

# Service Supply Chain Management in Malaysia: Feasibility towards Sustainable System

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**Abstract**— Service industry posts many improvement opportunity in supply chain system, adopting from the experiences in manufacturing industry. Though some global and local giant corporation has begun implementing a more systematic and complex supply chain system in the firm, the sustainability of the implementation is still in a challenging stage. This is highly due to the infant characteristic that the system bears in the new industries. Cost and quality constraints demands for service supply chain management in Malaysia's service firms to mature quickly in today's highly paced technological world. This includes on time delivery, raw material inventory control, planning, and quality control in service. The Malaysian market focus migrates to post-industrialization leading a positive surge in service sector's growth which requires improvements in service sector for better quality deliveries. Adoption of sustainable service supply chain improves the business management upon maturity.

**Keywords**— *supply chain management, sustainability, service industry*

## 1. Introduction

Operation costs has become a target entry point for most business analyst in revenue improvement plans. Both sales manufacturing and service sectors faces increasing inflation rate caused by global economic instability. Business owners requires the on-going business to either grow, if not sustain. For this to happen, gross profit from the revenue against operating costs has to be stable over time. Operations improvements focused on both production goods and service which began in 20th century, believed that scientific management theories can help in total efficiency.

The development in sales manufacturing industries was greatly established as it was easier to monitor the physical product flowing from one point to another and thus, measurement of efficiency was more direct and objective. In service sectors, however, was not as quick in growth and establishment is not as strong as well but many firms managed to improve the scenario.

Looking forward in the quick paced world, service sectors are growing in numbers more than ever. The rate of growth in service demand increases overtime as economic development takes place from industrialization to post-industrialization [11]. The increasing demand that was experienced in manufacturing industry will be projected on service industry as well as service sector eventually replaces manufacturing sector as the leading sector of the economy. Modern entrepreneurs swiftly adopts established systems from manufacturing sector. For instance, the information systems to track, collate, analyze and disseminate data to various parties especially the operation management in a timely manner [2]. Examples of such practices in service sector are car service track records in terms of frequency of car servicing as well as the usual components due for replacement or repair, frequency of components failure in a customer's computer, on time delivery track records in service to manufacturers and customer's satisfaction survey check in fast food centers.

## 2. Implication of study

The aim in this paper is to present the needs that is imperative towards Malaysia's service supply chain management improvement; subsequently towards a sustainable system in the business market. A combination of several theoretical tools developed by through innovation of conventional supply chain

management systems may result in harnessing positive qualities in most aspects which compliments each other. Application of rightful tools and taking advantage of ever upgrading information and communication technology at global level simulated locally in Malaysia accelerates maturity of service supply chain management despite the intangibility nature.

### 3. Problem Statement

Due to the nature of service sector producing intangible goods, there is challenge in collecting accurate data resulting in more of approximation of estimation. The requirement shifts as well from natural capital to more human capital. Labour intensive industries gradual expansion as a function of increasing demand. Many service firms begin as small-medium enterprise (SME) before original equipment manufacturer (OEM) firms provides the services as well.

Due to the significantly small size in SME, supply chain management was not heavily focused. The management does not view the importance of development in supply chain but instead focusing on output quality and sales quantity. Customers' satisfaction was assumed to be based on these 2 major criteria only, namely the quality of service and the price placed on the service provided.

Practicing the conventional supply chain gives rise to many problems which resulted a saturation of firm growth in business terms. Without a more complex structure of supply chain, service firms are communicating only to their upstream and downstream by 1 tier only. Service providers does not have any idea from where their raw material originates from nor they know about the quality control of the raw materials. Over in the downstream, direct customers may be only able to provide a summarized feedback of the end users instead of a detail information. The barrier exists in this context prevents effective information flow forward and backward.

Malaysia's economic growth demands a more structured, organized and mature method for material flow as well as information flow, just in time for service firms to provide a sustainable service to customers. To provide a sustainable service, quality controlled material as well as timely delivery of service must be attained as customer's intellectual knowledge and demand for better services rises.

### 4. Literature Review

Major purpose of supply chain management integration is to remove communication barriers and elimination of redundancies through

coordination, monitoring and controlling processes [7]. Supply chain integration attempts to increase links between each element in the chain resulting in an effective interaction for clear supply chain visibility and bottlenecks identifications [3]. The core function of supply chain management is the process of locating, obtaining and transporting inputs required, which in turn requires a focus physical product and product suppliers [12].

