# Knowledge Management in Supply Chain-Case Study

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## ABSTRACT

Supply chains are critical links that connect an organization’s inputs to its outputs. Businesses are operating within a new competitive landscape. Collaboration and the utilization of knowledge and intellectual assets have come to be the key ingredients for survival and success within this new landscape. The implementation of knowledge management practices enables a collaborative environment that enables the supply chain to be more adaptive and responsive and ultimately achieve an improved strategic competitive position in the market place. The adoption of knowledge management practices and principles enable improved supply chain collaboration. This increases supply chain efficiency, effectiveness and competitiveness. Many companies are discovering that while they can make incremental improvements by using SCM to streamline operations within their own walls, they will derive even more benefits from external collaboration. Consequently, they are searching for ways to cut costs and improve efficiency by working closely with their suppliers throughout the product life cycle. In the process, manufacturing operations workers are discovering tools and practices already familiar to KM professionals. They have begun collaborating on projects, achieving best practices, sharing knowledge across organizational lines and, most importantly, supplying information to decision makers when they need it. In today’s information age, only three things give a company a sustainable competitive advantage: 1) What they know; 2) How well they communicate what they know; 3) How quickly they learn new things. Organizations have their information assets in the form of databases. What is needed is a system to transform these sets of data into usable information and to allow everyone in the supply chain access to this information. The adoption and integration of the KM tools and practices mentioned above can provide individual organizations and the entire supply chain with such a system. KM involves the transformation of raw data from many sources into coherent information delivered to people who need it.

## KEYWORDS

Knowledge Management System, Supply Chain, Knowledge Management Tools, Knowledge Creation tools, Information Sharing Tools, Logistics

## 1. INTRODUCTION

Skills and experiences of employees must also be captured and made readily available through portals that feed into an organization-wide knowledge repository. Employees and supply chain partners can thus gain access to these experiences and best practices to support and improve their decision-making processes, and thus ensure the making of decisions that will reduce costs and add value to the supply chain and subsequent international trade process as a whole. For example, a procurement professional can consult the knowledge repository to discover whether a supplier is legitimate, how good its past delivery performances were, as well as the best proposed methods of negotiating with the supplier to ensure the best price, lowest cost, and the timely, reliable delivery of quality goods in a damage-free condition. Drawing from such experiences reduces time and assists in the avoidance of the repetition of costly past mistakes. KM has become a critical link in the supply chain infrastructure where the ability to manage events and decision points is of key importance. Information must flow freely. Suppliers and retailers, for instance, must share information about sales and forecasts. The emphasis on collaboration involves all partners, from the supplier of raw goods to the retailer. There are three supply chain flows that need to be managed: the product, information and financial flow. KM can support and enhance all three flows by providing all partners, employees and managers with the most up-to-date knowledge that supports accurate report generation and decision making. For example, one supplier may possess the knowledge through past experience that a particular customer has a history of bad credit. This knowledge must ‘flow’ well in time behind the scenes through the system to the manufacturer so that it knows not to grant credit to the customer and insist upon payment on delivery. This reduces the costs of bad accounts and reduced efficiency in the supply chain. The flow of knowledge in real-
time also facilitates the achievement of dynamic supply chains that are responsive to changing customer needs and demands.

Without applied KM organizations are stuck with static supply chains. The SCM system captures knowledge about what is happening. KM analyses those results, compares them to the intent of the supply chain partners and infers better ways of doing things. The partners can then enact those improvements to perform better in the next cycle. Dynamic supply chains also allow the achievement of efficient consumer response.

