

Managing Upstream and Downstream Relationships In Supply Chain for Military Organisation

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Abstract: Presently, it is important for an organisation to successfully manage their supply chain and inventory to improve performance. According to Supply Chain Council, 'supply chain is a term now commonly used internationally to encompass every effort involved in producing and delivering a final product or service, from the supplier's supplier to the customer's customer'. In managing supply chain, the emphasis will be on reducing cost and increase customer satisfaction. Supply Chain Management (SCM) is defined as 'the management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole'. From this definition, we could see that managing suppliers and customers relationships is essential to deliver customer value at a reduced cost to the supply chain. Hence, this paper will discuss the relevancy of the above SCM definition in military organisation by considering value in the defence context.

Key words: *Supply Chain Management, Supply Chain, Supplier, Customer, Customer Satisfaction and Military Organisation*

Background

The value in defence perspective is what matters to the end user. In this context, operational availability and capabilities are regarded as its value. The end user or customer in military organisation are the operational units operating at the frontline. Therefore, availability and capability matter most to the operational units. This availability concept includes the strength of its operating personnel, maintenance personnel, adequate training and the supply chain for spares. The operational availability will provide military organisation with the desired capabilities to safeguard the territorial sovereignty of the nation. These capabilities can be defined as the "the ability to achieve a desired effect in a specific operating environment" [1]. As far as military organisation is concerned, the high availability will provide capabilities required to execute its assigned mission. The effectiveness and efficiency of supply chain management is critical to support military operations and deployments.

The Supply Chain in Military Organisation

In the context of military, the supply chain can be regarded as a downstream flow of materials such as equipment and spares from the suppliers to the operating units at front line [2]. The front line units need availability and capability in order for them to operate effectively and efficiently. Through the supply chain, this is achieved when equipment and spares can reach them fast and able to reduce vehicles and equipment down time. An efficient supply chain can assist the organisation to reduce cost and improve performance. As for customer value, it flows from the operating units to formation headquarters and to suppliers [3]. These are information flowing in the form of demand. These demands are the availability and capability needed by the operating units. This upstream and downstream network flow is illustrated in Figure 1.

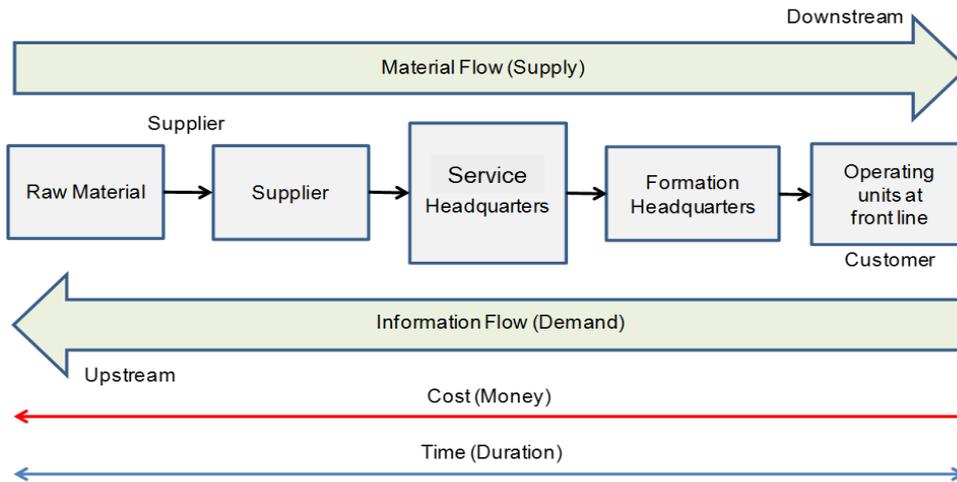


Figure 1: The Network of Military Supply Chain.

Based on Figure 1, the supply chain focus on improving efficiency, reducing waste and integrating suppliers at the upstream. At the downstream, the focus is to provide the desired value needed by the customer.

The Supplier-Customer Relationship in Military Supply Chain

Military organisation is a public sector providing defence and security service to the nation. Hence, it had a unique relationship with its suppliers and customers. The supply chain consists of two tiers of suppliers and customers. As for the suppliers, the Tier 2 supplier consists of the original equipment

manufacturer (OEM) while Tier 1 supplier is the main Central Depot (warehouse) which is the main distributing centre for the organisation. The relationship with OEM involves costing while the central depot is a manager and subordinate type relationship where services headquarters have the command function over the central depot [4]. The Tier 1 customers are the Brigade and Divisional Headquarters which is the Command Headquarters for operating units at the front line. The Tier 2 customers are the operational units consisting of combat, combat support and combat service support units. The relationship in supply chain can be illustrated in Figure 2.

