

## **Supply chain management practices as a source of competitive advantage for food processing SMEs in Peninsular Malaysia**

(Amalan pengurusan rantai bekalan sebagai sumber kelebihan daya saing IKS pemprosesan makanan di Semenanjung Malaysia)

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Keywords: supply chain management, business practices, competitive advantage, small medium enterprises, Malaysia

### **Abstract**

The present study was undertaken on food-processing small and medium enterprises (SMEs) in Peninsular Malaysia. It attempts to examine the relationship between supply chain management (SCM) practices and the competitive position of the SMEs. Focus was given to selected supply chain management practices namely supplier partnership, customer relationship, information management and quality issues. A quantitative approach, through the use of self-administered questionnaires, was used to gauge food-processing entrepreneurs' responses. The findings clearly showed that the selected supply chain management practices have a direct impact on the competitive advantage of food processing SMEs in Malaysia. It was also found that there was still a very minimum adoption of SCM practices in food processing SMEs, especially in small enterprises. Overall, only 21% SMEs claimed to practise a full-scale use of SCM application in their business operations. About 49% SMEs claimed to only partially use SCM practices, while 30% did not use SCM practices at all in their operations. Consequently, the majority of the SMEs' competitive position was only at the average level.

### **Introduction**

In today's marketplace, many businesses are striving to find the best strategies that could give them a competitive hand compared to their rivals. Companies may not be aware of the possibilities and benefits that an effective supply chain management could bring to their operations.

The ultimate goal of supply chain management (SCM) is to integrate in a seamless manner, members of the supply chain from raw materials supplier to the end consumer, to gain a competitive edge and achieve a high level of consumer satisfaction.

A number of studies on SCM had shown the benefits linked to effective supply chain management to businesses (Cebi and Bayraktar 2003; Min et al. 2005). Several studies have also begun to explore the relationships between SCM and several management constructs (eg. organisational performance, competitive advantage and on-time-delivery). However, being a new area of study in Malaysia, studies on SCM are limited in the agricultural and food processing industry.

While previous researches have looked into SCM practices of selected manufacturing firms (Basnet et al. 2003;

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Henriksson and Nyberg 2005; Sambasivan and Jacob 2008), the needs and operational environment of small and medium enterprises (SMEs) in Malaysia are very different from those of larger firms like multinational enterprises, or those in the developed countries. It is thus important that a specific study be carried out on SCM so that Malaysia's SMEs may improve their competitive capacity. This research will attempt to assess the adoption of selected SCM practices in Malaysia including supplier selection, supplier partnership, customer relationship, information sharing and information sharing quality, and whether adopting the practices have any relationship with a company's competitive position.

Specifically, the objectives of this study were to analyse the extent of SCM practices in the food processing SMEs, to explore the relationship between SCM practices and the company's competitive position, as well as to provide input for policy or programme formulation to improve the effectiveness of food and agricultural supply chain practices.

Food processed-based SMEs have been recognised as one of the most important contributors to the economic development of many countries (Alam et al. 2011). The number of Malaysian-owned food processing businesses dominated the food processing segment, with 80% of the total amount of establishments being SMEs. The processed food products have become the choice of many Malaysians due to the increasing trend of their standard of living and purchasing power. The changes of Malaysian lifestyle have resulted in an increase in the demand for convenience food and health food which

in turn has led to more establishments of food-processed based SMEs in the country (Alam et al. 2011).

The SMEs constitute an important component of the Malaysian economy. SMEs represent 99.2% of all businesses in Malaysia and contribute more than half of total employment in the country (EPU 2010).

However, SMEs still faced considerable challenges and constraints in the growth and development. Their contribution to the country's GDP remains low at 31%, as compared to other countries in the Asia Pacific such as Japan (55%), South Korea (49%), Hong Kong (49%) and New Zealand (40%). There is still considerable scope to unleash the SMEs full potential as a driver of economic growth and this can be done by looking into its supply chain management practices to improve their competitiveness and contribution to the economy.

Malaysia adopted a common definition of SMEs to facilitate identification of SMEs in the various sectors and subsectors. This has facilitated the government to formulate effective development policies, support programmes as well as provision of technical and financial assistance.

An enterprise is considered an SME in each of the respective sectors based on its annual sales or its number of full-time employees as shown in *Table 1*.