Scoping down to service industry, service supply chain management structure possesses similarities to that of product supply chain as services are created, purchased and transferred from one element to another in the form of a chain [8]. The complexity of service supply chain management is derived of number of direct and indirect service providers around the service integrators. Basic service supply chain consists of a customer, a service, a service provider and an initial service provider [8]. In general, there are 3 forms of supply chain identified globally. They are namely serial service supply chain, parallel service supply chain and hybrid service supply chain.

Serial service supply chain can be pictured as a conventional supply chain flow in which the service will flow from initial service provider to downstream in a straight flow across several elements before reaching customer. It can be easily depicted as shown in Figure 1.

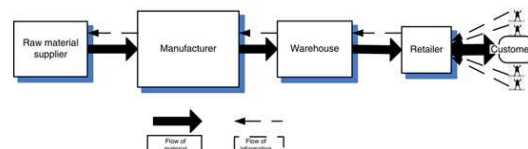
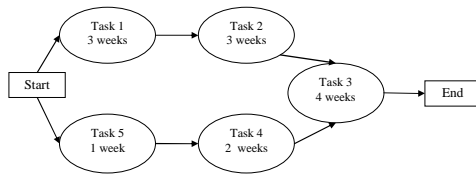


Figure 1: Schematic diagram of conventional supply chain (Sidola *et al.*, 2012)

Parallel service supply chain refers to a number of independent service providers (same organization) of the same functions but maintains separate supply and logistic system and reaches the same target population. The advantage of parallel service supply chain is the ability to meet short lead time to reach customer's end. Cost of operating such supply chain system is relatively high and most of the time, differs from one to another. A hybrid service supply chain combines the conventional supply chain system with parallel supply chain system. Hybrid service supply chain system promotes quick reach to customer's end through setting up parallel systems while maintaining incoming material quality through singular or limited and controlled standard suppliers.

With options of selection in which supply chain system works best, firms usually takes into consideration of the quality of delivery, cost, shortest lead time possible and maximization of logistic spaces. That said, some would consider

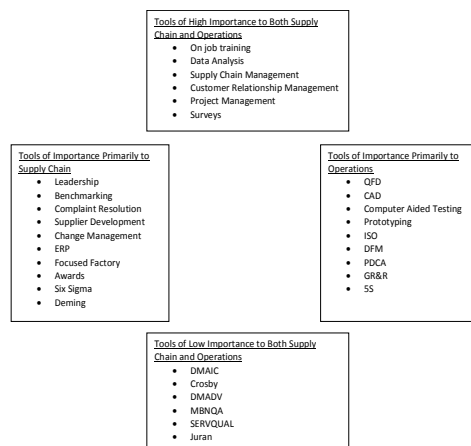
performing critical path study to identify the elements in the supply chain which needed more attention to ensure the flow is stable. A sample of critical path study can be illustrated to as in Figure 2.



**Figure 2:** Critical path method (Barrow, 2013)

Critical path method shows all tasks to be carried out to complete a scheduled activity and how long the overall activity will be taking. The critical path is the route through the network that will take the longest amount of time. A delay on any element falls in the critical path results a slack or float [2]. Information flow from each checkpoint to another, forward or backward, is more structured and eases tracking activity.

Quality review is as important as time management in productivity and delivery. As such, appropriate quality tools application is essential in determining the effectiveness of operation in the organization. Operation managers and supply chain managers have different approach in quality management [5]. Foster *et al* (2011) has identified quality tools that is preferred in supply chain over operations as shown in Figure 3.



**Figure 3:** Identified tools importance with respect to supply chain and operations managers (Source: Foster *et al*, 2011)

## 5. Application of Supply Chain Management in Malaysia's Service Sector - What is needed?

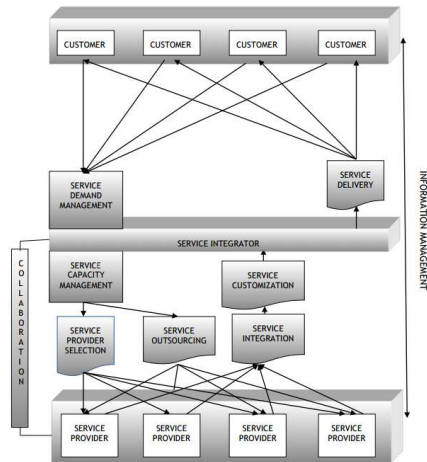
General rule of thumb in applying supply chain management, business practitioners needs to understand completely the properties of supply

chains. This is important so as the innovation of supply chain will not be a guesswork or exercised in futility [4]. Most major service firms which has effective supply chain management may have already experienced multiple down times in which they have paid in cash loss.

