product to customers. In producing differentiated product, voice of customers is something to be focused and prioritized [18], [39]. Subsequently, manufacturing firm that pursues differentiation strategy emphasized on the customer orientation [12], [15], [39]. It encompasses design of research and development (R&D) based unique products, generate brand image for the products, and promote the brand uniqueness through attractive packaging design, brand awareness and brand shares [31], [41]. Organizations create products that contain unique value will relative impose premium charge due to exclusivity and quality features [4] as customers are willing to purchase the unique offering.

Strong customer loyalty, brand loyalty, exclusivity and lower price sensitivity will improve overall profitability, new product performance and achieve sustainable competitive advantage [47]. Capability to have product development enables a manufacturing firm to design distinctive new products, which are greatly valued by consumers and hardly being imitated by competitors [41]. This would further initiate differentiation advantage and performance rewards within the industry [33]. Hence, differentiators are required to produce uniqueness and obtain customer satisfaction as compared to other rivals in the same industry [39]. In addition, differentiation advantage is proposed to direct result in gaining market share and profitability as it creates more defensible customer value than the rivals [45]. This would generate the buying power of consumers in purchasing the niche product at higher price and/ or higher quantity [33]. [40] stated that numerous intangible criteria, namely product operation management, resources capabilities and flexibilities could gain greater performance through competitive differentiation.
2.2 Sustainable Competitive Advantages and New Product Performance

Based on [28], a manufacturing company can sustain lower cost advantage by offering consumers with standard products and services at the most economical prices, in order that a business can overtake their competitors and still earn profits at the lower prices to compete. On the other hand, differentiation advantage can be achieved by creating customer value emphasized on differentiated brand image, superior quality and technology, innovative products and good service. In addition, traditional literatures focus on the impact of Porter’s attainment of competitive advantages through the achievement of improved financial performance (such as profits, margin and return of investment) and market results (such as sales and market share) [26].

Numerous performance measures should be considered in the assessment of manufacturing technology [6]. Performance of business could ultimately be improved through sustainable competitive advantages that are positively linked to customer satisfaction, alleged benefit and loyalty. New product performance is the measure of internal, for instance: product quality, time-to-market and cost, and, external performance (market orientation and sales-based measurement) in the progress of converting innovative concepts into products [46]. Several scholars such as [46], [55] pointed out that there are different types of measures such as financial, non-financial and subjective measures being used in determining the new product performance of a manufacturing firm.

In attaining competitive advantages, manufacturing companies should redesign their business model or value creation by in new product development [51]. According to [55], measurement of competitiveness should be included in the aspect of business performance dimensions to provide a holistic view of its impact on firm’s economical performance. Based on [23], sustainable competitive advantages would be hard for other organizations competing in the same product market to replacement or substitute. A business will experience customer satisfaction and financial performance by exploiting its competitive advantages.

Table 1 reveals the summary of past empirical studies of the relationship of sustainable competitive advantages and new product performance.

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Topic</th>
<th>Main Argument/ Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoako-Gyampah and Acquaah</td>
<td>2008</td>
<td>Ghanaian manufacturing firms</td>
<td>The study shows the sustainable competitive advantages are positively influence on firm performance.</td>
</tr>
<tr>
<td>Bai and Sarkis</td>
<td>2017</td>
<td>China electrical and electronics industry</td>
<td>The research highlights the green product competitive advantage positively affects the green new product success.</td>
</tr>
<tr>
<td>Leonidas et. al.</td>
<td>2013</td>
<td>Greece four- or five-star rating hotels</td>
<td>The study reveals the positive impact of competitive advantages on hotel financial performance.</td>
</tr>
<tr>
<td>López-Gamero et. al.</td>
<td>2011</td>
<td>Spanish hotels</td>
<td>The research examines the positive relationship of competitive advantages and financial performance.</td>
</tr>
<tr>
<td>Li and Li</td>
<td>2008</td>
<td>China manufacturing firms</td>
<td>The study shows the cost-leadership and differentiation strategy has positive impact on firm performance.</td>
</tr>
<tr>
<td>Murray et. al.</td>
<td>2011</td>
<td>China export firms</td>
<td>The research highlights the positive relationship of firm’s relative competitive advantages and export performance.</td>
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</table>
3 Methodology

There are two major sources of data in researches, namely primary data and secondary data. Researchers obtained primary data as their first-hand sources on determining the researchable variables and this primary data can be obtained from individuals, focus groups, or panels that can be obtained through interviews, questionnaires, or observations. The secondary data, on the other hand, are information acquired from sources that already exist such as business review data, governmental publications, articles, journals, publications, and website. Data were obtained mainly from primary sources in this research. Precisely, questionnaire was distributed and collected so that the primary data on variables can be examined. Furthermore, numerous articles were reviewed for deep understanding of literature related to sustainable competitive advantages, new product development and its relationships.