### **Literature review and hypotheses development**

Supply chain management (SCM) is a term used to denote the integration of the physical distribution activities to effectively integrate

Table 1. SME identification criteria: Industry sector – Manufacturing (including agro-based industry)

| Definition | Yearly sales                | No. full-time employees |
|------------|-----------------------------|-------------------------|
| Micro      | <RM250,000                  | <5                      |
| Small      | RM250,000 – < RM10 million  | 5 – 50                  |
| Medium     | RM10 million – RM25 million | 51 – 150                |
| Large      | >RM25 million               | >150                    |

Source: SME Corporation Malaysia (2013)

purchasing and supply with other functions in the firm. In other words, SCM represents the management of two-way movement and coordination or relationship of goods, services, finances and information along the supply chain from raw material until it reaches the final consumers.

According to Holcomb (1994), supply chain management emphasises on shaping competitiveness and profitability (Tracy et al. 2005). While some strategies to create competitive advantages may simply be copied by competitors, the competitive advantages channelled from the chain efforts are harder to duplicate. Effective supply chain, thus, offers the opportunities to create sustainable competitive advantages (Cooper et al. 1997; Tracy et al. 2005).

#### ***Competitive advantage***

Competitive advantage, which is treated as the dependent variable in the current study, is the extent to which an organisation is able to create a defensible position over its competitors (Porter 1985). The empirical literature has been quite consistent in identifying price or cost, quality, delivery, and flexibility as important competitive capabilities. By convention, the basic measures used for the competitive position of a firm are its market share and financial position.

Several other studies also included measures like product quality, customer loyalty and reputation as additional measures of competitive position (Gorynia 2004; Sambasivan and Jacob 2008). A 1997 study (Li et al. 2006) describes a research framework for competitive capabilities and define the following five dimensions: competitive pricing, premium pricing, value-to-customer quality, dependable delivery, and production innovation.

Based on the objectives of the current study, the chosen dimensions of the competitive advantage construct used in this study follow the ones used in Sambasivan and Jacob (2008), namely selling price, reputation, product quality,

lead time, delivery commitment, relationship with suppliers, profitability and overall competitive position based on market share and others.

#### ***Supplier selection, strategic supplier partnership and competitive position***

Suppliers play an important role in the food processing industry. They are the ones providing the machineries, equipments, after-sales maintenance services and especially the raw materials. Considering their important role, the supplier selection aspect is crucial in SCM.

A study exploring SCM activities carried out by manufacturing organisations in New Zealand revealed important factors in their selection of key suppliers namely: ability to meet delivery due dates, commitment to quality, technical expertise, ethical standard practices, financial stability and others (Basnet et al. 2003). Quayle (2003) studied the UK industrial SMEs and found out their priorities for selecting suppliers. The highest priorities broadly are for quality, reliability and price. On the other hand, e-commerce, procurement expertise, R&D and value engineering scored low importance.

Supplier selection is not the only aspect that should be looked into. Close relationship needs to be formed in order to have a mutual understanding of each other's needs. A strategic partnership between a company and its suppliers emphasises on direct, long-term association and encourages mutual planning and problem solving efforts (Gunasekaran et al. 2001). Parties having such strategic partnerships have the advantage of shared benefits between the parties involved. It also promotes continuous participation in one or more key strategic areas such as technology, products and markets. Strategic partnerships with suppliers enable organisations to work more effectively with a few important suppliers who are willing to share responsibility for the success of the products. All of the above-mentioned benefits drive businesses

towards gaining a competitive edge over the other players in the market.

Based on the above explanations, we posit the following hypotheses:

*H1: There is a positive relationship between a company's strategic supplier partnership and its competitive position*

*H2: There is a positive relationship between a company's supplier selection criteria and its competitive position*

### **Customer relationship and competitive position**

The construct of customer relationship as one of the components under SCM practices may be defined as the entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers and improving customer satisfaction (Sambasivan and Jacob 2008). Satisfied customers are more willing to generate positive word of mouth which is a very powerful marketing tool for any organisation. They voluntarily pass along a positive image of the organisation and its products. Noble (1997) and Tan et al. (1998) consider customer relationship management as an important component of SCM practices.

A company's efforts to establish good relationships with its supply chain members, including customers, are needed for successful implementation of SCM programmes. Close customer relationship allows an organisation to differentiate its product from competitors, ensure customer satisfaction, sustain customer loyalty and dramatically extend the value it provides to its customers. Customers 'defecting', a term used to describe customers who shift their loyalty to a competing firm (Lovelock 2005) should be avoided. Committed relationships are the most sustainable advantage because of their inherent barriers to competition.