However, this can be fairly minimized with good risk management and applications of management tools. Learning from theoretical derivations from studies and experience, service firms may begin through adopting Material Resource Planning (MRP) systems to manage the inventories of raw materials. Service firms often fail to deliver with perfect quality was due to material shortage or inventory expiry management failed. Other service firms in which they do not require any tangible raw material to provide the service failed in resource planning. In short, like manufacturing, service firms requires input of labour to complete processing the necessary to meet end customers' satisfactory as well as inputs from suppliers of various types [12].

However, service firms do not require extensive procurement, transportation planning and execution and physical manipulation as manufacturing firms do. Service industry focuses information manipulation and relationship developments which in turn require substantially lower capital investment as to compare with manufacturing industry. From the focused inputs, service industry tends to invest in upgrading information logistics such as improved ICT systems and installation of increased speed of communication flow in hardware and software. The upgrades are targeting in reducing labour cost, just like manufacturing industry focusing on automation of production activity in reducing labour cost. However, manufacturing industry needs to negotiate for lower shipping rates and fills containers to reduce cost per unit in which in service industry does not need to worry about.

Speed is essential to improve delivery for any industry. Manufacturers optimizes its delivery through speedy delivery and cost reduction on delivery. Physical bottlenecks and inventories are reduced as well as frequent raw material price negotiation is carried out by manufacturers. Service industry cannot perform the same but only to work on relationships and information flow. Partnerships with complementing strengths helps to reduce a service firm's cost [12]. An illustration of partnership collaboration and effective information flow management is viewed as in Figure 4.



**Figure 4:** Framework of Supply Chain for Service industry (Source: Sakhuja & Jain, 2012)

While manufacturers have physical bottlenecks, service firms have their own virtual bottlenecks such as redundant approvals and other intangible delays which can be removed. Similar to manufacturing, the efficiency of service supply chain management depends on the ability to execute key business's processes that will deliver the values and qualities as promised to customers [6]. The primary drivers that defines the key business processes includes well-defined decision making processes, removal of organizational and functional barriers, visibility to changes in demand and integration of information across the supply chain [9]. As such, initial setup of a service firm may start off with conventional serial service supply chain system. Over time, service firms may start to evaluate parallel supply chain system as the business grows. Implementation of parallel service supply chain system effectively only at critical areas gives competitive advantage in reaching customers in shorter period of time. However, in terms of quality standardization, conventional serial service supply chain should remained untouched at the upstream of the chain. The strike of balance between both serial and parallel service supply chain promotes the advantage of both worlds.

Malaysia's service firms have abundance in resources with the facilities developed over the years as a trading point. In view of the available facilities, the advantage that is free for the entrepreneurs to take is the services that are made known by both local and foreign services. Maximizing information logistics to its fullest potential is no longer an impenetrable barrier in a growing service business. With the help of international management information system such as Oracle and SAP, and the help of service forwarder such as UPS and FedEx, it is possible for the service industry in Malaysia to gain new market share in various places. Taking an international

example, Volvo has cooperated with FedEx in delivering vehicle breakdown services to end customers. The competitive advantage gained from this cooperation was that Volvo manages shorter lead time in delivering their service while FedEx gains more publicity through Volvo. Similar strategy can be adopted by Malaysian firms which provide services as well.

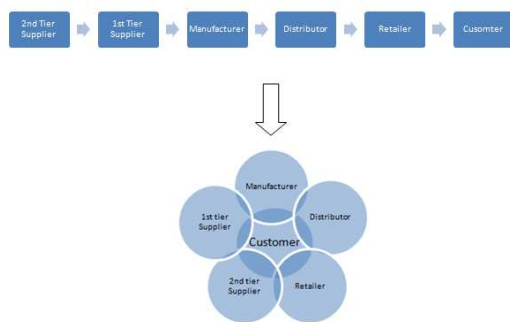
Other methods may be applied through continuous critical path study. Using more sophisticated form of critical path method such as program evaluation and review technique (PERT) and an activity network, which also known as an "activity-on-node- diagram", the study is allowed for a degree of randomness in activity start and completion times [2].

