

The Value of Industrial Design in Malaysian SMEs

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Abstract

Industrial design has long existed in Malaysia from the making of traditional furniture to hand made craft using materials from wood, metal or fabric. Over the time, the influence of industrial design in Malaysia has slowly disappeared in the industry because some of the considerations or perceptions of whether it is able to provide returns to its designers and the perception of some people who are unaware or lack the understanding of its importance and value. Previous studies have shown that there are managers in companies who have problem in understanding whether industrial design has value to the company although there have been many researches that attempted to quantify the contribution of industrial design to improve company performance. This study chooses the Balanced Scorecard framework to explore the industrial design's value because in order to assess how organisations manage and deliver the value to the stakeholders and customers, the organisation should be evaluated by measuring the performance. based on financial and non-financial performance measures for new product development, this study uses measures such as customer orientation, employees' orientation, competitiveness orientation and strategic partners' orientation for non-financial performance and growth, profitability, liquidity, efficiency and revenue for the financial performance..

Keywords: *Industrial Design; Small and Medium Enterprise; Company Performance; Balanced Scorecard.*

1. Introduction

Industrial design in Malaysia has long existed where products such as furniture, pottery, handcraft and others consisting of material from woods, metal or fabrics were widely used for daily life of farmers or fishermen [1]. It was found that local craftsmen activities existed with specialized equipment that relates to the designing service as the source of income for the people. The product of those design activities which are considered as traditional products could still be seen in this modern day and some are still being used in the rural areas. However, the design activities have moved from making a traditional product to a more complicated design product constructed on technical specification and engineering process. It was mainly due to the substantial development in the standard of living and the transformation from agriculture to manufacturing industries that has led the nation to produce products competing with consumer demand. This has made the second Prime Minister of Malaysia, Tun Abdul Razak, to urge industrial

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designers to adapt new technology and to come out with industrial design that embodies national identity in the effort to compete with imported products [2].

Although the importance of industrial design was highlighted and recognised, industrial design was not being promoted and encouraged in Malaysian industry as much as the information and communication technologies and oil and gas. This was mentioned by Sufian Yahuza, the former President of Persatuan Pereka Perindustrian, Malaysia (PEREKA), during his presentation at Solaris Dutamas for the MAKMAL Series: The Power of Industrial Design event (2012, September 6). Sufian mentioned that there is a huge potential in industrial design for the country's export, but the national focus has moved from manufacturing to information technology to oil and gas. Hence, the perception of industrial design providing profit to a company has slowly disappeared although it still exists with minimal contribution. It became a concern when discussions among the industrial design members on graduates' lack of employment. This has caused University Malaya to stop from offering this design programme in accordance to the Ministry of Higher Education's order to make sure all academic courses offered in public universities have job opportunities for those who graduate [3]. In 2014, it was reported that around 2,500 local designers established themselves overseas because there are more opportunities and recognition than in Malaysia [4].

The difficulty of the local designers to contribute their capabilities is not because they are not worth it, but it is rather due to the environment itself. The Chief Executive Officer of Malaysia Design Development Centre (DDEC), Datuk Abd. Rahim Hassan explains that Malaysians have innovative ideas and talents in the field of design that are comparable to developed countries. However, due to limited facilities, lack of experience and without any reasonable opportunities in the field of commercialization and marketing have resulted in them to become quiescent [5]. Besides that, there is also lack of understanding by Malaysians on the importance of design and role of industrial designers in a business world [6] as the previous Minister of Science, Technology and Innovation, Datuk Seri Wilfred Madius Tangau said that mentality and perceptions of Malaysians who are sceptical and uncertain about local design innovation products need to be corrected. He mentions how the negative perceptions are causing the products to be difficult to commercialize [7].

In the effort to find the contributing factors that lead to the lack of understanding by the local companies, there was a report published in the newspaper of an interview with the previous senior director of Malaysia Design Council (MRM), Futom Shikh Jaafar that explained how design challenges also exist in this country because of the perception by local companies who are not aware or do not understand the importance and value of industrial design [8]. She mentions that there is an issue where industrial design is rejected or not appreciated because of the lack of understanding in design and design rationale even though it was worth in return of investment. Other than that, she was concerned that the effects of companies' lack appreciation in local industrial design lead to the uncertain future of graduates from local universities.

