

Visualization/future of Supply Chain Management

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Abstract:

Supply Chain Management is a methodology of improving the business processes, making them more strong, more agile and as a result, more competitive. The main function of SCM is to improve the product or service competitiveness. This paper is a work to study, understand and interpret the Visualization of supply chain management. On the basis of systematic literature review, we have attempted to explore the Visualization of Supply Chain. We have captured various definitions of SCM provided by experts from the initial to recent period along with major classical definitions. Various dimensions of Supply chain are an integral part of this study. The paper discusses SCM and its dimensions; and tries to define SCM from related areas like Logistics Management, Value Chain Management and Operations Management. The paper also explains various theories of SCM. On completion of thorough literature review, the paper ends with a conclusion and future scope of work

Keywords: Supply Chain, Supply Chain management, Supply Chain Visualization, Supply Chain Visualization, Forthcoming of Supply Chain

1. Introduction

A supply chain deals with the conversion of raw materials into finished goods and timely delivery of the products to end users (Mabert and Venkataramanan, 1998). This paper first describes the visualization of various definitions of supply chain. Supply Chain Management basically looks into the interrelationship and inter- linkages between various functions, processes and chain members and analyses the impact of their interaction on value additions and profit maximization (Ballou, 2007). We next elaborate certain research questions such as understanding SCM and its dimensions, delineating SCM from other related areas and identifying various contributions in SCM theories. We have further tried to analyses and identify research gap.

Research Questions:

RQ1: To understand visualization of SCM and its dimensions.

RQ2: To delineate SCM from other related areas like Logistics Management, Value Chain Management, and Operations Management.

RQ3: To identify various contributions in the field of SCM theories. SCM connects different departments, from demand management, sourcing and procurement management, and manufacturing management to logistics management.

SCM process is made up of different parties i.e. retailer, manufacturer, and supplier involved in providing products and services to the customers, and the sole purpose is to add value in their products, both in upstream and downstream, through some channel with the proper flow of information and resources. In this fast paced business, it is imperative to have proper flow of information within this physical network which can be fully leveraged through business integration. This business integration will help in coordinating between different parties to achieve the bottom line results. In Fact, many companies have begun to identify that today competition occurs between supply chain networks rather than individual firms (Li et al., 2005; Koh et al., 2007; Chow et al., 2008).

2. Visualization and Definitions of SCM

The scope and definition of supply chain management has been ever changing. The meaning of the word supply chain management in industry parlance is not the same that it was 20 years ago. It is continuously evolving and broadening its scope. Here, we have tried to identify the trend in the visualization of SCM by reviewing papers in chronological orders. Reviewing papers in chronological order will show the trend in visualization of definition of SCM.

References	Definitions
Chang et al. (2013)	Supply chain management now has a new strategic dimension to it which is e-procurement.
Dubey and Ali (2013)	Supply Chain Management may be defined as the management of upstream and downstream associations with vendors and customers to provide better customer value at least cost to the supply chain.
Machowiak (2012)	SCM is a methodology of improving the business processes, making them more resilient, more agile and as a result, more competitive. The main function of SCM is to improve the product or service competitiveness
Randall and Mello (2012)	Supply Chain Management incorporates supply and demand management inside and across companies.
Dubey et al. (2012)	Supply Chain Management as a concept manages the flow of material, information and funds end to end i.e. from upstream to downstream members. It also deals with the disposal of material after consumption as per the environmental norms. SCM tries to achieve this at the lowest cost with maximum efficiency.
Melnyk et al. (2009)	The definition that "SCM is primarily responsible for managing the buying as well as managing the flow of orders and information" is no longer valid. Today all the related aspects such as improving customer service, mitigating supply chain risk, reducing wastes, improving new product design process and enhancing product service quality are treated as an integral part of supply chain management.
Parkan and Dubey (2009)	In INDIA, supply chain cost can be divided in two main categories: a) Distribution cost: which is generally logistics cost b) Inventory value and inventory holding costs: which mainly consist of cost of inventory and cost of keeping inventory in storage location
Wadhwa et al. (2008)	The challenge of SCM is to identify and implement strategies that minimize cost while maximizing flexibility in an increasingly competitive and complex market.

Vachon and Klassen (2007)	Supply chain management is increasing its dimensions. Being efficient is not enough; Companies are now looking for sustainable and environmental friendly supply chain.
Sachan and Datta (2005)	SCM should not be studied alone and its interest should not be only industrial development. Concepts such as market orientation, relationship marketing should be studied with SCM. There is a need of new boundaries of SCM which can incorporate all these concepts into SCM.

3. Research Methodology

In order to answer the research questions, the literature review method is used. This research paper tries to identify the trends in visualization of SCM. There are various definitions and theories of SCM which have changed rapidly with time. We have reviewed a lot of research papers and have made an attempt to study the various definitions of SCM in chronological order.