The population used in this study consisted of all the 894 electrical and electronics manufacturing industries of the across Malaysia (Peninsular Malaysia, Sabah, Sarawak and Federal Territories). In general, electrical and electronics sector in Malaysia produces wide range of technologies and products, consisting of semiconductors, radio frequency (RF), consumer and personal electronics, test and instrumentation, light emitting diodes (LED) and wireless system [35]. Next, the pilot study is conducted to gauge the goodness of measure [56], which is the reliability before administering the final questionnaires to the field for full-scale data collection.

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Dimensions</th>
<th>Items</th>
<th>Cronbach's Alpha</th>
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</thead>
<tbody>
<tr>
<td>Sustainable Competitive Advantages</td>
<td>Lower Cost Advantage</td>
<td>1. The company achieves lower cost of product than competitors do.</td>
<td>0.8752</td>
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<td></td>
<td></td>
<td>2. The company making products more cost efficient.</td>
<td></td>
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<td></td>
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<td>3. The company improves the cost required for coordination of various products.</td>
<td></td>
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<td></td>
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<td>4. The company improves the utilization of available equipment, products and facilities.</td>
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<td></td>
<td>Differentiation Advantage</td>
<td>1. The company introduces new products quickly.</td>
<td>0.7195</td>
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<td></td>
<td></td>
<td>2. The company provides products that are different from competitors.</td>
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<td></td>
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<td>3. The company offers a broader range of products from competitors.</td>
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<td>4. The company improves the time it takes to provide products to customers.</td>
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<td>5. The company provides high quality products.</td>
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<td>6. The company customizes the products to customer need.</td>
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<td>7. The company provides after sales service and customer support.</td>
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<td></td>
<td>Internal Product Performance</td>
<td>1. The new product met or exceeded the targeted product performance.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>2. The new product met or exceeded quality objectives.</td>
<td>0.8113</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. The new product met or exceeded the cost objectives.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4. The new product was introduced to market than its time-based goal (time-to-market).</td>
<td></td>
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<tr>
<td></td>
<td>External Product Performance</td>
<td>1. Overall total sales for the new product.</td>
<td>0.8648</td>
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<tr>
<td></td>
<td></td>
<td>2. The new product met or exceeded market share objectives.</td>
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<td></td>
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<td>3. The new product met or exceeded sales objectives.</td>
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<td></td>
<td></td>
<td>4. The new product met or exceeded profit objectives.</td>
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</table>

Note: Ranges of Reliability $\geq 0.9$ excellent, $\geq 0.8$ good, $\geq 0.7$ acceptable, $\geq 0.6$ questionable, $\geq 0.5$ poor, $< 0.5$ unacceptable
4 Discussion

The pilot test was conducted among 50 senior executives. The pilot questionnaires were randomly distributed through emails. Only 48 respondents returned, which represented 96-percentage response rate. SPSS version 20.0 was employed to test Cronbach’s Alpha of measurement instrument. Table 2 represents the reliability test result of the measurement instrument used. In general, [17], [56] commented the common statistical test of reliability score is Cronbach’s Alpha. It is considered good when the alpha coefficient is 0.80; acceptable when it is 0.70 and it is poor when < 0.60 [56]. From Table 2, Cronbach’s Alpha coefficients indicate that all items used in the instruments are acceptable, with a range of 0.7195 to 0.8752. Based on the feedback, expert’s opinion and comments were requested to ascertain the language and structure of the instrument.

5 Conclusion

Generally, sustaining competitive advantages can enhance resource configurations in pursuing long-term competitive advantages. Generic sustainable competitive advantages denotes the firm’s competencies that exploit their competitive advantages in realizing goals and better-quality performance especially during development of new product in emerging countries such as Malaysia. This research presented an overall strategic planning that would boost overall Malaysia electrical and electronics industry’s competitiveness and performance in consistent with Malaysia’s vision and aspiration to achieve high-income nation by 2020. Indirectly, this would generate additional local employment, boost nation economic growth of productivity and Malaysian’s Gross Domestic Product (GDP).

In conclusion, future study should be carried out to attend to the critical theoretical gaps and practical issues on sustainable competitive advantages and new product performance using Malaysian electrical and electronics industry as an emerging economy context.

References