1.1 Objectives of the study

Previous studies have shown that managers in companies are having problem in understanding whether industrial design has value to the company although there

have been many research trying to measure the industrial design influence in improving the company performance [9],[10],[11]. It was argued that there has not been a well-understood method to calculate a company's return on design or even to determine the element of investment in design whereby Guo [12] mentions that investing more in design does not necessarily generate profitable new products. It is possible that industrial design is hard to measure because it seems often that it is difficult to convince to stakeholders and customers the value design can generate [9] which lead to local companies having difficulties to understand the importance and value of industrial design.

As mentioned, local companies are not aware or do not understand the importance and value of industrial design and this issue causes companies in Malaysia to not to give much attention to design, which contribute to the lack of investment. Thus, it is significant for business managers to be provided with a coherent understanding of the value with the needed convincing through qualitative evidence to invest their company's scarce resources of time and money. Moullin [13] suggests that in order to assess how organisations manage and deliver the value to the stakeholders and customer, the organisation should be evaluated through performance measurement. The study explained that the performance measurement under its definition encourages people to consider their organisation to measure the value they deliver to the customers even if it is including the key area of how their performance managed. This relates back to the problem mentioned in this study where the importance and value of industrial design were not understood because it could be that it was not evaluated thoroughly with the right performance measurement.

Hence, the objective of this study is to explore how industrial design form its value in Malaysian Small and Medium Enterprise (SME) companies through measuring the right performance by gauging the value created from industrial design for the company as well as for its stakeholders and customers. The result from this study can be used to measure the company's performance for industrial design companies in Malaysian SMEs where the value is represented by measuring the company's performance according to the financial and non-financial performance. There exists little systematic evidence in the literature on how industrial design affects financial performance despite studies on the importance of industrial design in a firm's financial success [10]. Furthermore, a study by Vijfeyken et al. [9] revealed that the value generated depends on the type of activity (service or manufacturing companies) and size of the company, as well as on the conviction of the founder, who can inspire employees to be design minded. Meanwhile, Xia et al.[10] found that the impact of industrial design on company performance is not unconditionally positive but rather may depend on factors such as industry evolution and industrial design strategy.

1.2 Scope of the study

There are not many researches on how industrial design affects company performance that are available or suitable for SME companies since most of the studies on evidence were done on for large companies [10],[14]. Large companies usually have the required budget to have its own specialists such as technologists or technicians and can make their own detailed design tools that allow for the companies to have its own design function. However, for smaller firms like SME companies, some functions and decisions could not be implemented because they

do not have adequate experienced specialists [15]. Additionally, the selection of SMEs for this study is also based on the flexibility of the managers involved to assist with the study compared to larger organizations that requires more extensive approach. Other than that, there is lack of research documentation on design issues in Malaysia [16], this study explores and examines the design issues from previous studies and focuses on Malaysian SME because 98.5% of businesses in Malaysia are categorised under SME with more than one-third of the economy is contributed by them (<http://www.smecorp.gov.my>).

This study chooses to select SME companies in Malaysia where there is involvement of engineering in redesigning of products for product variance and cost reduction in small batches[15]. Moreover, Wu et al. [15] mentioned SMEs could respond to market shift faster by reducing the time of product development by endeavouring the advantage of new production techniques. The companies' performance, therefore, can be used to measure industrial design's contribution and role in Malaysian SME companies. The target organizations in this study are Malaysian SMEs companies with industrial design recognition, which in this study are those awarded by MRM. The award given by MRM is the Malaysia Good Design Award (MGDA), a recognition specifically for products that achieve the quality in design manufacturing. The award is Malaysian Government's highest recognition to build product confidence among consumers over the long term as well as to give good reputation for the companies in both trust and assurance in business. Design awards provide hard evidence of how a firm's creative expenditures have been well spent and award recipients were chosen according to the assessment and independent evaluation of a company's products based on the pre-established criteria [10].

