JAPANESE FOOD SUPPLY CHAIN MANAGEMENT: SHARING THE X-FACTOR

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Abstract— Japan is considered as a supply chain superpower. Yet, little is known about the Japanese food supply chain management. Thus, the focus of this paper is on explicating the structure and integration level of the Japanese food supply chain. Twenty interviews with supply chain managers, working with Japanese food and beverage companies in Malaysia were conducted using an open ended interview approach. These companies were randomly selected based on the Japan External Trade Organizations (JETRO) listing. Using a qualitative approach, the evidence suggests that a short and simple structure is a platform of the food supply chain and there exists a different level of integration along the chain. Conclusions are presented along with limitations and future research directions.

Index Terms— Food Supply Chain, Japanese Companies, Supply Chain Management, Supply Chain Integration.

I. INTRODUCTION

Supply chain management refers to the approaches employed to efficiently integrate all parties involve in the chain so that the final products could be delivered at the right time and with the right quality [1]. Effective supply chain management gives businesses a competitive advantage in the sense of reducing development and procurement costs, spur innovation and accelerate product development [2]. Although supply chain management is a critical element to operational efficiency, only a few companies engage in an extensive or advanced supply chain management practices [3, 4]. This could be possibly due partly to the lack of knowledge as to how to achieve supply chain management excellence. This is especially problematic given the limited amount of literature which specifically reveal the best practices to help better understand supply chain excellence. Thus, this study, exploratory in nature, attempts to reveal the two main issues (the structure and integration level) relating to supply chain management practices in the Japanese food and beverage companies operating in Malaysia.

The common objective of having a good supply chain for every company is to create value in terms of quality, cost and speed to the end customers [5, 6]. Nevertheless, each supply chain may vary greatly from one industry to another [7, 8]. The vulnerability of food supply chain is greater compared to other industry due to the nature of food products which are sensitive to temperature and deteriorate easily. Contaminations of raw materials would bring about serious consequences endangering both consumers and company image, thus, intensified the need for having an efficient food supply chain.
The Japanese companies were chosen because Japan is known as the supply chain superpower [9]. One of the reasons is that Japanese companies are well known and closely attached to the Just in Time (JIT) philosophy, and researchers argue that JIT is the basis of supply chain management [10]. Therefore, there is an equivocal claim that Japanese companies are better at managing their supply chains. Yet, little is known about the Japanese food supply chain. In addition, almost all (83%) Japanese food and beverage companies in Malaysia are halal certified [11] and Malaysia is very concern about halal compliance in the production of food products. The Malaysian Halal Standard MS1500:2004 is established to provide general guidelines regarding the production, preparation, handling and storage of halal foods [12].
This paper is structured as follows. The following section provides a brief review of literature about the supply chain management and supply chain integration respectively. The research methodology employed is then described. Next, the findings of this study are presented and discussed. Finally, the paper ends with conclusion and describes the limitations and future research directions.

II. LITERATURE REVIEW

Managing a Supply Chain
Supply chain refers to a network of all parties involved in the production and delivery of products or services to end customers [13]. As such, the management of supply chain involves handling various activities, which include integration of supply chain members, alignment of both internal and external supply chain activities,creation of a competitive and responsive supply chain, and satisfaction of customers according to their needs. Therefore, the management of supply chain becomes very complicated as it involves various parties in the chain as well as dealing with the complexity of the business itself. The current competitive business environment and global market place, where customers are more demanding to have better and cheaper products, expect more product varieties and faster delivery further complicate the management issue of the supply chain [14, 15]. Ability

to have a well managed supply chain may allow businesses to gain competitive advantage [15].

Cross-functional and cross enterprise integration [16], effective management regarding the flow of physical goods [17] and employing the outsourcing strategy [18, 19] are among the suggestions made by scholars in order to improve the management of supply chain. The suggested methods are claimed to benefit businesses in terms of reducing costs and enhancing flexibility which eventually may lead to improve firm's performance. Earlier, Abell [20] argues that in order to achieve supply chain management excellence, activities of all parties in the chain need to be aligned with company strategy and correspond with organizational structure, processes, culture, incentives and people.

