

## **Manufacturing Strategy and Export Performance of Small and Medium Enterprises in Malaysia: Moderating Role of External Environment**

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### **Abstract**

*The aim of this research is to determine if there is significant relationship between manufacturing strategy and export performance of small and medium enterprises (SMEs) in Malaysia. In addition, the study seeks to examine the moderating effect of external environment on manufacturing strategy and export performance relationship. To test the relationships, data were collected from owner/managers of 201 exporting SMEs in Malaysia through mailed questionnaires. Data were analyzed using descriptive statistics, factor analysis as well as regression analysis. The results reveal significant and positive relationship between manufacturing strategy and export performance of SMEs. The results also show that external environment plays a moderating role in this relationship. These findings emphasize the importance of adopting the manufacturing strategy among the owner/managers of SMEs for their success and these firms would gain in terms of competitive advantage over their rivals and reap higher export performance. They could also anticipate future threats and seek out opportunities for further expansions in the international markets. Future research may provide new insights on the important role of external environment in the firm's export performance which is relatively under researched among the SMEs.*

**Keywords:** *Manufacturing strategy, external environment, export performance, SMEs*

### **1. Introduction**

Many empirical studies on export performance have employed various variables such as market characteristics, management commitment to export, size of foreign market and size of firm, firms export marketing activities on product adaptation, market segmentation (Cooper & Kleinschmidt, 1985; Piercy, 1981); and firms' distinctive competence for technological advantage in relation to export performance (Cavusgil & Zou, 1994). Others have used variables like nature of exporter-importer relationship (Rosson & Ford, 1982; Styles et al., 2008; Zhang et al., 2003), export market orientation (Cadogan et al., 2002), export practices (Christensen et al., 1987), export planning (Lukas et al., 2007), and market and brand strategy (Aulakh et al., 2000; Brouthers & Xu, 2002, 2005) to measure export performance (Boehe, &

Barin-Cruz, 2010). Despite numerous researches performed on the export performance, only a few researches have incorporated the element of strategy in relation to the firms export operation and export success (Namiki, 1989), and research on the relationship between business strategy and export performance is still limited (Cavusgil & Zou, 1994; Salavou & Halikias, 2009). The business strategy is a firm's internal element and it is a vital determining factor for the firm's success in exporting because business strategy influences export performance directly (Aaby & Slater, 1989).

The concept of business strategy has been rarely tested in the context of export operation and performance. Most researches on business strategy were focused on the domestic capacity and very little research was done in adopting these strategies in the context of export performance (Salavou & Halikias, 2009). It has been suggested that more research should be conducted to examine the role of "Porter's Generic Strategy" and its impact on the export operation and export performance (Namiki, 1989; Boehe & Barin-Cruz, 2010). Hayes and Wheelwright (1984) argued that for the strategy to be effective there must be synergy in important area such as competitive strategy and manufacturing strategy, other functional strategies and the external environment. However, most of studies on strategy-performance relationship have been mainly focused on large or well established firms, and research on export related topics on SMEs has been scanty (Al-Hyari et al., 2012; Okpara, 2010; Altintas et al., 2007; Anderson et al., 2004; Singh & Mahmood, 2013). Furthermore, most of these researches have also ignored the element of manufacturing strategy in their research (Mintzberg & Quin, 1991) despite of its importance to the firm's performance (Williams et al., 1995). While Amoako-Gyampah and Acquah (2008) and Raymond and Croteau (2009) called for a more research on manufacturing strategy and export performance to be carried out, others have suggested that the effect of manufacturing strategy on performance is indirect, and that some aspects of environment moderate this relationship (Badri et al, 2000; Thun, 2008; Machuca et al, 2011; Pelham & Lieb, 2011). Thus the objectives of this study are threefold. First, to apply the manufacturing concept within the exporting SMEs, and second to determine whether significant relationship exists between manufacturing strategy and export performance of SMEs. Finally, it is also the objective of this study to examine the moderating effect of external environment on the relationship between manufacturing strategy and export performance.