Quality management system (QMS) applied depends highly on the type of customers targeted. Achieving quality policy and objective is actually achieving what the customers want and need [1]. Food industry and tourism industry may apply different quality objective and policy but with the same aim, that is making the customer happy and well. As such, obtaining ISO 9000 certification sets a confidence in consumers which in turn promotes the quality level of the service firm.

In development and optimization of service supply chain management, the main aim is to provide shortest lead time possible with great length of quality to customers' satisfaction. This helps service firms to further up business growth through cost reduction.

## 6. Supply Chain Management Improvements in Sustainability Towards Digital Era

The supply chain transformation enables retailers and customers to come in contact not limited to just distributors or manufacturers but as well as the 1st tier and 2nd tier suppliers. This system is classified under Extended Enterprise Resource Planning (ERP II). Such system allows all element of supply chain to communicate with each other and have knowledge of the constraint as well as critical information to plan ahead based on the supplier's environment or customers' demand forecast. The transformation of sequential supply chain to ERP II supply chain can be depicted in the following Figure 5.



**Figure 5:** Transformation of sequential supply chain to ERP II supply chain

Some service industry in Malaysia has started practicing ERP II system, mainly in major fast food outlets and high end hotels. Other firms has yet put an implementation on this system due to the cost of purchasing the licenses is extremely high. Also, it is impractical to certain state where transaction does not exceed millions of ringgits annually. The transformation above takes advantage in controlling the supplier to increase productivity and delivery efficiency. Through the system in ERP II, business owners no longer have much valid excuses in shipment delays due to unforeseen circumstances.

As for quality management system, new generation of organization adopts Enterprise Quality Management Software (EQMS) which allows all information managed in a centralized database. The workflow processes are streamlined and enables a leverage of powerful status report using report generators. Quick information flow and report generating systems creates added advantage to service firms to identify and predicts returning customers through purchasing patterns. Improving the cost of poor quality promotes continuous improvement, risk mitigation, and operational efficiency. Example of firms which integrates EQMS in the service firms are audit firms, supplier quality management firms, IT service management firms and risk managing firms.

Some service firms believes in quality issue reduction as a result in systematic thinking, transparency, documentation and diagnostic discipline which sustainability focus implies. The idea is valid with the assumption of efficient resource used and responsible environmental operation is in place. Improving resource utilization efficiency in Malaysia's service firms could, in fact, promote multiple folds of profitability due to its abundance in resource. Generally, sustainability demands a high discipline practice from the organization with a high initial cost. In realization of sustainability in service firms, service providers has to be aware of all quality controls and set high standards in delivering the services.

As a whole, service industry could practice sustainable service supply chain with the correct

tools applied. The effectiveness of the practice depends on how the managers will plan, envision, and execute.

## 7. Malaysia's service sector readiness in sustainable service supply chain management

Generally, Malaysia's service supply chain system management has yet to realize its fullest potential. Similar to most organizations in developed countries, development and innovation of service supply chain management is immature. More time and resources are required in this field of development. However, with the racing pace of customers' demand for higher satisfaction in services, logistics companies and system developers needs to keep up in upgrading both hardware and software of supply chain management system. Service firms such as after-sales branches of product lines, telecommunication firms, entertainment firms, medical firms, and food and beverage firms are encouraged to keep updating the existing supply chain system. High capital firms may opt for vertical integration to further control supply qualities and availability of raw materials. To a certain extent, vertical integration helps in gaining complementary systems which service industry may take too much time to develop.

Current supply chain system available in Malaysia does not guarantee sustainability, neither manufacturing nor service sector has establish supply chain system which deemed sustainable. Further development is still required but application of world renowned supply chain system such as SAP and Oracle is good enough as a starting point towards modernization of supply chain system.

## 8. Conclusion

Global service sector has high potential in creating a sustainable environment through innovation of service supply chain management. There is no exemption in Malaysia's service sector exposure to the possibilities in catching up with global performance. A balance between operation management and supply chain management give rise to a balanced performance of organization in general. The application of supply chain system from manufacturing industries in service industries may require some tweaks and further optimization activities as experienced by manufacturers in the early days. Application of developed systems virtually boosts service supply chain management development. Technology advancement promotes the speed of information transfer which is directly proportional to the need of establishment of service supply chain maturely.



As a whole, Malaysia has done well in development of manufacturing industries in terms of management and optimizations. A similar treatment is further required to Malaysia's service sector before entrepreneurs explore for sustainable systems. The potential in creating a sustainable system for Malaysia's service sector is considerably high as there are abundant resource available.

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