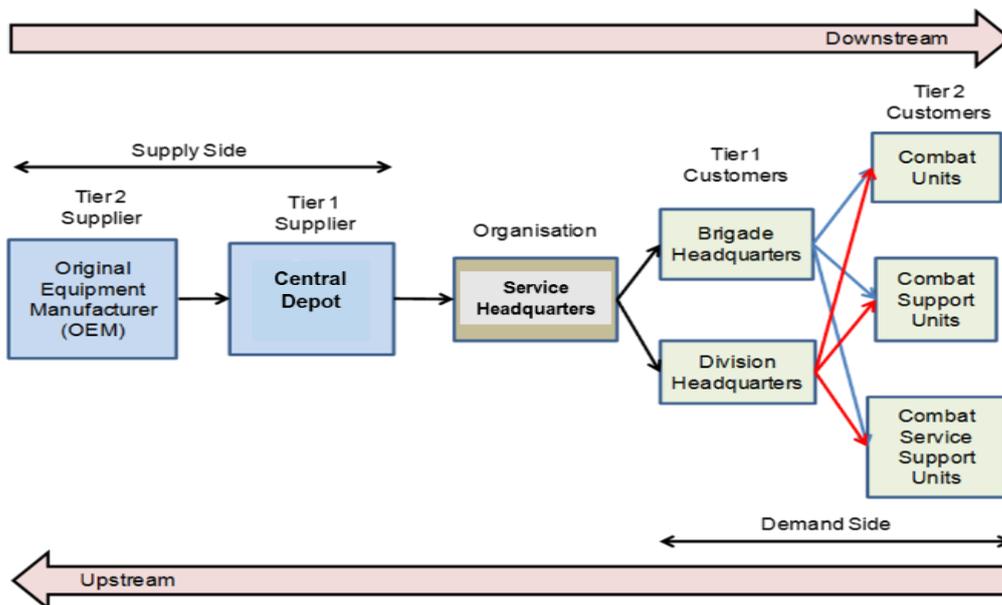


Figure 2: The Relationship in Military Supply Chain.

Based on Figure 2, the OEM will hand over manufactured equipment and spares to the Central Depot. The depot will hold, store and distribute stock to the customer based on the service

headquarters directive. Those required stocks will be distributed by the 'push system' to the Brigade and Division Headquarters based on the requirement and operational demand through services headquarters

[5]. The Brigade and Division Headquarters will then distribute the stocks to respective operational unit under its command. The operational units at the front line are the end users or customers in the supply chain. These units need the availability and capability to remain at the front line [6]. Hence, managing the relationship between supplier and customer is important for military organisation to deliver the value needed by its end user or customer.

Managing Upstream and Downstream Relationship with Suppliers and Customers

The management of relationship between suppliers and customers is important for military organisation to attain the value it had defined. This relationship involves integration, coordination and cooperation in the supply chain as a whole. In this relationship, the operational units (end user/customer) ultimately requires availability and capability while the OEM (Tier 2 supplier) emphasis on profit making and selling its product. By maintaining a good and solidarity relationship will allow both the supplier and customer to achieve cost and value advantage. The supply chain in military organisation is evolving from customer focus to strategic focus and the thinking regarding supply chain must shift to the new way [7]. The OEM and military organisation need to establish strategic alliance to transform fundamental business practices to reduce cost and waste while facilitating performance improvement. Trusting relationship between OEM and military

organisation is essential in the supply chain to build confidence between them. Sharing of all types of information will produce a mutual understanding between the OEM and military organisation for joint improvements and cost reduction. This will allow all the other suppliers and customers involved in the supply chain to be united in decision making. The proper management of this strategic relationship can provide profit making to OEM and desired value for military organisation and its customers [8]. This will enable a stable and strong relationship to the supply chain as a whole. Therefore, the management of upstream and downstream relationships with suppliers and customers is significant to satisfy everyone involved in the supply chain.