Various research papers from databases like Emerald, Science Direct and EBSCO were identified and referred to. Within these databases, various journals such as International Journal of Logistics Management, International Journal of Information Management, International Journal of Physical Distribution and Logistics Management, Journal of Operations Management, Supply Chain Management: An International Journal, International Journal of Operations and Production Management etc. were referred to by us.

The following methodology for the literature review process has been adopted

1. **Identification of Areas:** Based on the research questions, we were able to identify the particular areas in which we were supposed to find literature.
2. **Searches in Various Databases:** After finalizing the areas for literature review, we utilized various databases such as Ensco, Emerald etc. to find the relevant research papers.
3. **Sorting the Literature for Review:** Once the research papers were available, the papers based on the relevance of those papers with respect to the research questions were sorted out.
4. **Performing Review:** The sorted papers were then reviewed in an attempt to answer the research questions.

4. Measurements of Supply Chain Management

After studying various papers, we were able to identify 3 major supply chain measurements:

4.1 Long Term Relationship

The key signs of long term relationship in supply chain management are trust and communication (Heidi and John, 1990). Long term relationships have been identified as a very important dimension of SCM in various literatures (Min and Mentzer, 2004). The main idea behind maintaining a long term relationship in a supply chain is to complement each other's strengths and to develop synergies to improve the total gains (Carr and Pearson, 1999). Organizations should be all the time aware of the long term relationships between them and other firms. Long term relationship really helps an

organization by sharing their knowledge with others and learning from others experience and knowledge (Griffith, Harvey, and Lusch, 2006).

4.2 Parallel Engineering

It is essentially the collaboration of all the stakeholders of a supply chain i.e. suppliers, and customers at an early stage (Celtek and Kaynak, 1999). All the stakeholders are included in the decision making from the design stage so that there are no miscommunications regarding any aspect of design of engineering. All the work which might have dependencies with other stakeholders is done by making cross functional teams and involving all the stakeholders in the process of designing the product or process.

4.3 Strategic Purchasing

In today's era, purchasing is replaced by strategic purchasing. The profits are generated not from the customers but from the vendors or suppliers. Hence purchasing is becoming more and more strategic now. Identifying the vendor is also a part of strategic purchasing. Strategic purchasing always takes a long term view in mind while taking any decision. The purchasing strategy should be well aligned with the firm's strategic goals.

5. Organizational Theories in Supply Chain Management

There is a need to understand these theories that act as pillars of foundation in supply chain. There has been research regarding these underlying elements (Ketchen Jr. and Giunipero, 2004 and Ketchen and Hult, 2006). These theories will be employed in understanding the traditional view point of SCM and how it has evolved over time.

5.1 Resource-Based View

Resource-based View (RBV) is considered as most dominant dimension in supply chain management. These resources are rare, valuable and difficult to purchase. Such resource provides competitive advantage over the competitors who lack in such resources (Barney, 1991). Competitive advantage is generally considered as the implementation of strategies not currently being implemented by other firms that facilitates reduction of costs, exploiting market opportunities, and neutralization of competitive threats. Appropriate deployment of resources results in competitive advantage.

5.2 Knowledge-Based Theory

Knowledge-based view provides insight in terms of coordination of supply chains. A traditional organization largely relies on the hierarchy for coordination. Normal philosophy of supply chain lacks in formal hierarchy. They largely depend on knowledge to facilitate for concerted actions. Generally, most of the supply chains in formal mechanisms are for storing vital knowledge (information) in an organization (Grant, 1996).

5.3 Agency Theory

Agency theory suggests that the firm can be viewed as loosely defined between resource holders. An agency relation arises when multiple individuals hire other individuals (agents) to perform some tasks and authorize them with decision-making. Both the parties get very different targets, normally the

agent possesses higher target than that of the principal (Eisenhardt, 1989). Agency expenses are incurred to hire agents in order to sustain an effective agency relationship.

5.4 Institutional Theory

Institutional theory is largely depended upon the external pressures or forces for shaping of organizational choices. It emphasizes on definite supply chain practices to some firms. It provides guidance to managers and employees to understand success of other organizations and to apply appropriate possible actions (DiMaggio and Powell, 1983).

5.5 Transaction Cost Analysis

This theory provides a standard approach to ascertain the limits within which a firm should operate efficiently (Williamson, 1975, 1985, 1996). TCA can be used to provide an incentive for the firms to enter into collaboration with other organizations. By using this theory, we can ascertain which functions are to be performed within the organization and which functions are to be outsourced. Whenever a firm outsources a function, the firm to which it has outsourced becomes the partner of the parent firm. Thus the transaction costs also depend upon the behavior of the partner when it discovers some opportunity. The way to reduce these risks due to uncertain behavior of the partner is by entering in long term contracts with the partner, having penalty clauses and making joint investments.

