

Application of Workflow and Information System in Supply Chain Management

Sagar Varshney*
Shaivya Dixit**

Abstract

The management of the supply chain is commonly perceived as lying within fully vertically integrated businesses in which an individual organization monitors the commodity flux and where each part of the channel functions independently of each other. A Supply Chain Management Information System (Supply Chain Management Information System - SCMIS) is user-orientated and prepared to offer knowledge and information analyzing capabilities to assist in a planning, operation, strategic analysis, and decision-making function within a company's supply network.

In today's industries, the management of the supply chain becomes critical. Many traditional supply chain management schemes, however, cannot achieve equilibrium between different firms and only a few approaches can effectively change the variations of the supply chain. We are currently attempting to integrate process management and supply chain management and have provided a methodology for identifying the implications and implementations of IT in an SCM.

Keywords: Information systems, Supply chain management, Workflow management, strategic analysis

Introduction

The supply chain is the network of installations and distribution options performing material procurement functions, transforming these materials into intermediates and finished products and distributing them to customers." Supply chain management is typically regarded as connecting fully integrated organizations in which a single entity is managing the supply chain management system. There is a growing responsibility in today's world to be more mindful of socially and economically, and risks are necessarily treated [1-3].

- Resource access and affordability
- Needs of consumer
- Globalism
- Cost burden
- Consumers' perceptions

Management is expected to improve profitability, increase sales growth and gain and defend expanded market share. The great success of an organisation is focused on the ability to leverage the customer relationship network into the company in a mutually beneficial way. Supply chain management is an operation of the collaboration channel [4-6].

SCM requires cross-functional communication within the enterprise and the whole supply chain network [7-8]. The administration learns, by knowing and implementing the network supply management framework,

- The value of more networks of supply and
- How this convergence will increase the importance and productivity of stakeholders?

Method of Knowledge

An interconnected information framework comprises the sharing of expertise on numerous ethical events (IS).

*Research Scholar, Institute of Business Management, GLA University, Mathura, India,
Email: sagarvarshney23@gmail.com

**Research Scholar, Dayalbagh Educational Institute, Agra, India, Email: shaivyadixit007@gmail.com

IT's like a system of SCM tense. There are foreign vendors and the coordination of an organization's operation both within and outside is required. Inside IT, it is exceedingly difficult to obtain a successful supply chain. Companies spend huge volumes of funds to enter the IT-enabled supply chain [9-11],

- External corporate overhaul
- Technical process overhaul
- Change of critical channels of commodity delivery
- Procedure of customer care

Standardized business practices and IT structures allow access to information inside a supply chain effective and secure. It is a crucial factor in market sustainability and increases the productivity of firms. This ensures IT has an enormous impact on successful SCMs.

Flow of work

Workflow is seen as a crucial technical key to provide companies with expertise and efficiency. Workflow management means an automation of a business system in whole or in part where records, documents or tasks are moved from one individual to another for operation in compliance with a set of functional rules [12-13].

Workflow can differentiate between business processes and programs which make it very versatile when changing business styles. Process monitoring system focused on methods and incidents. For each customer, the workflow management system has an acceptable role. Various user interfaces, various system-wide effects, and various data [14] are available for users of various roles.

1. Knowledge about the Networks

Today, businesses try to adapt their pace speeds by being agile and sensitive to meet various business requirements. SCM is contributed to by major providers delivering resources, goods and information, thus bringing value to consumers and other owners, through the addition of major business processes from end-users [15].

The term 'information systems' is defined as any widespread combination of communications, computer equipment and software prepared for the management of business process information. The need to effectively navigate the emerging complex supply chain is information technology (IT). Companies are nowadays not treated as a sole organization but as part of several networks. Management of the supply chain provides tracking of those networks. For this multi-network control, IT is a necessary necessity that is related to the enhancement of the supply chain [16].