## **2. Literature Review**

### *2.1 Manufacturing Strategy and Export Performance*

Past researchers have highlighted the importance of manufacturing strategy towards attaining higher performance (Leong et al., 1990; Kim & Arnold, 1992; Ward & Durray, 2000). Amoako-Gyampah and Acquah (2008) argued that there is a direct relationship between manufacturing strategy and firm's performance. Miltenburg (2008) suggested that firms that apply manufacturing strategy are most likely to achieve higher return on sales and better profit before tax to sales ratio. Corporate performance is positively related to role of manufacturer managers in strategic decision making (Swamidass & Newell, 1987). Anderson et al.'s (1989) findings indicated that production competence is a measurable function of production and related to firms competence. Quality assurance and the firm's capabilities to deliver their products and services were also found to be significantly related to the firm's performance (Williams et al., 1995). Advanced operating procedures and firm capabilities tend to build efficient delivery process; low operation cost generates competitive advantage and increase firm performance (Day, 1994). Nevertheless, no significant differences were found between firms using mixed (efficiency and flexibility) strategy and firms using a single strategy of efficiency or flexibility and their business performances

(Ebben & Johnson, 2005). In addition firm's performance is not fully depending on manufacturing strategy; rather, it also depends on manufacturing strategy configuration and strategic configuration interaction (Popovska & Boer, 2008).

Manufacturing strategy dimensions of cost, quality, flexibility, and delivery were also studied in relation to firm performance and they are all found to be significantly related to the firm's financial performance (Butt, 2009). However, Swamidass and Newell (1987) found that flexibility was more related to the firm's business performance, while Amoako-Gyampah and Acquah's (2008) study found that only quality appear to have a significant influence on the firm performance. Similarly other researchers also found manufacturing dimension of quality to be an important predictor of the firm performance (eg. 1987; Flynn et al., 1994; William et al., 1995; Ward & Durray, 2000). Chi et al. (2009) indicated that the alignment between business environment characteristics, competitive priorities and supply chain structure improve firm performance. However, cost leadership strategy must be combined with manufacturing strategy capabilities in order for the cost reduction to be effective. Manufacturing capabilities focused on flexibility are more suitable for differentiation strategy adaptation. Da Silveira and Sousa's (2010) results indicated that capability learning and firm best practices are positively related to firm performances (flexibility and dependency) while firm's internal fit is negatively related to flexibility improvements. Popovska and Boer (2008) argued that firm's performance is not fully depending on manufacturing strategy; rather, it could also depend on manufacturing strategy configuration and strategic configuration interaction. Based on the literature review and suggestion by previous researchers on the manufacturing strategy, this research intends to examine the relationship between manufacturing strategy and firms export performance. Thus, the following hypothesis is formulated:

H1: There is a significant relationship between manufacturing strategy and export performance of SMEs.

### *2.2 External Environment, Manufacturing Strategy and Export Performance*

There is a strong relationship between manufacturing strategy and environment uncertainty (Swamidass & Newell, 1987; Ward et al., 1996). There are significant evidences linking external environment and the low cost, flexibility, delivery, quality (manufacturing strategy) against firm's performance (Swamidass & Newell, 1987; Ward et al., 1996). Technology turbulence (external environment) or manufacturing complexity is positively related to the export performance (Zou & Stan, 1988). In addition, the relationship between environment variables and manufacturing strategy also depend on the size of the firm (Lawrence & Hottenstein, 1995). Many past researches acknowledged that an industry and environment are inseparable and limiting ones research in a single industry would limit its environment variation of the sample (Dess & Beard, 1984; Dess, Ireland & Hitt, 1990; Swamidass & Newell, 1987). There is no one fine way to structure an organization, and there is no limitation in leading it direction nor there is one grounded way to come up with the best decision. The most favorable way to choose a course of action that is contingent relies on the fit between internal and external situations thus the environment. Furthermore, according to contingency theory, there is no universal consensus that certain principles can be blindly followed by any organization (Caruana, Morris & Vella, 1998). Each practice of manufacturing strategy could be different according to the environment (Machuca, Ortega Jiménez, Garrido-Vega & De los Ríos, 2011). Therefore, based on contingency theory, proper fit between manufacturing strategy and the external environment must be made by the firm (Pelham & Lieb, 2011). Nevertheless, not all of the previous decision made by the other organization can be used as a guide for the future decision making. This is because, every now and then external environment factors changes and the firms will constantly

