RISK MITIGATING STRATEGIES IN THE FOOD SUPPLY CHAIN BY JAPANESE FOOD COMPANIES IN MALAYSIA

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Abstract— The complexities of food supply chain impose enormous challenges on the processors and the challenges facing the food processing industry. The unique features of the food industry such as the perishable nature of food products differentiate it from other sectors of the economy, and have intensified the need for an efficient supply chain. Accounting for food industry is considered the backbone to Malaysian economy, this study will identify the major risks that Japanese food companies experience in Malaysia including strategies to cope with the risks. By employing a qualitative approach, this study will provide background information which may help to design appropriate supply chain strategies that can be adopted for circumstances suitable for the current challenges prevailing in Malaysia.

Keywords— Supply Chain, Japanese Food Companies, Risk, Mitigating Strategies.

I. INTRODUCTION

There are many forms of supply chain risk – internal to the company and external – that can impact a business's ability to maintain its operations and serve its customers. While different industries have varied practices in terms of mitigating risks, risk in the food supply chain is posited by many researchers as more complex than other industries.The special characteristics of products, production processes in food and actors in the chain itself have added to the complexity and dynamism of food supply chains.Given the complexities in risks to the food supply chain, its efficient and good integration is mandatory for food processing companies in Malaysia because the food and beverages industry is one of the most important sectors in the country's manufacturing industry. To date, Malaysia has experienced a persistent food trade imbalance as the demand for food items has risen faster than their supply.The industry is dominated by small and medium-sized enterprises which has resulted in the local food processing sector not being able to cater for rising demand.

In helping Malaysia become more self-sufficient in its food requirements, risk mitigation in the food supply chain is important. Given that Japan is a supply chain superpower and for years has been an important trading partner for Malaysia and contributes capital, technology and management expertise to it, its supply chain management practices need to be closely studied. The aim of this paper is to identify the major risks and mitigation practices that Japanese food companies experience in Malaysia.

II. AN OVERVIEW OF THE FOOD INDUSTRY IN MALAYSIA

The food-processing sector is one of the backbones of the Malaysian economy, accounting for about 10% of Malaysia's manufacturing output (MIDA 2012). Total processed food contributed about RM14.2 billion in 2013, and food products were exported to more than 200 countries. Although exports have doubled over the few past decades, at this stage Malaysia continues to be a net importer of food products with annual imports of more than RM36 billion in 2012 (MIDA 2015). In fact, Malaysia has experienced this situation for at least three decades (see Figure 1). The food trade imbalance is associated with the presence of many small medium-sized enterprises (SMEs) facing numerous challenges that undermine their production capacity. Malaysian food processing is dominated by SMEs that make up more than 96% of the industry [1].These SMEs are experiencing several problems such as obsolete technologies, insufficient and sub-standard quality of raw materials, low product innovation and no research activity at the factory level [2]. The small-scale nature of operation has resulted in SMEs being inefficient in producing consistent volumes of output. Due to these problems the local food processing sector is not able to cater for rising demand and this has resulted in a negative trade balance for edible products and preparations[3].

Realizing the important contribution of the food industry to the Malaysian economy, the government wanted to see growth in the local food-processing sector. Responding to the inability of the Malaysian food processing sector to make products efficiently, Malaysia's government has continually encouraged supply chain integration in business operations as spelled out in the Third Industrial Master Plan (2006–2020). Therefore, food processing companies in Malaysia should find ways to gain better control over production, trade and distribution of their food products. Apparently, good integration in the supply chain is mandatory for food processing companies in Malaysia.