In view of the above discussion, the following hypothesis was put forward:

*H3: There is a positive relationship between a company's efforts in maintaining customer relationship and its competitive position*

### **Information management and competitive position**

Information management may be separated into two forms namely in terms of quantity, which refers to the extent to which critical and proprietary information is communicated to one's supply chain partner, as well as quality, which refers to the accuracy, timeliness, adequacy and credibility of the information exchanged.

Food processing companies are likely to avoid high inventory levels, low utilisation of raw materials, inaccurate forecasts or high production costs. This is where information sharing becomes important. Empirical findings from Narasimhan and Nair (2005) reveal that information sharing can increase the operational synergy among supply chain partners. The type of shared information can vary from strategic to operational information and from consumer and market information to logistics information (Huang et al. 2003). The impact of information sharing on SCM depends on what information is shared, quality of shared information and company's capability in using and translating the information into a supply chain strategy and operational activities (Lee and Whang 2000; Moberg et al. 2002).

Advances in information technologies have made it possible for the players in the food industry to manage and share information along the supply chain in an accurate and fast manner. Another empirical finding from Childhouse and Towill (2003) reveals that making highly visible all information flow throughout the chain, is the key to an integrated and effective supply chain. Indeed, information gained and well used or strategised will be translated into

a competitive advantage for the supply chain members.

Accordingly, the following hypotheses were proposed:

*H4: There is a positive relationship between a company's level of information sharing and its competitive position*

*H5: There is a positive relationship between a company's information sharing quality and its competitive position*

The constructs studied and their definitions are shown in *Table 2*.

**Methodology**

Quantitative method was chosen for data collection which was carried out through a questionnaire survey. The measurement instrument was based on the scale developed by Li et al. (2005) which had gone through a rigorous validated process. The constructs were established and used by Wisner and

Tan (2000) and Basnet et al. (2003). In addition, selected questionnaire items used by Sambasivan and Jacob (2008) were also adopted for the current study. Focus was given to several constructs; selection of preferred suppliers, strategic partnership with selected suppliers, relationship with customers, information sharing and information sharing quality.

The period for data collection lasted for 5 months, from June to October 2012. The questionnaire used comprised of a 5-point Likert-type format divided into three sections (scale of 1 = Strongly disagree to 5 = Strongly agree). The first section gauges responses from respondents on their supply chain management practices. The second section deals with the SMEs' performance outcome whereby they were asked to rate their perceived firm's level of performance and competitive position, as compared to competitors. Finally, the last section of the questionnaire contained questions on the firm's background.

Table 2. Constructs studied and definitions

|                                     | Definitions  |
|-------------------------------------|--|
| Strategic Supplier Partnership (IV) | Defined as the long-term relationship between the organization and its suppliers. It is designed to leverage the strategic and operational capabilities of individual participating organisations to help them achieve significant on-going benefits       |
| Supplier Selection (IV)             | Refers to the criteria and practices taken into consideration when selecting suppliers   |
| Customer Relationship (IV)          | The entire array of practices that are employed for the purpose of managing customer complaints, building long-term relationships with customers and improving customer satisfaction   |
| Level of Information Sharing (IV)   | The extent to which critical and proprietary information is communicated to one's supply chain partner   |
| Quality of Information Sharing (IV) | Refers to the accuracy, timeliness, adequacy and credibility of information exchanged  |
| Competitive Position of SMEs (DV)   | Measures used to assess relative competitive position: reputation, product quality, selling price, lead time and delivery commitment, relationship with suppliers, profitability, and overall competitive position based on market share and other factors |

The population for the study consists of food and agricultural SMEs in Malaysia. It was reported that there were 5,925 food and beverage enterprises which forms 15% of the total of 39,373 SMEs in the overall manufacturing industry (DOS 2005). A listing of those companies was extracted out randomly from several sources for example The Malayan Agricultural Producers Association (MAPA), The Malaysia Manufacturers Directory which could be accessed through the e-Directory.com.my, as well as the food and beverage company listing provided by SME Corporation. The targeted respondents were either the owner themselves or middle/senior management staff familiar with the firm's business strategies and supply chain operations.

A total of 580 questionnaires were mailed to respondents through convenience sampling, out of which, 137 were returned, representing 23.6% of the response rate. The response rate was considered realistic considering the difficulty of getting food processing SMEs to participate in such studies. However, due to incomplete answers, only 133 of the returned questionnaires were deemed usable for further analysis.

