

INTEGRATION OF INFORMATION TECHNOLOGY WITH SUPPLY CHAIN MANAGEMENT FOR A STRATEGIC CHANGE

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ABSTRACT: *With a view to surviving and beating the competition, one has to manage the forthcoming in this modern world. IT has modernized traditional logistics and supply chains to achieve numerous profits such as increased efficiency and responsiveness for proper Management of information. Due to this it is possible to deliver quality information to the decision-maker at the right time and automate the process of data collection, collation and refinement. IT is beneficial for cooperation and integration within the stakeholders of the supply chain because the amount of communication makes integration with the availability of the resources for attaining a better decision making process. This paper is very much useful for decision-makers while formulating Supply Chain Management strategies and focusing on practices which would help them to achieve greater technological innovations.*

Keywords: Cooperation, Information technology, Integration, Supply chain management

1. INTRODUCTION.

Bardhan et al. [1] researched how to improve the relationship between IT-project alignment, project competencies, and project performance. When tested their research hypotheses using a relatively large, cross-sectional sample of project data they clarified the role of information technologies in project management, providing visions into how to integrate IT into innovation operational activities for improving proficiency and productivity. Lee et al. [2] goal was to contribute the role of IT within supply chain management and the achievement of flexible, aligned, and agile supply chains. To this extent, they used the triple-A framing, which has been used to propose a supply chain performance model. The triple-A framing also been used by Eckstein et al. [3] to investigate how supply chain swiftness and adaptability affects cost performance and operational performance. They found interceding role of supply chain agility between supply chain adaptability and performance. Product complexity positively controls the links between

supply chain adaptability, cost performance, supply chain adaptability and operational performance.

Ketchen and Hult [4] related traditional supply chains with best value supply chains and showed traditional supply chains often focus primarily on one key outcome such as cost whereas best value supply chain shine along an array of uniquely integrated priorities—cost, quality, speed, and flexibility. They also described how key organizational theories helped to distinguish traditional supply chains from best value supply chains. For future inquiry, they offered theory-based research questions that focus on best value supply chains. Ngai et al. [5] explored the relationship between supply chain competence and supply chain agility on firm performance, difference between supply chain agility and supply chain competence and finally the development of supply chain agility as a competitive advantage. Also the studies make known the importance of inter-organizational collaboration in creating IT and operational competencies for supply chain agility. Dubey and Gunasekaran [6] have used to characterize sustainable philanthropic supply chain design and improvement. Their investigation was based on the achievement of competitive advantage in supply chains through the use of IT.

2. INFORMATION TECHNOLOGY AND SUPPLY CHAIN

Supply Chain Management (SCM) is concerned with the flow of products and information among the members of the product units that make up all organizations, such as suppliers, producers, service providers and customers. These organizations communicate to access, purchase, transfer, retrieve and distribute products as well as services, suppliers to the end users. Today, information and technology must be broad to cover the information that companies create and use, as well as a wide range of increasingly convergent and interrelated technologies that process information with the advent of personal computer, fiber-optic networks and the explosion of Internet and World Wide Web technologies [1]. The cost and availability of information resources makes it easy to link and eliminate

information-related time delays in each supply chain network. This means that organizations are moving towards a concept called electronic commerce, where transactions are handled through various electronic media, including electronic data interchange (EDI), electronic money transfer (EFT), barcodes, fax, automated voicemail and many other. The old type paper transactions are becoming increasingly old-fashioned. Leading organizations no longer need ordering requests for paper. Purchase orders, invoices, receipt forms and manual reconciliation processes. All required information is collected electronically and related transactions are executed with a minimum of human involvement. Recent developments in database structures have allowed us to collect code and store numbers in databases and organize them electronically. Through the use of appropriate information systems, the permanent monitoring of inventories, the placing of orders and the acceleration of orders soon belong to the past.

Timely and accurate information is more important now than at any time. Three factors strongly influenced this change in the value of information.

- 1) Satisfied customers have become an obsession with companies. It is important to serve the customer in the best, most efficient and effective way, and information about issues such as order status, product availability, delivery times and invoices are a necessary part of the overall customer service.
- 2) Information is a key factor in reducing the ability of manager's requirements for inventory and staff at a competitive level.
- 3) Information flows play an important role in strategic planning and resource use.