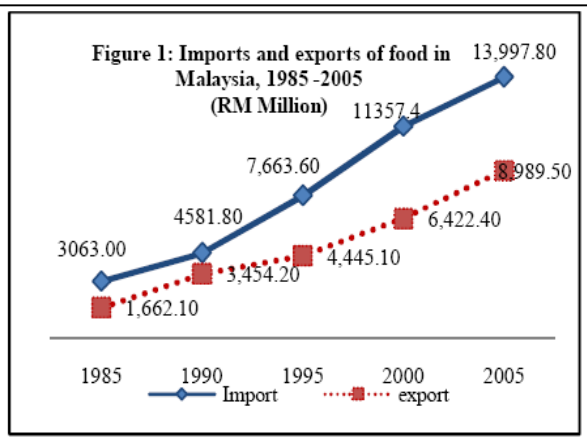


Figure 1: Imports and exports of food in Malaysia1985-2005 (in RM million)
Sources: Ministry of International Trade And Industry Report, various years

2.1Japanese – Malaysia trade linkages in brief

During the early stages of of Malaysia's economic development, the relationship between Japan and Malaysia went beyond the usual trade linkages. Considering the Japan–Malaysian affiliation, reference must be made to The Look East Policy and Malaysia's New Economic Policy (NEP) (1971-1990). While the Look East Policy sought to have Malaysians emulate the Japanese work ethic and business management techniques and to acquire Japanese expertise and capital through aid, investment and trade cooperation, Japanese foreign direct investment was a key ingredient in the success of Malaysia's New Economic Policy (NEP) (1971-1990)[4]. Japanese investment provided the required capital, technology and management expertise for the rapid-oriented industrialization policy which was central to these reforms. As a result, Japanese investment in Malaysia, based on paid up capital, increased from US$32.6 million in 1980 to US$69.1 million in 1981 and then to US$139.9 million in 1982 (which by then constituted 26.5% in total foreign direct investment in Malaysia) [5]. Base on the trends that began in the 1980s, Japan continued to be the major investors in Malaysia throughout the 1990s. Since then, Japan remained a major source of foreign investment. In 2013 Japan, the United States, South Korea, Singapore and China jointly accounted for 75.1% of total foreign investments approved during the period [6].

Concerning Japanese investment in the food industries in Malaysia, there are 18 Japanese companies Japanese food and beverage companies representing 2.5% of total Japanese manufacturing companies in the country. While the number of Japanese companies that have been active in the food and beverage production industry is still fairly small, the food sector showed encouraging developments as the number of Japanese companies operating in this field rose to 20 with the establishment of another Japanese company in Malaysia [7].

III. LITERATURE REVIEW

The primary objective of a supply chain is to create value in terms of quality, cost, speed and flexibility to the end customers as well as companies in the chain [8]. In addition, integrated supply chain management will enhance the ability to design products faster [9], lead to reduced costs [10], stock-outs and lead-time [11], and better forecasting accuracy and reduced cash-to-cash cycle time [12]. While the supply chain provides many benefits to a business, accomplishing these advantages is not an easy task. Various risks may arise along the chain which can be classified in two broad categories[13]. Firstly, risks may emerge from a failure of any one element in a supply chain potentially causes disruptions for all partnering companies upstream and downstream[14].Secondly, risks can arise from disruptions to normal activities which may be due to natural disasters, strikes and economic disruptions, or deliberate acts of sabotage, including terrorists.

Since different risks arise in any kind of supply chain, most of the literature finds that the supply chain management of food produce is more complex than other industries. The quality deterioration (perishability) and quality variation of food products, production and distribution management in food supply chains is intrinsically dynamic in the food supply chain[15]. Instead of quality of agriculture depending on climate conditions [16], the very short shelf life of food produce [17] and characteristics of (fresh) food products change over time has important implications for the management of processes in the supply chain [18].

Regarding the risks in the food supply chain, the discussion in the literature has revealed that different countries have varied practices in mitigating risks[see 19, 20-22]. In fact, there is evidence suggesting that different industries work in different ways because they employ varied operations and techniques are[see 8, 23]. This is due to the organization, management style and business environment differ from one place and industry to another. Since different risks affect supply chain processes in different forms, a focus on specific constructs that suit a particular country is required. For this reason the present study intends to contribute to deepening our understanding of managing risks in the food supply chain in Malaysia.