2. CASE STUDY

(e-commerce type of:) Case study of a Retailer selling Consumer electronic goods to Consumers (B2C model): To fulfill orders the Retailer has to monitor stock levels in the store. When an item in stock falls below a certain level, the Retailer must reorder the item from the relevant Manufacturer’s inventory (B2B model). In order to fulfill a Retailer’s request a Manufacturer may have to execute a production run to supply the finished goods. The Manufacturer would have to order the raw material from its suppliers. In this case study the retailer keeps inventory in the store having compartments to store different categories of goods such as i) Servers, ii) Thin clients, iii) Desktops, iv) Peripherals, v) Network accessories. A purchase order from a consumer may contain multiple items, where each item relates to a specific product and its quantity required. A product will not appear more than once in an order. Back orders are also supported; if the required quantity of product cannot be fulfilled in full in the first consignment, subsequent consignments will take care of the balance quantity.

A Consumer goes to the Retailer website with the intent of purchasing one or more items listed in the web pages along with the Product Catalogs. Payment option and address details of Consumer are confirmed. The Consumer sends the advance payment through a credit card option using electronic payment mode. The goods will be shipped to the consumer. The consumer validates the receipt of the goods and also confirms the correct working of the product. The retailer then sends invoice electronically and receives the balance of payment which is triggered by the pre-registered option from the consumer’s credit card option. System Logs events, including user ID, initiating server ID, service ID, unique transaction ID, and other transaction details have to be dealt with.

B2C model

1. Navigate to web page
2. Consumer views catalogue
3. Consumer enters purchase order
4. Retailer validates the order
5. Retailer-Ship the order to consumer
6. Invoice triggered
7. Email to consumer that the order is shipped
8. Payment option triggered

B2B model

1. Manufacturer validates the order
2. Consumer enters purchase order
3. Acknowledgement to retailer
4. Ships goods to retailer

Knowledge Management in Supply Chain-Case Study

Companies use innovative information technology tools to supplement the supply chain. By connecting with customer organizations through a collaborative intranet portal, the manufacturing organization can predict precisely when and in what quantity new inventory will be required and can communicate in terms of schedule knowledge to suppliers so that they can phase materials delivery and achieve lower inventory and greater efficiency. The tools of KM include many intended to help predict and respond. In addition to the tools of transaction analysis – data mining, business intelligence, online analytical processing – organizations are relying on the search, retrieval, forecasting and communication tools of KM. The efficient application of these KM tools results in supply chain intelligence which can be used to make the supply chain more proactive with regards to changing customer needs and preferences. Supply chain intelligence (SCI) involves the application of business intelligence to various SCM functions and product life cycles on a strategic scale to optimize the results of these functions by means of enhancing the ability to produce cost-effective products. SCI involves the ability to analyze products, processes, components and materials. This demands a data integration infrastructure, which provides the capability to extract, transform and load data extracted from multiple enterprise sources, such as ERP source data, quality assurance data and supplier and customer data. Known data, such as factory shipments to a particular customer, for example can be compared with historical information. In turn, that data can be compared against variables such as marketing efforts and weighed against market research. SCI allows the understanding of the reasons behind changes in supply chain trends, operations and processes. Better demand forecasting and capacity planning for the future are also enabled, which is of key importance to controlling inventory – the major cost factor. SCI therefore provides insight into and knowledge concerning fluctuating customer demand. This knowledge can be used to proactively predict future inventory demands better so that all partners in the supply chain can be more responsive and carry less inventory and safety stock. Less capital is tied up in inventory which can be used elsewhere in the supply chain. In many cases knowledge management focus is at odds with the company's corporate culture so implementation will require a corporate culture oriented to change management. Knowledge management tools, Knowledge creation tools, Information sharing tools are important for this requirement. Responsive manufacturing requires a supply chain system, which will ensure that production is geared to meet that need. The supply chain provides the focus for any organization, whether service- or product-based, seeking to improve the social, environmental and economic performance of its operations. Apart from the moral imperative, substantial business benefit can be achieved through a combination of leadership commitment to knowledge management in supply chain activities, focused and practical initiatives, and improved systems and processes. Collaborative effort is imperative to achieve success. Knowledge management tools use Enterprise collaboration systems which are information systems that use a variety of information technologies to ensure good communication, collaboration, and coordination in the organization.