Supply Chain Management (SCM) Model

For this section, we will look at two models which emphasis on different method for managing supply chain. The two SCM model are Porter Value Chain and Hines model. The brief descriptions on these models are as follow:

Porter Value Chain

Michael Porter introduced the concept of value chain in 1985 through his book on ‘Competitive Advantage’. Porter mentioned how company can create value and add more value by creating a competitive strategy [9]. He recommended a generic value chain which is illustrated in Figure 3.

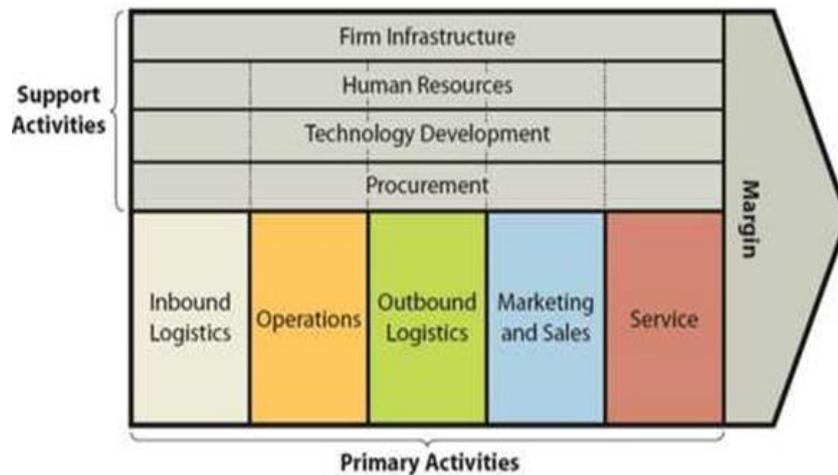


Figure 3: The Generic Value Chain. Source: Porter [9]

In the value chain analysis, Porter looked at activities that generate added value to customers. For these activities, he focused on the cost and how to produce profit margin to the organisation. In his

generic value chain at Figure 3, he divided the value chain into primary activities and support activities [10]. The activities are as below and the description is at **Table 1**.

Table 1: Primary and Support Activities.

Activities	Description
<p>Primary Activities :</p> <p>a. Inbound Logistics</p> <p>b. Operations</p> <p>c. Outbound Logistics</p> <p>d. Marketing and Sales</p> <p>e. Service</p>	<p>The processes related to receiving, storing, and distributing inputs internally. The relationships with supplier are a key factor in creating value.</p> <p>The transformation activities that change inputs into outputs that are sold to customers. The operational systems create value.</p> <p>Activities that deliver the product or service to customer. These activities include collection, storage and distribution systems. The activities may be internal or external to organisation.</p> <p>The processes used to persuade clients to conduct purchase from our organisation instead of from competitors. The benefits offered and effective communication with clients is source of value.</p> <p>The activities related to maintaining the value of product or service to the customers once it's been purchased.</p>
<p>Support Activities :</p> <p>a. Firm Infrastructure</p> <p>b. Human resource management</p> <p>c. Technological Development</p> <p>d. Procurement</p>	<p>These are a company's support systems, and the functions that allow it to maintain daily operations. Accounting, legal, administrative and general management are examples of necessary infrastructure that businesses can use to their advantage.</p> <p>This is how well a company recruits, hires, trains, motivates, rewards, and retains its workers. People are a significant source of value. Therefore, businesses can create a clear advantage with good HR practices.</p> <p>These activities relate to managing and processing information as well as protecting a company's knowledge base. Minimizing information technology costs, staying current with technological advances and maintaining technical excellence are sources of value creation.</p> <p>This is what the organisation does to get the resources it needs to operate. This includes finding vendors and negotiating best prices.</p>

Source: Understanding How Value is created within Organizations [11]

According to Porter, organisation must know how to control cost and add value to customer's value chain in order to produce added value. An effective business process and limiting the bargaining power of the suppliers is the way to manage cost [12]. By adopting this model, an organisation can include several different value chains and the value chains of the separate organisation will form the value system. Porter's value chain point towards the customer (left to right) and it demonstrated the traditional push system through the supply chain.

Hines Model

Hines model of value chain was produced in 1993 to propose improvements to Porter's ideas on value chain thinking. According to Hines, the end user defines the value required from the product [13]. He recommended the Integrated Materials Value Pipeline which is illustrated in Figure 4.