need to match their internal and external factors over and over again to derive the best decision for the firm. Grounded on the argument above, the following hypothesis is proposed:

H2: External environment moderates the relationship between manufacturing strategy and export performance of SMEs.

### 3. Theoretical Framework

Figure 1 below illustrates the proposed model that hypothesized the relationships between manufacturing strategy, external environment and export performance.

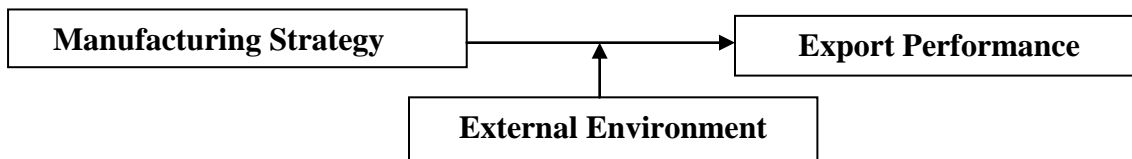


Figure1: Proposed model of manufacturing strategy, external environment and export performance relationships

The proposed framework is supported by the resource-based theory which provides a foundation for the exploration of manufacturing strategy and the relative effect on export performance. The theory seeks to identify factors that explain why firms are able to gain and sustain a competitive advantage. The theory asserts that a firm's performance is mainly driven by a unique set of firm resources that are difficult to imitate, rare and valuable. As long as competitors are unable to buy or imitate or substitute the resources controlled by a firm, these resources will continue to be a source of competitive advantage (Barney, 2002). Wernerfelt (1984) referred manufacturing strategy formulation as "what a firm wants is to create a situation where its own resource position directly and indirectly makes it difficult for others to catch up". According to Schroeder et al. (2002) strategy formulation begins by exploring the firm's internal resources. For the firm to have a competitive advantage over its competitors all of the resources must not be easily imitated and duplicated by the competitors as these competitive advantage contributes significantly towards the outcome of the firm's performance (Barney, 1991). Manufacturing strategy implementation is not static but is an ongoing process and interactive which require the firm to acquire knowledge and gather market information. Manufacturing resources such as a set of processes and unique equipment owned by the firm are not easily imitated in the short period of time as they were formed distinctively through unique process within the firm and form competitive advantage for the firm (Hayes & Wheelwright, 1984; St. John & Harrison, 1999). Thus, firm's capability to achieve low cost, high flexibility, dependability and quality is a form of manufacturing process that enables the firm to increase its competitive advantage based on manufacturing strategy (Cleveland et al., 1989; Hayes & Wheelwright, 1984; Hill, 2000; Vickery et al., 1993).

### 4. Research Methodology

#### 4.1 Sample and data collection

The sample for the study was drawn from the Federation of Malaysian Manufacturers (FMM) directory of manufacturing SMEs. From the listing, only firms which fulfilled the following criteria; manufacturing firms with an annual sales turnover of between RM250,000 and less than RM25 million, or