In a similar vein, Ayers [21] posits five important elements in implementing supply chain management. First, companies need to have a strategic design of supply chain in order to benefit the competitive advantage of having and managing the chain. This includes innovative ideas to incorporate customers' tastes and preferences in the production of the final products. Secondly, companies must have the ability to implement collaborative relationships. This concern with aligning and coordinating inter-organisational activities so that people in the organisations strive towards achieving the organisations' goal. Thirdly, companies need to establish supply chain partnerships. This includes building a close relationship between departments in the organisation as well as suppliers or parties outside the chain. The next important element is that the effective management of supply chain information. Companies must ensure that information could flow smoothly along the supply chain. On top of that, each parties in the chain must be able to retrieve and disseminate information effectively. Finally, the supply chain should concern with cost reduction because this is one of the main improvement targets of managing the supply chain. The supply chain activities should be monitored closely so that the cost of production could be controlled without discriminating the quality of the final products.

Supply Chain Integration

One of the ways to improve the management of the supply chain is through integration. In fact, supply chain integration has been posited by many scholars as a key to achieve supply chain management excellence [22, 23]. A well integrated supply chain may help companies to experience a seamless flow of receiving raw materials from suppliers till delivering the final products to customers. Subsequently, companies' performance would be improved through revenue enhancement, cost reduction and increase operational flexibility [24].

An integrated supply chain may help to tie the whole network together and thus help to reduce perennial supply chain challenges [25]. Integration of the supply chain could take place at both strategic and operational levels [4, 13]. For instance, the integration helps improve a poor demand management as well as enhance customer and supplier relationships. As such, the internal process activities and external linkages with suppliers and customers could be handled in a more structured manner. The integration would definitely help to locate businesses in a more competitive position and improve customer satisfaction [26].

The current globalization era increases demand for product variety and at the same time reduce product life cycle. Supply chain integration is the solution to these issues because it enables products to be designed faster without compromising the quality and costs [27]. Supply chain integration is claimed to help control the cost of production [28]; costs can be minimised through establishing consistent and predictable demand and supply pattern [29]. Some companies may integrate extensively with all parties in the chain while others may decide to have a relatively low level of integration. Nevertheless, all supply chains are integrated to a certain extent. Having a long term relationship, open communications, mutual benefits and trust as well as sharing risk and rewards among parties in the supply chain network are among the various forms of integration [30].

There appear a various ways in describing the integration processes in the literature. Stevens [31] and Giménez and Ventura [32] suggest that firms first integrate internally (coordinating supply, production and distribution) , and then extend the integration to its supply chain members. On the other hand, Scott and Westbrook [33] suggested three stages in achieving an integrated supply chain. The stages are: (i) the mapping stage, to analyze lead times and inventory levels throughout the supply chain, and thus indicate the current competitive advantage of the chain and potential improvements; (ii) a positioning stage, to identify opportunities for collaborative activities between chain members and (iii) a selection of action stage, to increase the competitiveness of the chain. Alternatively, Frohlich& Westbrook [34] examine the arcs of integration. They classified supply chain strategies into various types based on the different arcs of integration. They found that the widest arcs of integration had the strongest association with performance improvement.

The development of an integrated supply chain requires the management of material flow to be viewed from three perspectives; strategic, tactical and operational [31]. At each level, the use of facilities, people, finance and systems must be co-ordinated and harmonized as a whole. Indeed, there are so many operational and strategic facets of integration in supply chain management. Any given implementation can take an infinite variety of forms, progress through radically different stages, and result in several different outcomes. Yet, the methodologies and frameworks for effective supply chain and sustainable supply chain performance evaluation and

benchmarking are not well advanced in the literature. As a consequence, there is a consensus that there is no "proven path" in implementing supply chain integration.

III. METHODOLOGY

A total of twenty (20) interviews with the supply chain managers working in ten (10) randomly selected Japanese food and beverage companies in Malaysia was conducted using an open-ended interview approach. Respondents for the survey ranging from middle managers to senior managers from various related departments such as supply chain, logistics and production that deal directly with supply chain processes. In recruiting respondents, the general managers of Japanese food companies were contacted by email. Information letters that stated the objectives of this study and outlined the types of information needed were sent to them. Based on this information letter, the general managers or through their secretary appointed the most suitable respondents who have experience and knowledge regarding supply chain management. When permission was granted by the general managers, the respondents were then contacted individually and provided with semi-structured interview forms before the face to face interview sessions were conducted. In general, the number of interviews is deemed appropriate because the interviews were conducted with people who are considered experts in the field [35].