3. SIGNIFICANCE OF INFORMATION

Information is the key to making business decisions. Until the 1980s, most of the information used to exchange information between the functional areas of an organization and between branches in the supply chain was on paper. In many cases, these paper transactions and communications were slow, unreliable, and error prone. Doing business in this way was expensive because it reduced the efficiency of companies in the design, development, procurement, production and marketing of their products. During this time, information was often overlooked as the main source of competition, as its value for the supply of chain members was not well understood. However, companies that engage in supply chain management initiatives recognize the critical importance of the information and technology that makes this information available.

In a sense, information systems and technologies used in the supply chain are one of the fundamental elements that unite organizations in a single and coordinated system. In today's competitive environment, there is little doubt about the

importance of information and information technologies for achieving ultimate success, and perhaps even for the survival of the supply chain management initiative. Reduction of cycle time, introduction of revised cross-functional processes, use of cross-selling opportunities and channel capture by the client. The need for near-seamless connection within and between organizations is a key concept of information systems for developing and maintaining a successful supply chain. That is, creating cross-organizational processes and connections to facilitate the delivery of seamless information between marketing, sales, sourcing, financing, production, distribution, and transportation within the country as well as organizational, customers, suppliers, and carriers throughout the supply chain improve customer service. Improve forecasting accuracy, reduce overall inventory levels, and save company "transportation costs" - goals to achieve.

In fact, incorrect or distorted information from one end of the supply chain to another can lead to huge inefficiencies, such as excessive inventory investment, inadequate customer service, lost revenue, erroneous capacity plans, inefficient transportation, and lack of production schedules. This is referred to as the effect that the consumer goods industry normally experiences. Appropriate technologies such as barcodes and scanners have been developed and used in parts of the supply chain to eliminate inaccuracies.

4. INTER-ORGANIZATIONAL INFORMATION SYSTEM

In supply chain management, suppliers, manufacturers, customers are members and are connected by the last level of combination. These members are constantly provided with real-time information. The basis for the ability to share information is the effective use of information technology in the supply chain. Appropriately applying these technologies provides decision makers with timely access to all relevant information from anywhere in the supply chain. Many organizations recognize the critical importance of information in an integrated supply chain environment and implement a kind of inter-organizational information system (IOIS).

IOIS is an integrated data processing or data transfer system used by two or more separate organizations. These organizations may have business relationships. There should be an electronic connection between the two organizations that automates all elements of the work, such as: For example, order processing, order status, inventory overview, and shipping tracking information, or at least transaction transfer that would have previously been done manually or manually, would be freight forwarders like Post.

The development of an IOIS for the supply chain has three key benefits: cost reduction, increased productivity, and product / market strategy. Five basic levels of participation for individual companies within the inter-organizational system:

1) Remote I / O node where the member is located attends a remote site in an application system that is supported by one or more higher-level members.

2) An application processing node in which a member develops and uses a single submission, such as a single inventory application or order processing systems.

3) A multi-party exchange node on which a subscriber establishes and shares a network relationship and any number of lower-level subscribers with whom he has established business relationships.

4) Network Management Node in which the member develops and shares a network with various applications that can be used by many different types of lower-level members.

5) Integration of a network node in which a member literally becomes a data objects communication / data processing integrating any number of subscribers and lower level applications in real time.

The participant shares a network of different applications with any number of participants with whom she has business relationships. Finally, all relevant information should be distributed to all organizations between the point of delivery and the place of consumption. For example, orders for inbound shipments, manufacturing, warehousing, inventory management, outbound shipments, sales, marketing, forecasts, and customer service information. Although organizations recognize the importance of IOIS for effective supply chain management, no standard approach to technology or information is used.

Information is crucial in SCM cooperation because it exists in all three elements, such as: Cooperation, Collaboration and Integration of SCM into the basic SCM model. Some even view information as an independent factor of production, in addition to the traditional factors of material, capital and human capital production. Basically, a distinction can be made between the amount of information and the amount of information. In the case of coordination, the amount of information exchanged is usually greater, while the information exchanged in a cooperative relationship is richer.