manufacturing firms with fulltime employees ranging from 5 to less than 150, and engaged in the exporting activity, were chosen. A total of 779 SMEs made up the target population. Based on Krejcie and Morgan (1970), a sample size of 260 was determined, and due to response rates of between 20 to 25 percent for a mail survey, the number of questionnaires sent should be four or five times than the intended sample size. A questionnaire accompanied by a cover letter and a postage-paid return envelope was mailed to the owner/manager of each firm. Owner/managers were targeted in this study because they were involved in the overall running of the businesses, and their views often represent the views of the entire firm. A total of 233 questionnaires were received, yielding a response of 29 percent. However, 11 questionnaires were removed because they were incomplete and 21 more questionnaires were deleted during the outlier detection process, giving an overall 201 usable questionnaires for further analysis. There is also a possibility of a non response bias when there exists significant difference between the answers of those who responded and those who do not respond. To test for non response bias, the early respondents were compared with late respondents as suggested by Armstrong and Everton (1977). No significant differences were found in the mean responses for any of the constructs in the study, suggesting that the non response bias is not an issue in this study.

#### 4.2 Measures

The instruments for this study were developed using established measures from previous studies. The manufacturing strategy of fifteen items was measured using the seven-point Likert type scale adapted from Ward and Duray (2000). This measurement was selected because it has been shown to possess valid psychometric measure properties. The measurement for external environment was based on Kohli and Jaworsky's (1990) study. It consisted of six items and measured using a seven-point scale. Self-report technique was used to measure export performance, and subjective assessment was employed because it was expected that owner/managers would be unwilling to disclose full financial data. This study measured export performance with four items; sales volume, profitability, market share, and new markets, and the owner/managers were asked to rate their export performance on a seven point Likert type rating scale. It has been found that the subjective measures of performance are correlated with the objective measures of performance (Dess & Robinson, 1984).

#### 4.3 Reliability and Validity

Cronbach's alpha was used to assess the instruments reliability. Generally, 0.70 or higher is considered to be agreed value for alpha's reliability (Hair et al., 2011). Table 1 below shows that all the variables have values of more than 0.7, indicating that the instruments are relatively reliable.

Table 1: Reliability Scores for Variables

| Variable               | No. of items | Alpha value |
|------------------------|--------------|-------------|
| Manufacturing strategy | 15           | .95         |
| External environment   | 6            | .78         |
| Export performance     | 4            | .74         |

The variables in this study were validated through factor analysis. Before performing the analysis, the suitability of the data was assessed through two tests; Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) and Bartlett's Test of Sphericity. The KMO values were 0.958, 0.856 and 0.755, and the Bartlett's Test of Sphericity was significant at  $p < 0.001$  (See Tables 2, 3 and 4). The results support the factorability of the data. For factor analyses, principle component analysis and Varimax rotation were

performed. The analysis has resulted in single factor loading in each of the three constructs; manufacturing strategy, external environment and export performance that explained 75.338 percent, 57.23 percent and 58.118 percent of the variance, respectively. Only factors with a loading value of 0.50 and above were considered, and therefore no items were deleted (Hair et al., 2011).

Table 2: Factor Analysis – Manufacturing Strategy

| No  | Item   | Loadings |
|-----|--|----------|
| 1.  | Reduce inventory   | 0.915    |
| 2.  | Increase capacity utilization                                  | 0.882    |
| 3.  | Increase equipment utilization                                 | 0.912    |
| 4.  | Reduce production costs  | 0.905    |
| 5.  | Statistical process control                                    | 0.851    |
| 6.  | Real time process control systems                              | 0.925    |
| 7.  | Updating process equipment                                     | 0.889    |
| 8.  | Developing new process for new products                        | 0.851    |
| 9.  | Developing new process for old products                        | 0.875    |
| 10. | Lead time reduction  | 0.718    |
| 11. | Setup time reduction   | 0.861    |
| 12. | Ability to change priorities of jobs on the shop floor         | 0.875    |
| 13. | Ability to change machine assignments of jobs on the job floor | 0.763    |
| 14. | Provide fast deliveries  | 0.867    |
| 15. | Meet delivery promises   | 0.904    |
|     | Eigenvalues  | 11.301   |
|     | Percentage of variance explained                               | 75.338   |
|     | KMO  | 0.958    |
|     | Bartlett Test of Sphericity:                                   |          |
|     | Approx. Chi Square   | 3793.105 |
|     | Df   | 105.00   |
|     | Sig  | 0.000    |
|     | Cronbach Alpha   | 0.976    |