On average, two managers involved for each interview session and the interview lasted between 1 hour and 1 hour 30 minutes. Each interview was conducted by two researchers and the principal researcher participated in all interviews. Interviews were tape-recorded and transcribed in their entirety. Added information was collected from secondary data sources such as company reports and other material that companies were willing to share. The primary and secondary data were triangulated to increase reliability and internal validity of research findings [36].

The companies were randomly selected based on the JapanExternal Trade Organizations (JETRO) listing. There are currently eighteen (18) Japanese food and beverage manufacturers operating in Malaysia [37], and ten (10) companies (56%) agreed to take part in this research project. These companies involve in producing food and beverage such as herbs, spices, additional flavourings, bread, pastries, vitamin beverages, powdered drinks and flour.

Following standard practice of qualitative research [38], the data obtained from the interviews were read reiteratively and analyzed rigorously through an inductive process of identifying the common and salient themes. The process of data analysis was aided with the use of NVivo10, a software used to analyze qualitative data. A final step in the inductive approach requires an assessment of the trustworthiness. As a means to assess validity, the other researchers independently made the coding process and compared the findings with the initial results. Should there be any observed discrepancies; the researchers collaborate to resolve the anomalies.

IV. FINDINGS AND DISCUSSION

The Japanese Food and Beverage Companies in Malaysia

There are 18 (Table 1) Japanese food and beverage companies representing 2.5% of the total Japanese manufacturing companies in Malaysia [37]. Figure 1 illustrates the location of these companies. Six companies are located in Johor, followed by five companies in Selangor. There are 3 companies in Penang whilst Kuala Lumpur and Perak have two companies each. These companies involve in producing food and beverage such as herbs, spices, additional flavourings, bread, pastries, vitamin beverages, powdered drinks and flour. Twenty interviews were carried out with the supply chain managers working with these companies. All the managers have more than 10 years working experience. The designations and experiences of the managers reflect their vast knowledge and management skills in handling supply chain issues in their companies.

Table 1:Japanese Related Companies (Manufacturing) in Malaysia

Manufacturers	Total
Food & Beverage	18
Textile & Textile Products	16
Wood & Wooden Products	26
Petroleum & Chemical Products	89
Steel & Non Ferrous Mtl. Products	76
Machinery	25
Electronic & Electrical Products	273
Transport Mach. & Parts	61
Other Manufacturing	146
Total Manufacturing companies	**730**

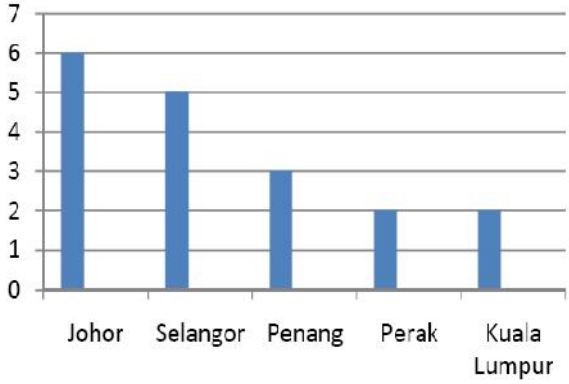


Fig 1: Location of Japanese Food and Beverage Companies in Malaysia

The Structure of the Japanese Food Supply Chain

Generally, the structure, particularly the length of the chain may have a significant impact on the flow of

materials as well as information through the entire supply chain. A long chain may expose the company to a higher occurrence of miscommunication among the chain partners and complicate the material handling processes.

The findings show that the Japanese food and beverage companies operated based on a short and simple supply chain structure. Childerhouse and Towill [39] affirmed the positive effect of having a simple material flow on value stream performance. A short and simple structure helps the supply chain to stay agile and lean in the effort to reduce costs, increase revenue and minimise assets. This is explicitly expressed by the following managers;