Evans et al. [7] distinguished the availability of information and the wealth of information. Reach refers to the number of people or companies that share information and therefore connect. Prosperity is characterized by bandwidth,

coordination and interactivity. Data needs to be transformed into information by organizing, modeling, formatting, manipulating, validating, and putting into context, and timely deploying decision makers before they become valuable. Prusak et al. [8] have suggested the "Five Cs" as methods to transform data into information. According to this, data has to be (1) Contextualized, (2) Categorized, (3) Calculated, (4) Corrected and (5) Condensed with the purpose of information.

Integrated and coordinated solutions in supply chain networks require the free flow of relevant information. Recognizing the importance of information for SCM raises the question of how important this is. Many researchers tried to determine the value of information by various methods. The exchange of information is important to SCM, but it is also not the only way to achieve optimal performance. In general, suppliers gain more from the exchange of information than retailers. With regard to relevant factors that influence the value of the information exchange, they conclude that they are highly dependent on the respective supply chain situation. The researchers also provided a comprehensive literature review of various models that examine the impact of information exchange on performance under different conditions. Dependent on the respective settings, the advantages are different, but in almost all models the exchange of information improves the direct or indirect value for money of the supply chain between 0% and 35%. It has been found that a faster and more even flow of goods through the supply chain is more advantageous than the exchange of information. In order to achieve a faster and more uniform flow of goods, at least improved information processing capabilities are required and therefore the information exchange indirectly influences this. It is also recognized that the value of information exchange can increase under conditions of increased demand uncertainty. Despite the proven impact of the information exchange, Lee and Wang [9] pointed out that information sharing is only one means of improving supply chain coordination and planning. Accordingly, companies need to develop ways to use information.

According to them these five are most important types of information.

1. Inventory level
2. Sales data
3. Sales forecast
4. Order status for tracking and tracing
5. Production and delivery schedules

In addition to the listed items, cost accounting measures are also important. Information on selling price, rescue costs, variable production costs and fixed production costs, etc. Important to fill the information needed for optimal decisions. However, this information is very sensitive. The benefits of such general information are undisputed, and all of the above information can be used in highly integrated and consistent organizations to make more effective decisions. However, there are obstacles that prevent companies from passing on such information. This is mainly due to the prevailing belief that information represents power and its parts, leading to loss of power and endangering partner position in the supply chain. Traditionally important information was a significant strategic advantage, corresponding to the economic theory in which the monopolist promises to keep all profits.

Profit linked to superior information is often referred to as information rental. However, in such a constellation, the information available and retrieved can only be used but not used properly. This is a serious problem for supply chains.

Another aspect of the exchange of information is the quality of general information. Quality generally has many dimensions and its meaning depends heavily on the context. A generally accepted definition of quality is provided by the International Organization for Standardization (ISO). They define quality as the degree to which a set of inherent characteristics of a product or service meets customer requirements.

In the context of SCM, quality can be interpreted as meeting customer requirements for the physical and functional characteristics of products or the expected outcome of processes. The quality of information in supply chains can be interpreted in a similar way. Unlike entire supply chains, all members of a supply chain that rely on information are recipients and thus customers of information. Therefore, the quality of information should be determined according to how information is perceived and used separately by each element of the supply chain. The ten dimensions of information quality that characterize the overall quality of information are

- Relevance
- Accuracy
- Timeliness
- Completeness
- Coherence
- Format

- Accessibility
- Compatibility
- Security
- Validity

5. CONCLUSION

Information is critical to SCM collaboration because it exists in all three elements of the core SCM model. It can be understood as “glue” that holds together business structures, processes and complete supply chains. One can distinguish between the amount of information and the wealth of information exchanged information. In the case of coordination, the amount of information exchanged is generally greater, while the information exchanged in collaborative relationships is richer. Prosperity is characterized by the breadth of dimensions, personalization and interactivity. Interactivity determines whether a monologue or type of information exchange dialogue takes place in a particular situation where coordination, collaboration and integration are entitled to be in the global arena.

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