Table 3: Factor Analysis - External Environment

| No. | Description  | Loadings |
|-----|--|----------|
| 1.  | In our kind of business, customers' product preferences change quite a bit over time.                      | 0.760    |
| 2.  | Our customers tend to look for new products all the time.  | 0.749    |
| 3.  | Sometimes our customers are very price-sensitive, but on other occasions, price is relatively unimportant. | 0.753    |
| 4.  | We are witnessing demand for our products and services from customers who never bought them before.        | 0.757    |
| 5.  | New customers tend to have product-related needs that are different from those of our existing customer.   | 0.772    |
| 6.  | We cater too many of the same customers that we used to in the past.                                       | 0.748    |
|     | Eigenvalues  | 3.434    |
|     | Percentage of variance explained   | 57.238   |
|     | KMO  | 0.856    |
|     | Bartlett Test of Sphericity:   |          |
|     | Approx. Chi Square   | 445.682  |
|     | Df   | 15.000   |
|     | Sig.   | 0.000    |
|     | Cronbach Alpha   | 0.850    |

Table 4: Factor Analysis - Export Performance

| No | Item  | Loading |
|----|---|---------|
| 1. | The level of our export sales volume.               | 0.747   |
| 2. | The profitability of our export operation.          | 0.709   |
| 3. | Our share of export market sales.                   | 0.828   |
| 4. | The rate at which we are able to enter new markets. | 0.759   |
|    | Eigenvalues   | 2.325   |
|    | Percentage of variance explained                    | 58.118  |
|    | KMO   | 0.755   |
|    | Bartlett Test of Sphericity:                        |         |
|    | Approx. Chi Square                                  | 189.328 |
|    | Df  | 6.000   |
|    | Sig   | 0.000   |
|    | Cronbach Alpha                                      | 0.757   |

## 5. Findings and Discussions

### 5.1 Profile of Respondents

Table 5 presents the firms' demographic profiles. The demographic information consists of types of industry; company form; number of employees; international strategy and annual sales. SMEs manufacturing sector consists of many sub-sectors, hence the survey was designed to capture the SMEs sub-sectors in which they were operating.

Table 5: Sample Characteristics: Firms' Profile

| Particulars                | Variables                              | Frequency | Percent |
|----------------------------|--|-----------|---------|
| Type of industry           | Garment/apparel                        | 10        | 5.0     |
|                            | Automobile part                        | 14        | 7.0     |
|                            | Food products & beverages              | 19        | 9.5     |
|                            | Textiles                               | 10        | 5.0     |
|                            | Chemicals                              | 8         | 3.9     |
|                            | Fabricated metals                      | 9         | 4.4     |
|                            | Furniture and other manufacturing      | 10        | 5.0     |
|                            | Plastic products                       | 14        | 7.0     |
|                            | Electronics appliances                 | 68        | 33.8    |
|                            | Wood products except furniture         | 39        | 19.4    |
|                            | Total                                  | 201       | 100.0   |
| Company form               | Private limited Co                     | 154       | 76.6    |
|                            | Sole proprietorship                    | 28        | 13.9    |
|                            | Partnership                            | 19        | 9.5     |
|                            | Total                                  | 201       | 100.0   |
| Employees                  | 5 – 10                                 | 35        | 17.4    |
|                            | 11 – 25                                | 41        | 20.4    |
|                            | 26 – 50                                | 48        | 23.9    |
|                            | 50 – 100                               | 35        | 17.4    |
|                            | 101 – 150                              | 42        | 20.9    |
|                            | Total                                  | 201       | 100.0   |
| International market entry | Exporting                              | 184       | 91.5    |
|                            | Licensing                              | 6         | 3.0     |
|                            | Joint venture                          | 8         | 4.0     |
|                            | Wholly-owned subsidiary                | 3         | 1.5     |
|                            | Total                                  | 201       | 100.0   |
| Annual sales               | Less than RM250,00                     | 0         | 0       |
|                            | RM250,000 to less than RM10 million    | 103       | 51.0    |
|                            | RM10 million to less than RM25 million | 98        | 49.0    |
|                            | Total                                  | 201       | 100.0   |