IV. METHODOLOGY

A total of ten (10) Japanese food companies, representing 56% of those listed in Japan External Trade Organizations (JETRO) were involved in this analysis. There are currently 18 Japanese food and beverage manufacturers operating in Malaysia [24]. Twenty (20) senior or middle managers with direct responsibility for supply chain management logistics in these businesses were preferred for interview following the advice of Chow et al. [8]. To document

the issues concerning supply chain practices, perceptions originating from middle-line managers are important because they deal directly with supply chain processes and network structures, and the technical/behavioral components of management systems [8]. The number of respondents is deemed appropriate because there are enough here who are considered to be experts in the field. Williams and Webb [25] state that there is no precise mechanism for identifying the ideal number of individuals or groups for inclusion in any individual study. It has been suggested that the size of the participating panel may vary according to the topic being covered, the nature of different viewpoints included, and the time and resources available. All interviews were taped and transcribed for analysis. Following standard practice for qualitative data analysis, the data were systematically analyzed by inductively developing and iteratively refining a coding scheme.

V. FINDINGS

The literature concludes that supply chain management incorporates a wide range of inherent risks and opportunities. In case of Japanese food companies operating in Malaysia, there are four major risks that are most likely negatively affect these organizations' operations: production, price purchase, demand and procurement. Combining the data derived from managers in Japanese food companies in Malaysia, has provided some interesting and useful insights into how Japanese food companies cope with these risks.

5.1 Production risks

While numerous risks exist in every stage of production carried out by each of the actors along the production chain, in general, most managers of Japanese food companies view that production risks are the most difficult uncertainties to deal with. Japanese food companies compete on their ability to provide a consistently high yield of blemish-free perishable goods along with superior on-time delivery performance at the lowest cost. For them, maintaining good quality of products is very essential and it is the top priority in their business operations to maintain longer in the industry.

There are several sources of production risks emanate from internal business operations. First, machine breakdown is the main risk to production since Japanese food companies are high-technology oriented. Second, the scarcity of production operators has resulted in Japanese food companies in Malaysia depending largely on migrant workers for their burgeoning industrial expansion plans. Third, most managers working for Japanese food companies in Malaysia contend that inventory management is in a somewhat critical state because they have limited storage areas and facilities.

In managing production risks, the Japanese management styles were identified to be the critical success factor for overcoming risks. The employment of Just in Time (JIT) philosophy in the production process and planning helps to mitigate the limited storage space. Application of good manufacturing practices such as the 5S methodology (*seiri* (organization), *seiton* (neatness), *seiso* (cleaning), *seiketsu* (standardization) and *shitsuke* (discipline)) is now a daily routine for all workers. The 5S method helps to organize a work space in a clean, efficient and safe manner which could enhance productivity, visual management and ensure standardized operational practices. Japanese food companies also promote *gemba* or manufacturing floor activities as a way of encouraging worker participation and continuous improvement. The idea of having *gemba* is that the managers walk around the work area to gain first-hand insights into how food processes are conducted, or to understand the full impact of a problem that has occurred. In the meantime, managers in Japanese food companies emphasize that close relationships with suppliers are important in handling productions risks. This is because they provide much valuable guidance by referring to the availability of raw materials, and proper techniques to maintain raw materials' freshness and edibility.

5.2 Price purchase risks

The raw materials used by the Japanese food companies come from a mixture of local and overseas sources. While a small percentage of raw materials is obtained from overseas, however, resulted in Japanese food companies being exposed to purchase price risk. The interviews revealed two sources of purchase price risks. The first is the price volatility of raw materials. The nature of the food industry and industrial production depends on trade in raw materials such as minerals, agricultural and natural resources despite the fluctuations in supply that may occur. The second concerns the prices of imported or raw materials that are subject to foreign exchange rates. Because international purchasing always involves a series of purchases, companies, in certain cases usually buy the raw materials or goods in bulk, which requires larger monetary transactions. These transactions are exposed to greater risks in the form of currency fluctuations.

The ill-effects of the purchase price risk is controlled through by using the price and quantity lock strategy. This strategy refers to the mutual understanding between the Japanese food and beverage companies and their suppliers regarding the quoted price when the orders for the raw materials are first made. Should there be drastic and/or adverse changes in the price of raw materials, suppliers may allow the Japanese companies a few months to adjust their production plans accordingly before implementing the new price. Alternatively, the suppliers may continue charging the first quoted price up to the maximum quantity that

has been locked in or agreed to earlier. Although having an official contract specifying the quoted price is the best way to control this risk, most companies choose not to have it and believe that a long-term and close relationship with suppliers enables them to benefit from the price and quantity lock strategy.