3.SCM ASPECTS

Traditional challenges have included lowering costs, ensuring just-in-time delivery, and shrinking transportation times to allow better reaction to business challenges. However, the increasing environmental costs of these networks and growing consumer pressure for eco-friendly products has led many organizations to look at supply chain sustainability as a new measure of profitable logistics management. This shift is reflected by an understanding that sustainable supply chains frequently mean profitable supply chains. Many companies are limited to measuring the sustainability of their own business operations and are unable to extend this evaluation to their suppliers and customers. This makes determining their true environmental costs highly challenging and reduces their ability to remove waste from the supply chains. However much progress has been made in defining supply chain sustainability and benchmarking tools are now available that enable sustainability action plans to be developed and implemented.

4.KM ASPECTS

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groupware, can be classified into enterprise communication tools, enterprise conferencing tools, and collaborative work management tools. It helps organizations improve efficiency and compete globally. Cost, revenue, profitability, and customer satisfaction benefits await all companies that are committed to redesigning their supply chains. Cost savings in logistics and manufacturing are often the key objectives of supply chain redesign. The cause for supply chain transformation is escalating customer service demands. The escalating customer service requirements, rising energy prices impact manufacturing and transportation costs, and other factors include the cost of supporting more specialty products to fight commoditization, labor and insurance costs, and regulatory and security compliance costs. The organization may follow and implement a system based on a framework such as ISO14001. The benefits that have been derived depend upon the degree to which supply chain has been redesigned and the effectiveness of supply chain restructuring, since all businesses rely on their supply base and customers to survive. Most organizations turn towards the improvements which can be achieved by working with suppliers and service providers. This is often done through a Code of Conduct for suppliers, reviewing the purchasing Terms of Trade and conducting surveys and audits. The greatest gains are made though working closely with suppliers to identify those areas where improvements can be made. However, working with its direct suppliers is not sufficient; companies also have to engage with their suppliers’ suppliers on a similar basis. A further challenge as well as a benefit, lies in working with suppliers and customers to improve the design of products and the processes that connect the business with customers. Reputation and brand are among a company’s principal assets. One of the parameters that can have a negative influence on corporate reputation and share price is whether the company’s supply chain is socially responsible and accountable. The book value of a company is significantly enhanced by investment in its people, environmental impacts and local communities. The growing demand for sustainable products and the response by manufacturers are due in part to recognition that one bad story can do lasting damage to a brand. Damage control is more costly than proactively managing an issue. Organizations need to recognize that they have to identify, understand and manage issues within their own organization before they start working with other organizations in their supply chain to ensure that these issues are successfully managed throughout. Physical distribution involves transport and storage at all stages either using a company’s own resources or by outsourcing to a third party contractor. Once known as warehousing and distribution, the sector has metamorphosed through logistics to become part of supply chain management. This encompasses inbound delivery of raw materials and the distribution of finished products out to market, and cuts across internal organizational lines as well as international boundaries, reaching out to both customers and suppliers. Strategic partnerships between suppliers and their customers and vice versa can address many of the potential obstacles and create significant value for both parties. Suppliers can also partner with other suppliers to share warehouses and fleets. Whoever operates the vehicle, fuel represents a significant operating cost for many companies and it is worth considering the total life-cycle costs and impacts of running a vehicle rather than just comparing kilometres per litre used. Reverse Supply Chain is the process of planning, implementing and controlling the efficient, effective inbound flow and storage of secondary goods and related information opposite to the traditional supply chain direction for the purpose of recovering value or proper disposal. Reverse logistics is one of the least understood and least studied aspects of the supply chain. In some businesses, the level of returns is so low that little time and effort is invested in making it work as efficiently as the major picking or storage operations. Well-managed operations operate a credit process and move equipment and product returns back into stock or elsewhere as quickly as possible. The mail order industry can receive up to 50% of all goods ordered back as returns. To achieve this it is essential that they have organized processes to quality-check products back into stock and credit the customer. This same process is increasingly applied to handling equipment and packaging waste. Product manufacturers can and must take on new responsibilities to reduce the environmental footprint of their products. However, real change cannot be achieved by producers acting alone: retailers, consumers, and the existing waste management infrastructure need to work together to find the most efficient and cost-effective solution. However, existing environmental product-related policies have tended to focus on large point sources of pollution, such as industrial emissions and waste management issues, rather than the products themselves and how they contribute to environmental degradation at other points in their life cycles. Measures have also tended to look at the chosen phases in isolation. Product stewardship is a product-centred approach to environmental protection and social consideration. It requires those in the product life cycle, including manufacturers, retailers, users, and disposers, to share responsibility for reducing the environmental impacts of products and improving the quality of life of those using them. As supply chains extend around the globe, and product life cycles grow shorter, traditional inventory management processes have been rendered obsolete. New operational demands dictate that companies continuously manage inventory throughout multiple levels of global supply chains to optimize performance against business objectives. Companies must synchronize their systems, processes, technologies, and services across inventory functions. Success requires a current view of on-hand inventory, established inventory policies, and the ability to rapidly respond to unplanned demand and supply changes. Supply chain excellence requires striking the most profitable balance among service levels, lead times, budgets, risks, and inventory costs. These metrics are largely determined by how a company's supply, production, and distribution network is configured and managed, where it positions its inventory, and what inventory
stocking strategies have been implemented. The discipline of continuously managing inventory policies to optimize supply chain performance against business objectives, changing market conditions, risks, and supply chain constraints include what inventories to carry, where, in what form, and how much across the procurement, manufacturing, and distribution network. An efficient supply chain process relies on an effective method of finding potential gains and innovations in various functional areas including manufacturing, replenishment, capacity, operations, fulfillment, inventory, distribution, transportation, and financials. Managing demand throughout the enterprise is critical. Whether crafting new product and promotion strategies to increase sales, transforming the supply chain into a demand-driven supply network, meeting customers’ performance expectations, an accurate picture of demand is required for success. The importance of effective demand management is best reflected by the value it delivers. Companies that have focused their efforts on understanding and managing demand are proven to have significantly reduced supply chain costs, better supply chain responsiveness, and higher revenue and profit than their competitors. There exists a gap in the literature available in the area of supply chain management studies, on providing theoretical support for explaining the existence and the boundaries of supply chain management. These theories include: Resource-based view, Transaction Cost Analysis, Knowledge-based view, Strategic Choice Theory, Systems Theory, and Network Perspective. The components that must receive managerial attention when managing supply relationships are: Planning and control, Work structure, Organization structure, Product flow facility structure, Information flow facility structure, Management methods, Power and leadership structure, Risk and reward structure, Culture and attitude.