## Results and discussion

### Background information

This section provides background information on the local food-processing establishments that participated in the survey. A total of 133 food-processing SMEs were analysed from the survey. More

than half of the respondents were women (57.1%). The majority of the establishments were under the small category (93.0%), whereby the number of its full-time employees was between 5 and 50 people. Most SMEs have been operating for more than 10 years (51.1%). The finding that 53.4% have formed partnerships with suppliers meant the organisations have established a long-term relationship with their suppliers to help them achieve significant on-going benefits.

### Hypothesis testing

The collected data were coded and analysed. Usable data were subjected to correlation analysis using the Pearson Product-moment Correlation Analysis (Table 3), after ensuring no violation of the assumptions of normality, linearity and homoscedasticity. This statistical analysis is considered the best as it is aligned with the study's objective, to test whether or not the formulated hypotheses should be rejected or accepted. The result showed a medium and positive correlation between the variables of strategic supplier partnership and competitive position [ $r = 0.31, p < 0.01$ ]. There was also a small but positive correlation between the second pair of variables [ $r = 0.27, p < .001$ ], with high criteria of supplier selection associated with a high level of competitive position. Next, the result from the third hypothesis testing found quite a strong and positive correlation [ $r = 0.47, p < 0.01$ ] between a company's efforts in maintaining customer relationship

Table 3. Results of Pearson Correlation

| Construct                            | 1      | 2      | 3      | 4      | 5      | 6 |
|--------------------------------------|--------|--------|--------|--------|--------|---|
| Total competitive advantage          | 1      |        |        |        |        |   |
| Total strategic supplier partnership | .315** | 1      |        |        |        |   |
| Total supplier selection             | .270** | .520** | 1      |        |        |   |
| Total customer relationship          | .476** | .492** | .566** | 1      |        |   |
| Total information sharing            | .334** | .425** | .487** | .603** | 1      |   |
| Total information quality            | .340** | .351** | .354** | .508** | .793** | 1 |

\*\*Correlation is significant at 0.01 level (2-tailed)

and its competitive position. The fourth hypothesis also resulted in a positive correlation [ $r = 0.33, p < 0.01$ ] between the two variables tested, with high level of information sharing being associated with a high level of competitive position. Finally, it was found that there is a positive correlation between a company's information sharing quality and its competitive position [ $r = 0.34, p < 0.01$ ]. The strength of the relationships is interpreted according to Dancey and Reidy's (2004) categorisation. Statistically, the correlation analysis failed to reject all five null hypotheses.

#### ***Extent of use of SCM among SMEs***

It was evidenced from the survey that only 21.1% SMEs claimed to practise a full-scale use of SCM application in their business operations. About 48.9% SMEs claimed to only partially use SCM practices, while 30.1% do not use SCM practices at all in their business operations. After running an independent samples t-test to calculate the competitive advantage scores of each SME category, the result showed that there is a significant difference between the two groups, whereby medium enterprises are more competitive than small enterprises. Following that, crosstab analysis was conducted to identify the difference between the extent of SCM practices used among small and medium enterprises. It was discovered that 39.6% of small scale businesses do not practise SCM at all, with only 7.9% practising a full-scale use. In contrast, for medium scale establishments, more than half (62.5%) practise a full-scale use of SCM while 37.5% practise a partial-use. Therefore, it could be safely summarised that the supply chain management practises do have an impact on the businesses' competitive position.

#### ***Competitive position of SMEs***

The questionnaire originally asked food-processing SMEs for their information on actual financial and financial performances. However, during the pilot test which was

conducted prior to the actual survey, the companies were unwilling to disclose this information. Consequently, relative positions had to be used to operationalise the competitive positions of SMEs. Hence, the SMEs were asked to compare their level of performance in comparison to their competitors. Among the measures used to assess their relative position are reputation, product or service quality, selling price, lead time, delivery commitment, relationship with customers, relationship with suppliers, profitability and overall competitive position based on market share and other factors, all of which are the measures adopted from Sambasivan and Jacob (2008). The mean values for each of the measures were calculated whereby the majority of SMEs perceived that they performed only on the average or less than their competitors. Note that all of the mean values were between 2.00 and 3.00, indicating that food-processing SMEs perceived they perform on average compared to their competitors in those measures (*Table 4*).