2. Literature review

There are plenty of variations for the definition of industrial design, including several findings that explain the transition of product development and manufacturing from the early Industrial Revolution all the way to the Information Age [17]. Although the perception of industrial design was founded on different concepts, a common view exists in such area like product development, which indicates how industrial design not only focuses on aesthetic but also on other aspects such as user-friendliness, efficient use of material, product performance, ergonomics and uncomplicated manufacturing process [18],[19]. In addition, industrial design was also found in the literature to relate with the strategic function of a product that effects the company value. Previous studies also mention that the concept of corresponding customer preference to product's performance, quality, price, durability and appearance are values to product integrity and company image [17].

Since the scope of this study is on Malaysian SMEs, the definition of industrial design will follow the definition by PEREKA because it was developed according to the Malaysian environment as it is found to be suitable with this study. The definition was developed in conjunction with the 2015 World Industrial Design Day (WIDD 2015) for Malaysia Chapter where PEREKA Development Committee, along with industry players and academicians from local and private universities in Malaysia came out with the Malaysian definition of industrial design. The definition involves the value added into the product from the process

of creative thinking activities according to its function and strategy including organisational and human capital for the future sustainability.

Other than that, it has been discussed in previous studies the importance of industrial design in an organization where a study by Hertenstein et al. [20] explained that industrial design is considered as one of the many other critical main areas to new product development together with marketing, purchasing, manufacturing, research and development and others. The study added that new product development contributed by the industrial design through improving the involvement of a product with its customers such as appearance, function and ease of use.

2.1 The Value of Industrial Design

It has been discussed in previous study the importance of industrial design in an organisation where a study by Hertenstein et al. [20] explains that industrial design is considered as one of the many other critical key areas to new product development along with research and development (R&D), manufacturing, purchasing, marketing and others. The study added that industrial design contributes to new product development by improving the involvement of a product with its customers such as appearance, function and ease of use. Other than that, industrial design has also been acknowledged in other area of an organisation such as marketing. It is significant that industrial design has an important part in producing a product that is successful into the marketplace [21]. Moreover, industrial design is also known as a value for competitive advantage and sustainable commercial success where study shows that corporate financial performance is related to effective industrial design even after considering expenditures on industrial design [22].

Furthermore, many studies have found how design can yield an important added value and recognize that design is a driver for innovative performance, differentiation and growth [23],[24],[25]. However, it is hard to measure how the value design can deliver to a business. The previous studies explained that measuring design investment according to subjective foundation is hard because it is believed to be challenging to determine the right design input [12]. Various aspects such as brand design, engineering design, packaging or even the shop interiors were mentioned as determining factors where these elements are also accompanied by sales or marketing. In addition, the study by Guo [12] argued that design effectiveness could not be measured reliably according to the design investment while another study also highlighted that investment in design is subjected to the biased and typical mistakes by cost accounting practices and financial reporting [26]. Hence, it is difficult for managers in companies to understand how industrial design add value to the company, since there are only studies on its contribution to improve the company performance.

2.2 Company Performance

There are many studies conducted on the relationship between industrial design and company performance. However, the measurement, sampling or variable of the previous studies are mostly not suitable as the condition of the scope of this study is different in cultural anthropology and ethnography. A study by Hertenstein et al. [20] mentioned that there are limited researches that tried to

measure the influence of good industrial design to improve company performance, but the results were mainly based on anecdotal evidence with perception that good industrial design is profitable. Further findings found that a study by Gemser and Leenders [19] conducted a research investigating how the performance of companies affected by industrial design. It was found in that study the industrial design impact on company performance is not totally positive instead it rather may rely on factors including industry evolution and industrial design strategy while another study was found that financial performances of new products are on average 20% better [27]. Nevertheless, these findings show that there is a strong support for a company with good design to have better company performance as the findings' consistency across a various type of measures confirms the empirical discovery of this conclusion.