The difficulty of SCM compels businesses to follow Telephone, Internet and World Wide Web contact methods. The long-term advantages of all supply chain members are shared. In order to minimize confusion, it should be improved to exchange information through EDI (Electronic Data Interchange) technologies. Companies are spending massive money to get a production network empowered by IT. The following issues are discussed in IT-integrated SCM[17]

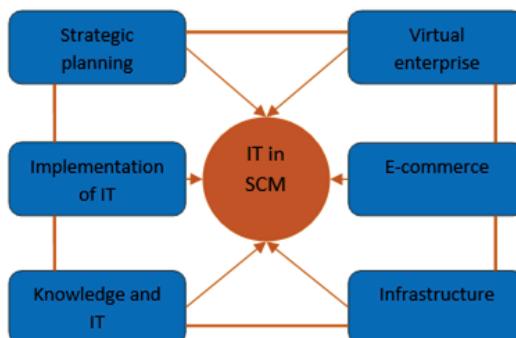


Figure 1 Network of IT in Supply chain

In every company, the competition plays a significant role. Companies prefer workers allowed by IT. SCM is competing in global markets across performance objectives such as price, quality, versatility, reception and trustworthiness. The IT-enabled SCM is a versatile operational architecture that uses a business-dependent framework. In the IT infrastructure of SCM [18], internet connectivity, hardware integration, program integration and application system consists. Information systems for supply chain management shall be usable, compatible, easy to use, safe and secure. SCM's efficient IT implementation relies on top management support and organisation's structure support, but the staff must empower knowledge system to function in the open world.

2. Information about application in SCM

IS to be found in the management supply networks for a variety of items. The Internet facilitates connectivity by improving strong customer-company interactions.

The usage of the IT and why in the SCM is still indistinguishable. SCM applies to practices and processes to efficiently and effectively transfer goods and information between a business and its vendors and consumers. Interorganizational frameworks are used to exchange knowledge and process the company's shortcomings. IC impacts on, incorporation of the supply chain, consumer integration, efficiency of the supply chain, transactions, implementation, knowledge exchange. information. Companies use IT to carry out deals that involve a significant number of transactions and secure business relationships. In particular in circumstances with uncertain demand and routine product launch, IT is used for providing and taking details. In their SCM efforts, businesses employ IT in a different way. In SCM, the IT forms used are,

- Supply chain collaboration and planning
 - Irregular environment
 - Demanding environment
- Tracking of order and delivery coordination
 - Project orientation of business
 - In transient delivery consolidation
- Transaction processing
 - Cost reduction
 - Increasing information transfer

- Removing the human errors
- Amount of transaction

Drivers used in IT [12] for transaction processing are,

- Deduction of the costs of operational procedures
- Improvement of information quality by
 - removing manual errors
 - fast moving transfer of information

The number of transactions is also a catalyst for the handling of IT transactions. In competitive, volatile and logistically demanding business conditions information about the process of the supply chain is shared. 10 out of 16 companies have used IT to process their suppliers in most situations. A total of eight companies have used IT to deal with their customers' purchases. For transaction management, only three businesses use IT both downstream and upstream of the supply chain. In order to handle distribution controls and transmission of guidance, IT was also used. The use of IT for transaction processing was found to be decreased manual labour and costs, to improve information efficiency, to speedy data transmission and to use volumes of transaction. The number of firms that do not use the IT to trade is high or at least moderate.

All IT-using organisations with a highly concentrated customer base to plan and communicate with their customers. There was no direct link between the use of IT in supply chain planning and relationship planning and company environments and qualities. Using IT for order monitoring and distribution planning is correlated with a personalized design of the items being delivered. Supply Chain and Information Management is a boundary-spreading field of supply chain network research used by companies to procure, manufacture, and distribute products and services worldwide.

The Internet supports to handle supply network actions by contributing information about the

- Product form that is demanded
- Factory accessibility
- The method of planning
- Physical structures for entry and exit
- Sites for customers

FLOW OF WORK IN SCM (SUPPLY CHAIN MANAGEMENT)

The improvement in the productivity of the supply chain is induced by global financial integration. The success of an organisation relies on the efficacy of SCM. The supply chain involves many kinds of businesses, and shifts in the supply chain occur frequently.

The control of the supply chain is the engineering of dynamic systems. The workflow management and workflow answers the question how different supply chains are interconnected and made scalable. A supply chain needs different types of organizations to assist each other with a shared purpose; both have different impacts. More information on the company process control is now available. Job flow is one of the major corporate stability management innovations.

Work flow management can be characterized as "the automation in whole or in part of the business process in which documents, information or tasks are transmitted for action, for a number of procedural rules, from one participant to another."

There are two benefits of working flow management:

- Separates industry from programmes
- The machine mechanically executes the role of each operation.