#### **Conclusion and recommendations**

This paper aims to contribute empirically to the current understanding of supply chain management practices and how it contributes to the competitive advantage of food-processing SMEs. The study revealed that the selected supply chain management practices, namely the relationship with suppliers, supplier selection criteria, customer relationship, information management quality, and information sharing, have a direct relationship on the competitive advantage of food processing SMEs in Malaysia. However, only 21.1% SMEs claimed to practise a full-scale use of SCM application in their business operations. About 48.9% SMEs claimed to only partially use SCM practices, while 30.1% do not use SCM practices at all in their business operations. Clearly, there is still a very minimum adoption of SCM practices in food processing SMEs, especially in small enterprises. Among

Table 4. Dimensions of competitive position with mean values

|   | Very high (%) | High (%) | Average (%) | Low (%) | Very low (%) | Mean |
|---|---------------|----------|-------------|---------|--------------|------|
| Selling price   | 1.5           | 19.5     | 69.9        | 8.3     | 0.8          | 2.9  |
| Lead time   | 1.5           | 18.0     | 75.9        | 3.8     | 0.8          | 2.8  |
| Profitability   | 7.5           | 17.3     | 69.2        | 6.0     | 0.0          | 2.7  |
| Reputation  | 8.3           | 31.6     | 57.9        | 2.3     | 0.0          | 2.5  |
| Product/Service quality   | 9.0           | 48.1     | 42.1        | 0.8     | 0.0          | 2.4  |
| Delivery commitment   | 9.8           | 42.1     | 46.6        | 0.8     | 0.8          | 2.4  |
| Relationship with suppliers   | 16.5          | 49.6     | 33.1        | 0.8     | 0.0          | 2.2  |
| Relationship with customers   | 22.6          | 45.1     | 32.3        | 0.0     | 0.0          | 2.1  |
| Overall competitive position<br>(based on market share and other factors) | 9.0           | 30.1     | 60.2        | 0.8     | 0.0          | 2.5  |

the reasons put forward was that small businesses neither have the capability in terms of manpower nor the financial capacity needed to practise a full-scale supply chain management use. The consequence is that the majority of the SMEs' competitive position is only at the average level.

An important point is the fact that there is very little awareness among food business operations on the SCM issue. Since competition in the food industry is very strong, adopting SCM practices can be a very good strategy to improve competitive position in the market. It is also recommended that awareness on the issue should be created among the SMEs. SME Corporation may very well be the champion in conducting seminars or other programmes pertaining to SCM.

Touching on the limitations involved, the findings and discussions are limited to a specific industry which is the food and beverage manufacturing industry. Ideally, this study can be extended to other competitive industries such as tourism and banking. In future studies, the scope may be widened to other advanced supply chain practices for example just in time, vertical or horizontal collaboration, ethical standards, e-commerce, postponement, decision support system or enterprise resource planning. These practices may have a stronger

association with the competitive advantage of SMEs.

Finally, the paper contributes by providing empirical evidence on the use of supply chain practices of food processing SMEs in Malaysia. It is worth noting that many of the SMEs do not realise their full potential using effective SCM. Findings from the survey revealed less than a quarter of the businesses practise full-scale SCM. Noting that there is indeed a positive relationship between SCM practices and competitive advantage, companies may consider adopting a full-scale use of SCM practices. All in all, supply chain management can be a strategic tool for firms to improve their performance and secure their competitiveness.

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**Abstrak**

Kajian ini telah dijalankan ke atas perindustrian kecil dan sederhana (PKS) sektor pemprosesan makanan di Semenanjung Malaysia. Ia bertujuan melihat hubungan antara amalan pengurusan rantai bekalan (SCM) dengan kedudukan daya saing PKS. Tumpuan telah diberikan kepada amalan pengurusan rantai bekalan terpilih iaitu hubungan perkongsian dengan pembekal, hubungan dengan pelanggan, pengurusan maklumat dan isu-isu berkaitan kualiti. Pendekatan kuantitatif melalui borang soal selidik telah digunakan. Hasil kajian jelas menunjukkan bahawa amalan pengurusan rantai bekalan terpilih mempunyai kesan langsung dengan kelebihan daya saing PKS pemprosesan makanan. Dapatan kajian turut menunjukkan bahawa masih terdapat penggunaan yang sangat minimum terhadap amalan-amalan SCM, terutamanya dalam perusahaan yang kecil. Secara keseluruhannya, hanya 21% PKS mendakwa mengamalkan penggunaan amalan SCM secara menyeluruh dalam operasi perniagaan mereka. Sejumlah 49% PKS mendakwa hanya menggunakan sebahagian daripada amalan SCM, manakala 30% langsung tidak mengaplikasikan amalan SCM dalam operasi perniagaan mereka. Kesannya, majoriti kedudukan daya saing PKS pemprosesan makanan di Malaysia berada pada tahap yang sederhana.