The largest respondents were from the electronic appliances industry with 33.8 percent; wood products except furniture with 19.4 percent; food products and beverages, 9.5 percent; automobile parts, 7 percent; plastic products, 6 percent; and garments, furniture and textiles, each with 5 percent. SME sub-sectors play an important function in the expanding Malaysian economy (Radam et al., 2008). Selecting a sufficient number of respondents from various sub-sectors in this finding is vital in ensuring the generalizability of the characteristics represented by the elements of the population (Sekaran, 2006). In terms of structure, the SMEs were categorized into three main categories, with private limited company representing the largest component at 75 percent while the sole proprietorship and partnership



representing, 14 percent and 11 percent respectively. This respondent's data reflected the true population of the manufacturing SMEs category which is mostly in the form of private limited company. The finding also revealed that most of manufacturing SMEs in the survey employed between 26 to 50 full time workers twenty five (25) percent, another twenty (20) percent with 101 to 150 employees, 26 to 50 employees with 19 percent, 5 to 10 employees with 18 percent, another with 18 percent employed between 51 to 100 full time workers. An SME is defined as a firm that employs between 5 to 150 full time workers. Thus, all the firms surveyed were in this SME category.

SMEs rely on exporting as their most favorite international mode of entry (Coviello & McAuley, 1999). Not surprisingly the largest mode of international strategy entry was from exporting at ninety one (91) percent; joint venture at 5 percent; licensing at 3 percent; and wholly owned subsidiary at 1 percent. The result shows that majority of the SMEs in Malaysia used exporting as means to enter the international market. In addition, manufacturing sector contributed 79 percent of total export earnings and nearly 29 percent of Malaysian GDP. Manufacturing sector has an essential role in the expansion of the Malaysian economic growth (Ramayah & Koay, 2002). The respondents were representatives of the manufacturing SMEs that were focused on exporting, hence the domain of the study. In terms of the amount of annual sales, 51 percent of the sampled firms generated annual sales that ranged from RM250,000 to less than RM10 million, while the remaining 49 percent generated between RM10 million to less than RM25 million of annual sales. The results showed that the respondents were all from the small and medium size category based on the definition of SMEs. Therefore, it can be concluded that all the respondents fit the definition of small and medium enterprises category set by the SME Corp. Generally, the sampling respondents represented the true population of manufacturing SMEs and meet the criteria of small and medium enterprises as defined by SME Corp and they are also involved in the export activities.

### 5.2 Hypotheses Test

The first hypothesis (H1) stated that there is a significant relationship between manufacturing strategy and export performance of SMEs. This hypothesis was tested using SPSS. Table 6 displays the result of the analysis, and the t-value is 8.586 at  $p < 0.000$ , indicating that there is a positive and significant relationship between manufacturing and SMEs' export performance. Based on this result hypothesis H1 is supported. It can be inferred that the more the SME owner/managers adopt the manufacturing strategy in their firm, the higher the export performance is yielded. In addition, the strength of the relationship is measured by ( $\beta = 0.398$ ), meaning that manufacturing strategy is also a crucial predictor of export performance. This result is consistent with previous studies and the general notion that manufacturing strategy is associated with superior firm performance.

Table 6: Relationship between Manufacturing Strategy and Export performance

| Independent Variable   | Standardized Beta | T     | Sig. (p-value) | R <sup>2</sup> |
|------------------------|-------------------|-------|----------------|----------------|
| Manufacturing strategy | 0.398             | 8.586 | 0.000          | 0.681          |

The second hypothesis (H2) stated that external environment moderates the relationship between manufacturing strategy and export performance of SMEs. To test this hypothesis, hierarchical regression was used as suggested by Bennet (2000). This is an ideal analysis method for research containing both main effect and on interaction terms. The finding reveals that external environment moderates the

relationship between manufacturing strategy and export performance, and thus H2 is supported (See Table 7). The strength of the relationship is measured by  $B = 0.114$  indicating that external environment is a good moderator in the manufacturing strategy and export performance relationship.