Management of the workflow

- Guided case
- Driven method
- Smooth.
- Character of high efficiency
- Available easily

Distributed Workflow Management With Genesis Architecture

The field of workflow management in enterprise applications and product development is growing increasingly and has strong functional significance. However, most of today's process management systems have a monolithic and unified architecture and are still not enough to fulfill the specifications of large software development. Huge software development practices

demonstrate multi-site teamwork and coordination with a wide variety of people and substrates. Their largely centralized system architecture does not require the requisite functionality for modelling, enacting and handling distributed applications for the present commercial workflow technologies. There are many coordination tasks that traditional workflow systems cannot achieve.

- Facilitate distributed workflow execution
- Shared data access,
- Use of software for groupware
- Endorse a simple transition from the old to the current system and within project
- Functionality of effect preparation and transition.

The GENESIS (generalized process management framework in cooperative engineering) paradigm can be extended to distributed process modeling. for distributed process modeling. GENESIS is an ongoing research initiative to design and build an open-source, non-invasive platform to enable information technology operations in a massively distributed environment[18]. GENESIS is a hierarchical language modeling system. The international framework (that is the conceptual leader of the distributed software project can be planned and implemented at the coordinating venue, while the sub-processes can be modeled and implemented separately at different organizational locations [19]. The project managers at the various sites will collaborate with each other to edit the global model of operation. The interfaces between the global model process and the structured subprocess are especially relevant for the understanding. There is a hierarchical organization of distributed GENESIS projects [20-21]. The boss is responsible for the creation and execution of the global framework while the local locations are responsible for the production and operation of the sub-processes related to their package. For example, an international project leader will include a region, oversees the project and various local venues.

SCM Software to flow of work

SCM is a way to plan, conduct and maintain efficient, cost-effective delivery and storage of raw materials, to manufacture in-process, finished goods, and related details for market compliance from the point of departure

through to the points of consumption. Network management's short target is to,

- Improving production
- Minimize inventory
- Cut down the duration of the loop.

The long term aim [7] for the management of the supply chain is,

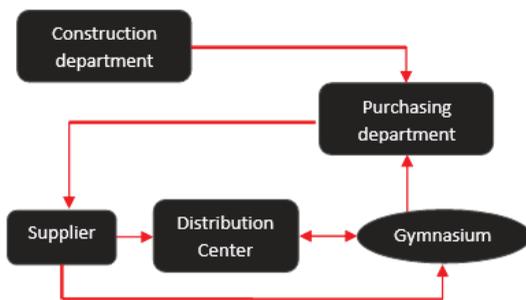
- Improved loyalty of consumers
- Market share boost
- Raise corporate income

Assign the right role for the users in the management of working flow. In workflow management, business logic is also important. Corporate logic is conveniently modulated and delegated. Three phases to reach the framework of operating flow [8]:

- Achieving the working flow model with software
- Recompilation of the model
- Run the pattern

Example: Olympics SCM information System

6 main works are included in Olympics supply chain [20], as in Figure:



Fitness centers are entities needing artifacts. The Contract department finds and checks its vendors. The sourcing area gathers demands from the gymnasium. The seller shall supply the goods. Transport firms shall be accountable for importing transportation between international manufacturers and distribution centres. Distribution center inventories, distributes, and gathers merchandise as necessary. Departments must have their inventories well identified. The estimated requirements of each department must be enforced. The order management system can send orders faster, faster data recuperation from a web application and automatic data alerts upon receipt of an order. The system can gather

data on demand from the stadiums. For Database Logics, Database Service Manager is responsible.

Conclusion

Informatics (IT) is seen as a need to navigate today's changing diverse supply chains successfully. The analysis of IT and workflow literature at SCM has been carried out in this article. This makes it very understandable that an efficient supply chain without IT is extremely difficult to achieve. IT has an unbelievable bearing on the achievement of a successful SCM. Workflows are essential technologies to ensure that organisations are reliable. Workflow Optimization discusses how the separate supply network should be combined and made more versatile. And workflow control based on GENESIS is also discussed here. The use of this GENESIS workflow management framework with SCM is discussed later.