The study by Hertenstein et al., [20] also explained that industrial design together with manufacturing and research and development (R&D) engineers collaborate side by side in developing products that can be produced efficiently. Decisions from each department contribute to the cost and the requirement of using specific equipment for the product. It means that both expenses and assets of designing a product effects the company's performance. The study also concluded that the results from both factors are directly translated into the typical financial measures of the company performance such as cash flow, return on assets, return on sales and profit. In addition, previous studies involving new product development with company performance shows that the evidence mostly suggest aspects of new product development are positively related to the company performance [20]. However, a study by Fahmi and Saudah [28] explained that measuring performance also implies the monitoring of the effects and influence of the scores of each perspective on others. The study says that it is achieved by tracking the overall financial results while monitoring the progression where each of the organisations' performance objectives should be tied to at least one measure that reveals the performance of the organization against its objective.

3. Measuring the Performance

This study conducts a comprehensive literature review precedes the conceptualisation of the industrial design's value in Malaysia SME companies through measuring the performance of a company. According to a study by Ankrah and Mensah [29], companies may have performed poorly because they lack effective and efficient performance management frameworks and strategies to adequately and judiciously allocate resources to meet organizational goals. The study mentions that organizational factors such as job definitions, adequate job evaluation, designs and feedbacks are theoretical instead of being practical, and SMEs have contributed immensely to the disintegrated approach to personnel management used within an organization, which is due mainly to the absence of clear definition, monitoring, measurement and feedback on performance. However, Moullin [13] describes the value to customers and other stakeholders managed by organisation are also being provided through performance measurement. The study mentioned that the performance measurement relates well to the balance scorecard as the four usual dimensions of financial, customer, internal process and innovation and learning are included in "delivering value", customers and stakeholders, while internal processes, innovation and learning are

central to the way organisations are managed [13]. Thus, this led to measuring the value of industrial design through balance scorecard according to the financial and non-financial performance.

Previous study has shown that using financial perspective to measure performance was found to be inadequate because non-financial measures are as significant as financial measures in measuring the system. Study by Malgwi & Dahiru [30] found that managers make use of only financial perspective to measure performance in the past but that seems not to be suitable enough because financial performance has been used to measure its performance by purely using accounting or financial data of the company. Furthermore, measuring company performance by only using financial data or accounting is not adequate to measure the new corporate organisation performance due to the integration of supply and demand chains [31]. Additionally, Malgwi and Dahiru [30] added that financial data have inherent lagging characteristic and consider as micro-oriented because it is a compilation from already know events and only on the financial perspective. Moreover, when the system integrates both non-financial and financial measures, the result on the organisation performance is found to be higher [32]. Therefore, the significant tool that can be used to measure both non-financial and financial performance is the balance scorecard. Thus, this study explores how the balance scorecard can be used as the significant tool to measure both non-financial and financial performance.

3.1 Balanced Scorecard

The balanced scorecard was developed as a framework by Kaplan and Norton [33] for measuring the performance of a company that included non-financial performance measures into the financial metrics to provide a more holistic and clear view on performance of an organisation. In addition, previous study has also described balanced scorecard as a set of measures that have been carefully pick from the strategy of an organisation. The scorecard's selected measures appear as an instrument for executive to communicate with external stakeholders and workers of the performance and results drivers so that the company can accomplish its strategic objectives and mission [34]. The need to integrate non-financial performance variables has led to the development of the balance scorecard to measure an organisation's performance. It's framework not only offers to measure the performance of an organisation but also assist in identifying the essential action to the company's planning by measuring and execution the matrixes [30]. Additionally, balance scorecard is also viewed as a system for an organisation to assess key performance measures according to the performance perspective in internal business processes, learning and growth, financial and customer [35].

Furthermore, the balanced scorecard nurtures the balance between various strategic measures to achieve its goal that motivates its employees to work according to the company's vision. It is also a tool that assists the company's direction, sets organisational objectives, improves communication and finally delivers feedback on its strategy. Each measure on a balanced scorecard acknowledge a part of the company's strategy [36]. Based on the literature findings mention earlier, financial criteria for industrial design mostly relate to new product development. This is significant but most of the studies were not

conducted specifically to SME companies. Therefore, it is important to use the measures that is suitable to the scope of this study because usually larger companies have enough investment to make its own specialist and specific tools while SMEs do not have these features and its limitation of having experienced designer [37]. Further findings found the study by Wu [39] identified four performance measures for SMEs, which are customer orientation, employees' orientation, competitiveness orientation and strategic partners' orientation. Wu [39] explained that the data collected from the interviews show that performance indicators vary from company to company.