Table 7: Relationship between Manufacturing Strategy, External Environment and Export Performance

| Variables              | Standardized<br>Beta | t     | Sig.<br>(p-value) | R <sup>2</sup> |
|------------------------|----------------------|-------|-------------------|----------------|
| Manufacturing Strategy | 0.114                | 2.364 | 0.019             | 0.694          |
| External Environment   |                      |       |                   |                |

The link between manufacturing strategy and export performance of manufacturing SMEs was investigated in this study. It was found that positive and significant relationship exists between manufacturing strategy and export performance. Thus adopting manufacturing strategy in the firm would result in higher export performance. SME owner/managers should be aware that manufacturing strategy must be implemented in their firms in order for them to obtain competitive advantage over their rivals. However, the firm's ability to gain positive benefits from the manufacturing strategy will depend on the availability of resources, such that firms with higher availability of resources will be able to make better use of the strategy for achieving superior performance. This links well with resource-based view of the firm which postulates that the presence of assets that are difficult to imitate are associated with the firm's competitive advantage (Barney, 1991). Implementation of advance manufacturing technologies has been recognized as a main factor that enriches competitiveness in the firms (Naik & Charkravarty, 1992). The finding of this research concurs with many past studies that manufacturing strategy contributes significantly towards improving export performance. SMEs that are able to control the inventory effectively could reduce their expenses on storage cost; storage space; avoid keeping obsolete or old fashion stock and theft. At the same time, SMEs that effectively and efficiently manage their machinery could also reduce machine downtime; increase machinery utilization and increase manufacturing capacity. SMEs that could produce products at the lowest cost shall be able to sell at a reduced priced and conquer a greater market share and sales growth. By capturing greater market share and sales growth SMEs could attain higher export performance. SMEs that have a quality products and distinctive design will attain greater reputation in the market place.

Quality and standard uphold by the SMEs are mandatory to qualify them as successful exporter (Ferguson, 1996). Firm's product reputation, secures customers repetitive purchasing behavior, and therefore increase export performance. SMEs that want to minimize their manufacturing cost will reduce its products cost, by maintaining high statistical control procedures that could detect early product defects. Implementation of manufacturing strategy in the firms improves productivity, product quality and reduces product rejection rates which are crucial for the domestic and foreign markets (Naik & Charkravarty, 1992). As the competition in international market increases, technological capabilities would be a great factor that determines the firm's propensity for exporting (Nicholls-Nixon, 1995). Early prevention could allow the firms to save time, resources, increase efficiency, maintain higher productivity, and trim down the operation cost effectively. SMEs that maintain real time process control system, are able to produce their products in a more efficiently manner that safe machine and human time which in turn reduce operation cost and those that are keeping their process equipment up to-date are able to produce quickly

and efficiently which also reduce operation costs. By developing creative ideas for their new products and becoming more innovative, these firms could capture greater market share and sales growth and at the same time reduce operation cost. Hence, SMEs that emphasize greater quality control in their manufacturing system and product design could reap higher export performance.