References

1. Watson, R. T., Akelsen, S., Pitt, L.F.,1998. "Building mountains in that flat landscape of the World Wide Web" *California Management Review*, 36–56.
2. Qrunfleh, S. and Tarafdar, M., 2014. *Supply chain information systems strategy: Impacts on supply chain performance and firm performance. International Journal of Production Economics*, 147, pp.340-350. Jablonski, S. Bussler, C, "Workflow Management. Modeling Concepts, Architecture, and Implementation," International Thomson Computer Press, London, 1996.
3. Dyson, L.E. and Koruth. S., "Improving Business Performance through Supply Chain Intelligence: An Australian Perspective, in Soliman, K.S. (ed.) *Information Technology and Organizations in the 21st Century: Challenges & Solutions*, "Proceedings of The 2004 International Business Information Management Conference, July 4-6, Amman, Jordan, International Business Information Management Association (IBIMA), pp. 342-348.
4. V. Kumar, R. Sharma, P. Singhal, *Demand Forecasting of Dairy Products for Amul Warehouses using Neural Network*, *Int. J. Sci. Res.* (2019)
5. Carol A. Ptak and EISchragenheim, "ERP Tools, Techniques and Applications for Integrating the Supply Chain," St. Lucie Press, 1st Edition 2000.

6. Chen, J.C., Cheng, C.H. and Huang, P.B., 2013. Supply chain management with lean production and RFID application: A case study. *Expert Systems with applications*, 40(9), pp.3389-3397.
7. Dapeng Sun, Xiaoping Zhang, Ming Yu, "Applications of Workflow in Supply Chain Management: A Case Study", IEEE, 2006.
8. Closs, D. and Savitskie, K. (2003), "Internal and external logistics information technology integration", *International Journal of Logisticsmanagement*, Vol. 14, No. 1, pp. 63-76.
9. Addo-Tenkorang, R. and Helo, P.T., 2016. Big data applications in operations/supply-chain management: A literature review. *Computers & Industrial Engineering*, 101, pp.528-543.
10. Kauremaa, J., Auramo, J., Tanskanen, K. and Karkkainen, M. (2004), "The use of information technology in supply chains: transactions and information sharing perspective", *Logistics Research Network Annual Conference*, Dublin, Ireland, September 9–10, 2004.
11. Jaana Auramo, Aimolnkiläinen, Jouni Kauremaa, Katariina Kempainen, Mikko Karkkainen, Sanna Laukkanen, Sami Sarpola, Kari Tanskanen, "The roles of information technology in supply chain management".
12. Bongsug Chae, Hsiu Ju Rebecca Yen, and Chwen Sheu, "Information Technology and Supply Chain Collaboration: Moderating Effects of Existing Relationships between Partners", *IEEE Transactions on Engineering Management*, vol. 52, no.4, November 2005
13. Lambert, D.M., Cooper, M.C., Pagh, J.D., 1998. "Supply chain management: Implementation issues and research opportunities". *International Journal of Logistics Management* 9 (2), 1–19.
14. Motwani, J., Madan, M., Gunasekaran, A., 2000. "Information technology in managing supply chains" *Logistics Information Management* 13 (5), 320-327.
15. Gunasekaran, E.W.T. Ngai, "Information systems in supply chain integration and management", *European Journal of Operational Research* 159 (2004) 269–295
16. "Olympics Games E-Supply Chain Management Project Requirement," Department of Industrial Engineering Tsinghua University, 2005, unpublished.
17. P. Ritrovato and M. Gaeta, "Generalised Environment for Process Management in Co-operative Software", *Proceedings of the 26th Annual International Computer Software and Applications Conference, special section on the Workshop on Cooperative Supports for Distributed Software Engineering Processes*, Oxford, UK, IEEE Computer Society Press, 2002.
18. Lerina Aversano, Aniello Cimitile, Andrea De Lucia, "A Communication Protocol for Distributed Process Management", RCOST - Research Center On Software Technology Department of Engineering, University of Sannio.
19. de Sousa Jabbour, A.B.L., 2015. Understanding the genesis of green supply chain management: lessons from leading Brazilian companies. *Journal of Cleaner Production*, 87, pp.385-390.
20. Heckmann, I., 2016. The Genesis of Supply Chain Risk. In *Towards Supply Chain Risk Analytics* (pp. 19-41). Springer Gabler, Wiesbaden.
21. Wu, H., Li, Z., King, B., Ben Miled, Z., Wassick, J. and Tazelaar, J., 2017. A distributed ledger for supply chain physical distribution visibility. *Information*, 8(4), p.137.