CONCLUSION
Supply chains are critical links that connect an organization’s inputs to its outputs. Businesses are operating within a new competitive landscape. Collaboration and the utilization of knowledge and intellectual assets have come to be the key ingredients for survival and success within this new landscape. The implementation of knowledge management practices enables a collaborative environment that enables the supply chain to be more adaptive and responsive and ultimately achieve an improved strategic competitive position in the market place. The adoption of knowledge management practices and principles enable improved supply chain collaboration. This increases supply chain efficiency, effectiveness and competitiveness. Many companies are discovering that while they can make incremental improvements by using SCM to streamline operations within their own walls, they will derive even more benefits from external collaboration. Consequently, they are searching for ways to cut costs and improve efficiency by working closely with their suppliers throughout the product life cycle. In the process, manufacturing operations workers are discovering tools and practices already familiar to KM professionals.

FUTURE SCOPE
One has to address Supply Chain Knowledge Management Intelligence which is a new initiative that provides the capability to extract, sense, and analyze information about a supply chain. It enhances an executive's ability to reason through business outcomes and prescribes the best course of action for focusing an organization on the highest impact activities. Modeling a supply chain is, at best, a complex Endeavour, because in doing so we model an organization’s processes, costs, and objectives. Global supply chains that cross multiple geographies, cultures, and currencies add to the challenge.

REFERENCES