The ability to regulate the manufacturing capacity instantaneously as part of the firms' flexibility ability in manufacturing strategy will enable them to meet greater demand from their customers while maintaining lower production cost and greater products quality. SMEs' flexibility to meet market demand will not only increase its goodwill but also retain customer loyalty and increase its export performance. Similarly, firms that emphasize on lead time reduction, set-up time reduction, are able to change priority on the job floor, able to change machine assignment and maintain high flexibility qualities could increase their market share and sales growth. Less wastage and theft on raw material would occur, as they would purchase their product inputs just in time which reduces chances of obsolescence of stock or damage to their resources. These firms may also increase the production capacity whilst utilizing their machinery efficiently. Therefore, SMEs' flexibility and capability could reduce the expenses like storage cost, labor, electricity, wastage and space if these resources are managed efficiently. A properly managed expense enables them to sell their products at a reduced price and also increase export performance. SMEs' ability to make on time delivery of product and reliability will capture higher customers' satisfaction which in turn would increase greater market share and sales growth. Those that are able to produce and deliver its products earlier than what was promised also retain customer satisfaction and trust which builds customer loyalty which, in turn could increase export performance. The firm's ability to deliver on time is an important determinant of a firm's effectiveness in the eyes of a customer. An organization should have high order rates, short order cycle time, up-to-date shipping information and frequent delivery time as all these elements could build firms' capabilities; increased customer satisfaction leads to higher market performance (Tracey et al., 1999). Therefore, firms that are able to increase their delivery value in the customer's eyes would increase their export performance (Cavusgil & Zou, 1994). The firm's ability to achieve low cost, high flexibility, dependability and quality is a form of manufacturing process that enables it to increase its competitive advantage based on manufacturing strategy (Cleveland et al., 1989; Hayes & Wheelwright, 1984; Hill, 2000; Vickery *et al.*, 1993). Thus, the manufacturing strategy is a competency and advantage that a firm builds around its operation process that gives the firm a competitive advantage over the rivals. The ability to produce unique product features, capability to manufacture special products and improving existing manufacturing techniques; builds competitive advantage for the firm and thus generates higher demand from customers and increase export performance in the short and long run. By enforcing quality control and putting emphasis on the research and development of new product features, SMEs will be able to create quality and unique products. Nevertheless, the successful adoption of manufacturing strategy is highly dependent on the firm's capabilities, readiness to change and organizational culture. The match between the firm's capabilities and its external environment is the tenets of strategic management. Hence SMEs should choose manufacturing strategies that suit their external environment in order for them to enjoy superior business performance.

## 6. Conclusion

This research adds to the existing knowledge by providing empirical evidence of the contribution of manufacturing strategy to export performance of SMEs in Malaysia. This research also responds to calls for more exploration of the manufacturing strategy in an international context and its impact on performance. In addition, this research provides owner/managers of SMEs with more information to develop and enhance skills, resources and strategies to achieve competitive advantage and superior export performance. Manufacturing acts as an impetus that affects firm's manufacturing capabilities and competitive advantage which consequently have effects on export performance. Thus SME owner/managers should focus efforts on adopting manufacturing strategy in order to realize the potential value of the international markets.

Although the study has theoretical and managerial contributions, it also contains several limitations. First the sample size in this study may limit the generalizability of the findings. The low response rate makes it difficult to identify the population the sample represents. Furthermore, the sample frame was based on a data set comprising only SMEs that were registered with the Federation of Malaysian Manufacturers (FMM) and as such may not be representative to all export-based SMEs in Malaysia. There are many SMEs which are not registered with the FMM. Therefore, it would be meaningful in the future to conduct research by surveying a wider range of SMEs. Second, the use of a single respondent for each firm may be subject to common method bias. Only owner/managers of the firms were chosen to collect the data for the study. Although the owner/manager may be the key person in the SME, one person's authority cannot represent the entire strategy of the firm. In addition, the perceptual opinions of the owner/manager may be biased because of subjective judgments of his or her own firm. Nevertheless, the researchers had taken necessary steps to minimize any biases that may have resulted, and future research might consider employing multiple informants. The third limitation was the cross-sectional nature of the study. Cross-sectional study does not elucidate why certain correlations exist and at the same time limits the inferences about the causal order of the variables. In addition, the data can only provide a snap shot at one point of time. Although useful and information, assertions based on temporal snapshots are limited to the frame of time in which the data were collected. Thus, future research should consider the use of a longitudinal investigation that would allow firms to be studied over time and provide further insights into the dynamic nature behind the findings.

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