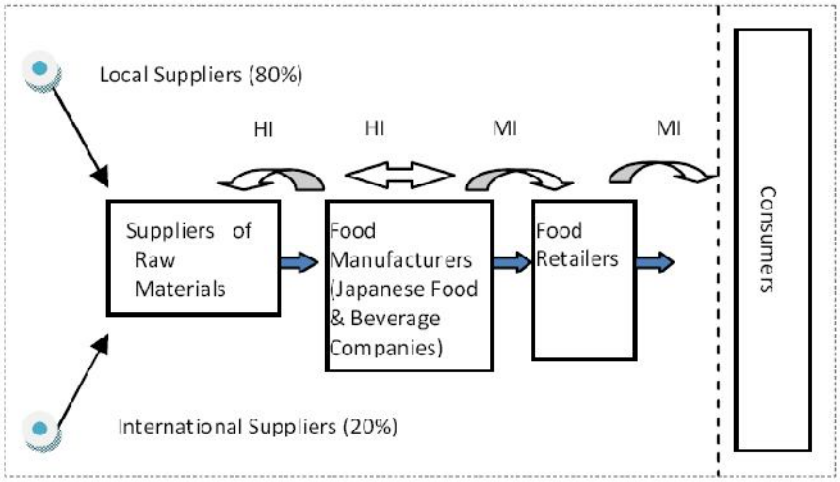
"We have simple procedures.....from procurement till finished products...all very simple...a fast flow".....Manager 1

"Everything very simple...from supplier till completed product...managing the flow is the main issue".....Manager 8

The short and simple structure consists of suppliers of raw materials, food manufacturers, food retailers and finally the end consumers (Figure 2). Suppliers refer to the supply chain members who provide raw materials to the food manufacturer. The Japanese food and beverage companies act as the food manufacturer in this chain. They handle the production process, product development and responsible for the quality of food products that reach the end consumers. Retailers refer to the supply chain members who sell the food products directly to the end consumers. Finally, the end consumers are the end users of the food products.

The main unique element of the Japanese food supply chain as compared to other typical food supply chain is that food distributors are not included as the main actor in the chain. Acknowledging the nature of food products which are sensitive to temperature and deteriorate easily, a short structure is chosen to ensure that the final products reach the end consumers at the right time with the right quantity and quality.

In addition, almost all (80%) of the main raw materials are supplied by local suppliers and the remaining 20% are imported from overseas. Proximity to suppliers could help maintain the quality of raw materials because it could reduce the risk of being contaminated [40]. The simple and short structure is one of the key elements in achieving a time-efficient food supply chain.



HI = Highly integrated; MI= Moderately integrated

Fig 2: Japanese Food Supply Chain

The Integration Level

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 [5, 6] . Implementing supply chain integration is one of the crucial ways to achieve this objective [22, 23]. An integrated supply chain may help to tie the whole network together, which could eventually help to reduce perennial supply chain challenges [25] such as poor demand management and forecasting as well as inadequate formation of customer and supplier relationships. As such, supply chain integration helps companies to integrate process activities internally as well as integrating externally with customers and suppliers. The literature describes that supply chain integration may enhance the performance of the business [24]. Integration of supply chains could take place at both strategic and operational levels [4, 13]. The integration could be in the form of having a long-term relationship, open communications, mutual benefits and trust and shared risk and rewards.

In the case of the Japanese food supply chain, all parties involved in the chain are either highly or moderately integrated with each other (Figure 2). As such, the Japanese food and beverage companies could be considered to have reached a "full information

sharing" level with their suppliers. At this level, the suppliers and other parties in the chain not only receive actual orders from the companies, but also furnish with other information such as production status, transportation availability and demand data [41]. As a result, all parties in the chain work together in a harmonious way and help repress any uncertainties.

Due to a high level of integration which stimulate in-depth understanding in doing business, they manage to do business based on mutual agreement. Official contract is not a mandatory aspect to engage all parties in doing business with each other. In fact, there are parties in the chain which have been working together for more than 16 years without having any contract. To quote one of the interviewees (Manager 2), "no signed contract...mutual agreement...we have been working with some for more than 16 years". Only recently, a few companies started to have a legally binding contract with parties in the chain just to fulfil the corporate governance procedures. This is quite an achievement because information sharing is often claimed to be a generic cure for supply chain ailments [1, 42].

CONCLUSION

This research successfully revealed the valuable insights into the Japanese food supply chain. Understanding comprehensively supply chain management issues may help companies to evaluate their current supply chain management practices and benchmark them with the Japanese companies which is known as the supply chain superpower [9]. The main limitation of this study is that the financial performance of the Japanese food and beverage companies that might be necessary to exploit were not studied. This is an area for future research. Nevertheless, the findings of this study could act as guidelines for other food companies in an attempt to achieve a time efficient supply chain which may act as a strategic tool to improve their level of competitiveness in the industry.

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