International Journal of Information Technology and Management

Vol. V, Issue No. I, August-2013, ISSN 2249-4510

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AN INTERNATIONALLY INDEXED PEER REVIEWED & REFEREED JOURNAL

www.ignited.in

International Journal of Information Technology and Management
Vol. V, Issue No. I, August-2013, ISSN 2249-4510

Information Visibility and Its Effect on Supply Chain Management Dynamics

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Abstract – In a supply-chain, a company is linked to its upstream suppliers and downstream distributors as materials, information, and capital flow through the supply-chain. Information visibility – the availability of relevant information for making supply chain related decisions is an important concept in the context of supply chain management. The purpose of this paper is to identify the different dimensions of information visibility and propose a framework based on the information visibility dimensions. The proposed framework can be used to evaluate supply chain information systems (SCIS) and their contribution towards information visibility in supply chains This paper also discusses the, several strategies are examined for improving supply-chains in the industry.

Keywords – Information sharing, Information systems, Information visibility, Supply chain management, Supply chain management information systems

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INTRODUCTION

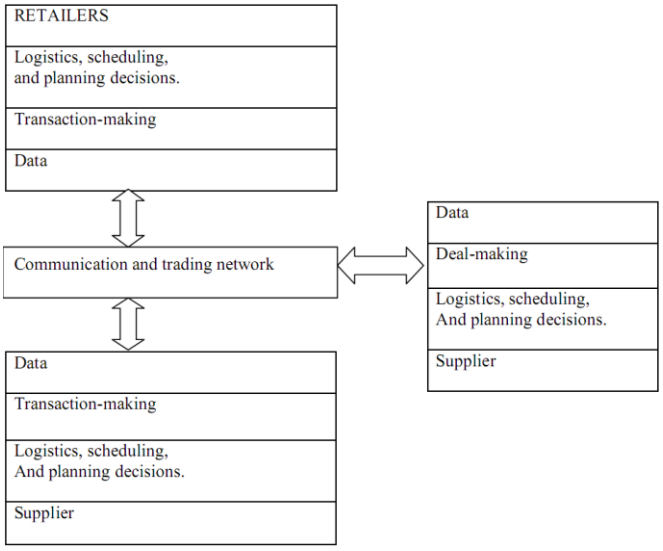
Supply chain management (SCM) is the management of a network of interconnected businesses involved in the ultimate provision of product and service packages required by end customers (Harland, 1996). The term was coined by Keith Oliver, a Booz Allen Hamilton executive in 1982.

Supply Chain Visibility -The motivation behind supply chain management is to eliminate the barriers by enabling the synchronization and sharing of valuable information among trading partners (Kouvelis, Chambers, and Wang 2006). The success of a supply chain system depends on the level (and the timeliness) of visibility it has on the materials from the suppliers to the customers (Joshi 2000). The most important benefits of such improved information visibility are realized in inventory management and in asset utilization.

The impact of information visibility on supply chain operations both quantitatively and qualitatively. In a quantitative study, Joshi (2000) developed a system dynamics based simulation model to study the impact of information visibility on supply chain dynamics. He simulated a beer distribution network with a retailer, wholesaler, distributor, and factory. The performance measures were inventory level in the supply chain and the orders for the beer cases. He studied different forecasting methods with information sharing (visibility) and found that information visibility provided 40 to 70% reduction in inventory cost. The loosely coupled, self-organizing network of businesses that cooperates to provide product and service offerings has been called the Extended Enterprise (Ross 2006).

Recent development in technologies enables the organization to avail information easily in their premises. These technologies are helpful to coordinates the activities to manage the supply chain. The cost of information is decreased due to the increasing rate of technologies. The functional roles of information technology (IT) in SCM (Supply chain management) have been outlined as follows (Auramo et al 2005):

- Transaction
- Execution
- Collaboration and Coordination
- Decision Support



Dynamic Communications and Trading

A framework for information visibility-

Information visibility in real time

People gather the information at different times of the day as individual units of the supply chain, on the shop floor or in the warehouse. The collected information feed in the computerized database at a predetermined time, at regular intervals. Thus, the database is updated in fixed quanta of time. If the data is not feed in regular time interval then this introduces visibility gaps in the system which affect the business.