This theory is generally used in taking the crucial decision i.e. whether to manufacture a product or to outsource its manufacturing (Maltz, 1993; Andersson, 1997; Halldorsson, 2002). Thus essentially TCA helps in deciding whether a particular operation should be performed in-house (within the organizational limits) or to be outsourced (outside the organizational limits).

5.6 The Network Theory

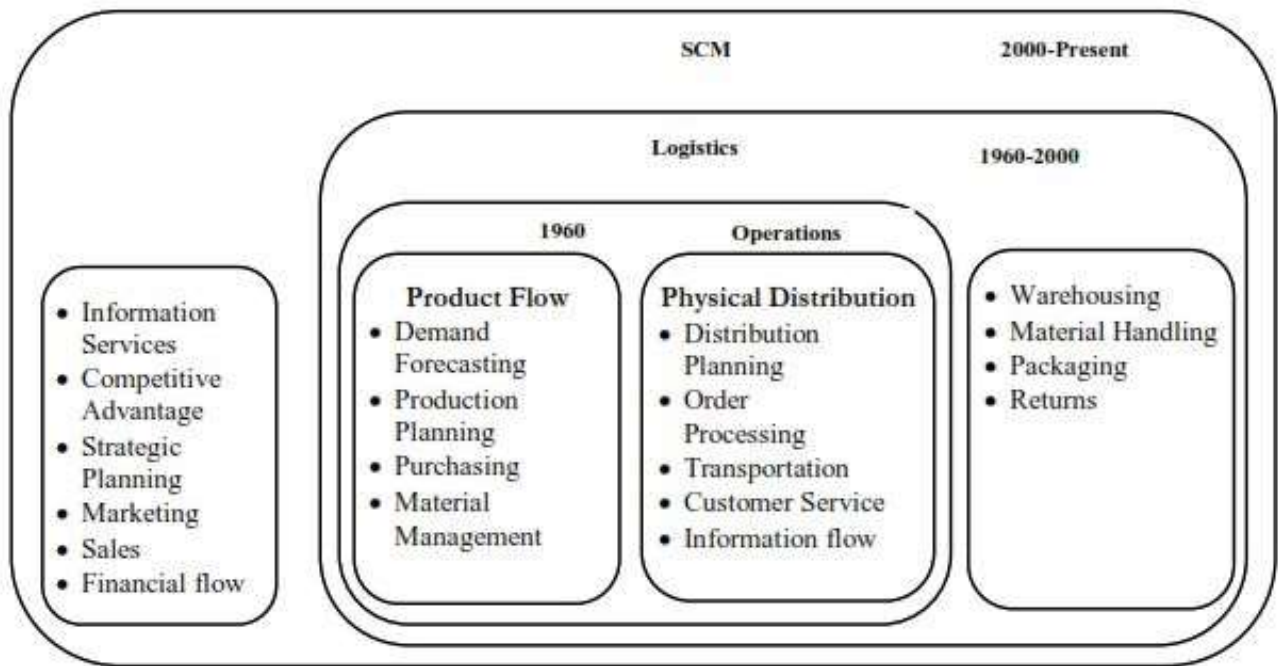
In today's competitive era, the performance of a firm does not depend only on its direct partners and indirect partners. Hence, the way in which a firm interacts with other firm becomes significantly important in this era. The way the firm interacts with other firms decides the formation of a new resource. Thus the two firms combine together to develop synergies and to learn from each other's strengths. The network theory provides an understanding of the importance of relationship between two organizations, whether it is build-up of trust or long term relationships or using of each other's systems and processes.

The relationship between two firms in a network is enhanced by two kinds of processes i.e. the exchange process wherein the two firms exchange information, goods, services etc. while the other is adaptation process where the two firms learn and adapt to each other's processes such as legal, administrative logistics etc. (Johanson and Mattsson, 1987).

7.1 Unique Contribution

Framework of Visualization of SCM across the years along with its future dimensions is the unique contribution of this paper. The diagram below is an attempt to visually depict the visualization of SCM

from 1960s to present. As we can see from the diagram that the scope of SCM has been steadily increasing, we expect it to encompass many more activities in the future. As per the diagram, SCM as of today is inclusive of all the concepts such as logistics, operations, physical distribution etc.



(Sachin & Datta, 2005)

5.7 Further Research Directions

Through this study, a number of interesting results were revealed that require further research. A further case-based exploration approach should be carried out to better understand the visualization of SCM in an organization. Another area that requires further exploration includes the investigation of management's role in implementation of successful SCM practices. Also, the use of information systems and technologies to support SCM is an emerging area for future research.

6. References

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