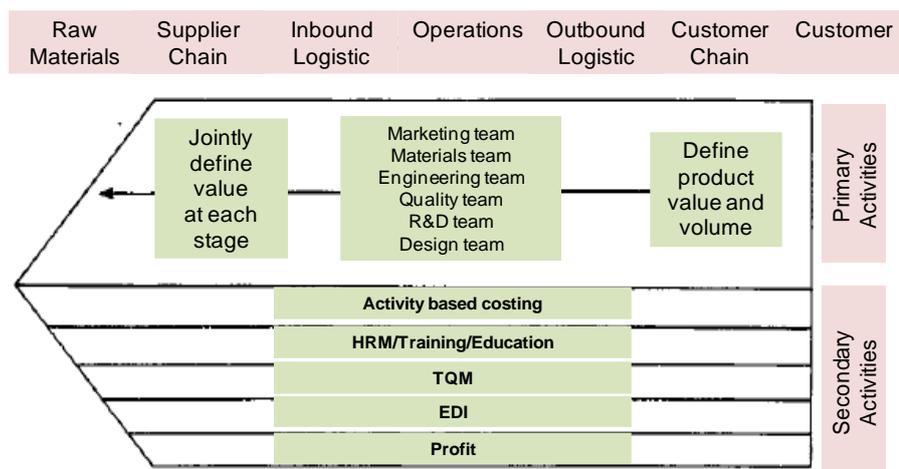


Figure 4: The Integrated Materials Value Pipeline
Sources: Hines [14].

In this Integrated Value Pipeline at Figure 4, Hines divided the value chain into primary activities and secondary activities [14]. The activities are as below:

- a. Primary Activities:
 - i. Define product value and volume.
 - ii. Integration of marketing team, materials team, engineering team, quality team, R & D and design team. Jointly define value at each stage.
- b. Secondary Activities: Activity based costing, Human Resource Management (HRM)/Training/Education, Total Quality Management (TQM), Electronic Data Interchange (EDI) and profit".

In the primary activities, the different companies in the pipeline will form an integrated team to jointly define the value required by the product at each stage. The relationships between companies are based on mutual understanding to solve problems and not as adversaries among them. This will create a win-win situation and customer can be better served. The secondary activities need to be integrated as well to enable the primary activities to work successfully. In Hines model, the supply chain is pointed away from customers (right to left) and this demonstrated the pull system through the supply chain.

The Relevancy of Supply Chain Management Model to Military Supply Chain

In the context of military, the safeguarding of nation sovereignty is the main objective. The main challenge is to equip operating units at front line

with availability and capability to deter internal and external threat. The operating units at the front line need effective and supportable availability and capability to perform its roles and task. SCM can be considered as an adequate tool to overcome these challenges and provide the desired value for military organisation. By taking into consideration the Porter and Hines model, it can assist to develop military supply chain structures and optimise customer value [15]. In considering Porter's model, the principle on profit will not be the amount of money gained but the availability it can get from the supplier with a lower costing. This will produce a buying power to purchase for military organisation to attain the needed value in its context. The process of push system will ensure the continuity of supply in the supply chain for the front line units to build up capabilities. Hence, this model can assist to ensure there is no disruption and shortage of supply for the front line units which can put the security of the nation at stake. Apart from that, this model will also provide advantage to the OEM to increase product sales by pushing spares and equipment [16]. The Hines model which emphasis on customer value will provide military organisation with the desired value it needed to sustain the front line units. The process of pull system in the supply chain will replenish the front line unit's inventories and meet its demand. This model is able to eliminate unused resources and eliminate wastage from excessive inventories. On the other hand, the supplier can achieve cost reduction through demand because it depends on the information obtained from the organisation that pull the product [17]. This will indirectly create a more responsible supplier in managing military inventories. The integration between suppliers and customers is important to establish a long lasting mutual partnership at the strategic level. Without

supplier, certain military organisation will not be able to achieve its value because it does not have the expertise and capability to manufacture its own product.

CONCLUSION

The management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole is up most important to supply chain in military organisation. This relationship is interrelated and everyone in the supply chain plays an important role to achieve respective desired outcome. Both the Porter and Hines model can assist military organisation to optimise its customer value. Consideration must be made according to the goals and objectives set by the organisation. Military organisation can adopt both model into its supply chain structure and review its relevancy based on the operating environment. In addition the application of Just in Time (JIT), lean thinking and adopting agile supply chain to develop capabilities can be considered for further improvement to the supply chain structure.

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