To achieve real time visibility of information, we need to:

1. Have real time information acquisition mechanisms.

2. Convert acquired information into relevant information.

3. Have immediate access to this information.

Basic building blocks

The basic building blocks of the framework are radio frequency tags, electronic product codes, tag readers, decision support systems (DSS), and object naming service, the internet- web services, electronic commerce**,** and a controlling software application.

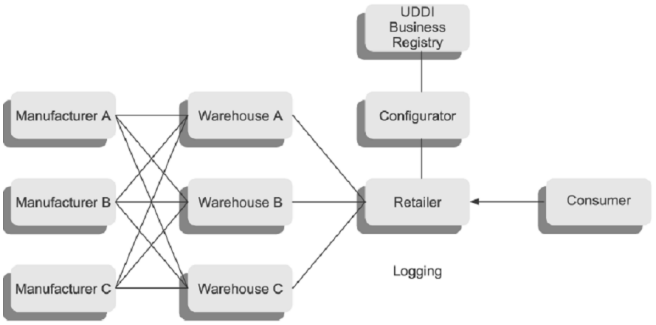
Emerging and new information visibility technology for supply chain management-

Radio Frequency Identification (RFID) - RFID is the reading of physical tags on single products; cases, pallets, or re-usable containers that emit radio signals to be picked up by reader devices.

Software Agents- Artificial Intelligence emerged into the model of software agents with the submission area of multi-agent systems. A software agent is a software system, which has attributes of intelligence, autonomy, observation or acting on behalf of a user.

Decision Support Systems- Decision Support Systems (DSS) is a computerized information system that supports business and its decision-making activities. A properly designed DSS is an interactive application intended to help decision makers accumulate useful information from raw data, documents, personal knowledge, and/or business models to identify and solve problems and make decisions.

Web Services- Web services are application interfaces accessible via Internet standards.



Electronic Commerce- Electronic commerce refers to the wide range of tools and techniques used to conduct business in a paperless environment. Electronic commerce includes electronic data interchange, e-mail, electronic fund transfers, electronic publishing, image processing, electronic bulletin boards, shared databases and magnetic/optical data capture. Organizations are automating the process of moving documents electronically between suppliers and customers.

Electronic Supply Chains- Electronic Supply Chains refers the supply chains that are electronically facilitated between participating firms.

The impacts of information-sharing on supply chain –

Supply-chain management requires both customer relations and supplier relations are input to effective harmonization of supply-chains. Often, the interaction between suppliers and their customers are adversarial in nature, based on a negotiated contract that find out all the terms and conditions by which all parties are required to meet the terms. Instead, a firm can create long-term strategic relationships with their suppliers. In most cases, sole sourcing is a practice whereby a company commits to buy all of a particular type of its services or commodities from one vendor. In exchange, the vendor becomes an associate in the design of new product-service bundles. Vendor expertise and knowledge can be shared and leveraged for product process enhancement. Therefore, the costs of

negotiating and administering contracts can be significantly reduced.

CONCLUSION-

Supply- chain management (SCM) can be defined as the relationship, coordination and continuous improvement of a sequentially prearranged set of operations. The goal of supply- chain management is to offer maximum customer service at the lowest cost possible. A customer is anyone who uses the output of a process. Therefore, the customer is an important to any organization that is focused on customer service. In a supply-chain, a corporation will link to its suppliers upstream and to its distributors downstream in order to serve its customers. Usually, materials, information, capital, labor, technology, financial assets and other resources run through the supply-chain. Since the goal of the firm is to maximize profits, the firm must maximize benefits and minimize costs along the supply-chain.

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