As mention earlier, balanced scorecard is a combination of both non-financial and financial measures. From the literature findings, most of the studies generally measure the company's performance in new product development for the non-financial and financial criteria [40]. An example from the study by Ulrich and Eppinger [38] recommended five measures specifically for assessing the performance in product development effort which includes product cost, development capability, development time, development cost and product quality. Another study mention that company image, ease of use, uniqueness, reliability and durability can increase product quality as the non-price value of design [41]. Other than that, it was found in the literature research five criteria for assessing new product development identified in the study by Hsu [40] which includes both non-financial criteria and financial criteria. The non-financial criteria are the degree to which a new product enhances company image and technological capability whereby the financial criteria are success in reaching profit targets, sales and volume.

4. Discussion

Past studies that mostly focused on company performance do not explore the values created in financial and non-financial performance for industrial design. Most studies focus on the company performance in new product development without specifically explore the both financial and non-financial performance. There are also previous studies conducted on the relationship between industrial design and company performance but without discovering the measures that contribute to the financial and non-financial performance [20]. Additionally, Hertenstein et al. [20] found strong support for the fact that firms with good design have better financial performance but the study do not suggest that every firm with industrial design will have superior financial performance because industrial design alone cannot overcome the effects of inefficient production, or weak sales and marketing. Other than that, the closest measures that assessed industrial design towards financial and non-financial performance were based on the new product development [38]. In addition, industrial design was also found to relate with the strategic function of a product which affects the company's value such as the concept of corresponding customer preference to product's performance, quality, price, durability and appearance [17].

The most significant way to explore the value industrial design has on Malaysian SME companies is through the performance measurement together with balance scorecard as the indicator to categorize the findings. However, among all the measures found in previous studies on the industrial design and company performance, most of the findings were mostly do not involve or contribute to financial and non-financial performance of the company. Other than

the measures found from the studies on the new product development, there was also a study that manages to discover the determinant of financial and non-financial performance for SME companies. Hence this study identified four non-financial performance measures that are the most suitable determinants according to the new product development and SME, which are customer orientation, employees' orientation, competitiveness orientation and strategic partners' orientation and the financial performance measures are growth, profitability, liquidity, efficiency and revenue [38],[39],[40]. This performance measurement determines specifically towards the company performance according to the balanced scorecard by collecting the data from the studies on new product development and SME companies. Thus, these determinants are considered as the significant measures to explore the value of industrial design on the company performance for Malaysian SMEs through financial and non-financial performance.

5. Conclusion

This study found that the industrial design values are the value to customers and other stakeholders managed by organisation which are being provided through performance measurement. Moullin [13] describes the balance scorecard is best relates to the performance measurement as the four dimensions comprises of delivering value, customers and stakeholders. Hence, the balance scorecard can explore the value through financial and non-financial performance because financial data have inherent lagging characteristic and are considered as micro-oriented as it is a compilation from already known events and only on the financial perspective [30]. Moreover, when the system integrates both non-financial and financial measures, the result on the organisation performance is found to be higher [32]. Based from the literature findings, financial or non-financial performance criteria for industrial design mostly relates to new product development. This is significant but most of the studies were not conducted specifically to SME companies. It is important to use the measures that is suitable to the scope of this study because usually larger companies have enough investment to make its own specialist and specific tools while SMEs do not have these features and its limitation in having enough experienced designer [15].

There have been a lot of studies in the literature on the financial performance measures of the balanced scorecard. However, most of the studies focused more on new product development of other industries rather than industrial design. Although the balanced scorecard measures developed from the previous studies are not related to industrial design, the financial and non-financial perspectives of the balanced scorecard are applicable to the context of industrial design. The non-financial measures will be the leading indicators for the financial performance. Hence, based on financial and non-financial performance measures for new product development, this study uses measures such as customer orientation, employees' orientation, competitiveness orientation and strategic partners' orientation for non-financial performance and growth, profitability, liquidity, efficiency and revenue for the financial performance. The findings of this study will create awareness and provide understanding on the importance and value of industrial design.

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