5.3 Demand risk

Demand risks are another major issue attached to the food supply chain that Japanese food companies have to deal with. There are two main drivers for this risk. The first stems from unpredictable changes in consumer demand that ultimately result in demand volatility. Managers in Japanese companies find that in the food industry, consumers regularly change their behaviour – new preferences and fads dominate many buying decisions. The second driver for demand risk is poor internal coordination and communication across functions. While delay in sharing information will result in an ineffective organization, overlap results in wastage and lost time, which has to be spent doubling efforts, materials and time to produce the same item twice.

As practiced by Japanese food companies, demand risks can be offset and managed through frequent updates and executing forecasting information processes accurately. To the extent that any forecast is inevitably inaccurate, inventory and sales databases for all relevant departments will be interconnected. Due to variability in the pattern of demand and supply, each raw material or product will be coded and indicate its batch number data. Inflow and outflow activities of raw materials and finished goods are recorded in the computer system in order to facilitate tracking inventory levels, orders, sales and deliveries. Efficient monitoring of material flows (delivery and sales) and information flows (demand forecasts, production schedules and inventory level information) may prevent this risk from actually occurring.At the same time the team liaises with the marketing functional division as well as the order filling and customer service management processes. These sources are close to the customers and provide critical information on sales projections and anticipated demand. This effective system will provide them with a guide for matching demand to supply.

5.4 Procurement risks

One of the most important values that wasidentified as being practiced by Japanese food companies is to preserve food quality so that food products or processed food will always look and taste the same. Japanese food companies will try to retain as much as possible the ingredients used in processing food from the same suppliers.High quality food products can be produced only from high quality raw materials. Given that the food industry is heavily dependent on its suppliers, risk in procurement is one of the main dangers in the Japanese food supply chain.

The procurement risks are mitigated through trade relationships with suppliers in several ways.First, by having procurement through loyal suppliers, Japanese food companies are able to receive the exact quantity and quality needs over the life of the contract. Second, working closely with raw materials suppliers is beneficial as it enables sharing of information on preserving the good quality storage of raw materialsin maintaining raw materials' freshness and edibility.Thirdly, it is important to ensure payment to the suppliers in a timely manner. In fact, the management of payments to suppliers is relatively easy to undertake as there are only few loyal suppliers in the Japanese companies' food supply chain. Fourthly and lastly, there is the issue of yearly evaluation of suppliers' performance. As viewed by managers in Japanese food companies, an evaluation is important for a continuous and smooth flow of supplies coupled with meeting the demanded quality of raw materials. As a result, the procurement department needs to be well integrated with the suppliers of raw materials because the quality of raw materials must be continuously evaluated and checked so that suppliers are doing what is expected of them.

CONCLUSION

While supply chain risk tends to paralyze most supply chains, the Japanese food and beverage companies in Malaysia have recognized the need to put strategies and capabilities in place to identify, prioritize, and manage risks and opportunities across their entire food supply chains. The most important four risks that are most likely to compromise businesses are, in the following order, production risk, purchase price risk, demand risk and procurement risk.Although Japan is now interacting and trading in a global context, the distinctiveness of its culture still persists, generating a unique social and business environment. Japanese management styles are present in the companies' activities and management practices in Malaysia, enabling them meet their ultimate objective of creating high quality products continuously. The Japanese food companies place a high priority on building long-term partnerships with their suppliers. Beyond the quality of the supplied goods and procurement needs, this relationship creates mutual information sharing which helps to preserve raw materials' safety, freshness and edibility. In the meantime, creating a win-win suppliers relationship and viewing suppliers as partners in helping to grow the business has benefited the Japanese food companies in reducing procurement risks. Further, success in managing food supply chain risks is also mainly based on the advantages of having information technology.

All these input is crucial as different supply chains operating in various countries do require different strategies for risk mitigation. Hence a focus on

specific constructs of strategies that suit a particular country is needed.While it is essential for local food companies to stay longer in the industry through the input they deliver or receive, foreign companies worldwide may benefit from the input when considering their investment in Malaysia's food industry.

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