Supply Chain Integration (SCI)

It used to be that a supply chain team would work only on their thing. Today these teams get together and learn from one another (Sal Calta, ISC vice president of worldwide manufacturing, IBM)

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Introduction

Traditionally, company supply chains were concerned with collaboration to resolve problems in the supply chain and overcome difficulties with supply and demand (Westbrooke, 2002). Today, integration of key business processes which incorporate a complete supply chain from end users to suppliers that add value by providing products, services and information for customers and other stakeholders, is essential in supply chain management (SCM) (Chan and Qi, 2003; Ballou et al., 2000). Sometimes activities throughout the useful life of the product (e.g. service, reverse logistics and recycling) are also treated as components of an integrated supply chain (Coleman and Austrian, 2000).

Most SCM related-problems stem from uncertainties or from an inability to co-ordinate several activities and partners (Turban et al., 2006). Therefore, cooperation, collaboration, information sharing, trust, partnerships, shared technology and a fundamental shift away from managing individual functions to managing integrated chains of processes has become the basis of integration (Akkermans et al., 1999).

The three main drivers of supply chain integration are the information revolution, increased levels of global competition creating a more demanding customer and demand driven markets, and the emergence of new types of inter-organisational relationships (Handfield and Nichols, 1999: 5). Elements that can be integrated include information systems - management of information flows, inventory management - management of product and material flows, and supply chain relationships - management of relationships between trading partners, such as alliances, partnerships and cooperation (Power, 2005).

Definition

Integration of supply chains helps to elevate the "linkages within each component of the chain" and facilitate "better decision making to get all the pieces of the chain to interact in a more efficient way" (Putzger, 1998: 55).

Successful application

Throughout the 1980s and 1990s businesses began to develop a close relationship with selected clients and place more emphasis on improving working arrangements with suppliers. This trend required increased collaboration throughout the supply chain. In order to design and implement an integrated supply network companies should first establish coordination in the supply chain network, in the internal supply chain (e.g. in manufacturing plants) and in the distribution systems. This will facilitate material, service, information and fund flows (Awad and Nassar, 2010).

Steps to successful application

1. Optimise the organisational network: design the least cost network focusing on customer demand.
2. Simulate the organisational network to test alternative models to predict supply chain behaviour and avoid future problems.
3. Optimise the organisation's policy by introducing the best operating rules (e.g. how much inventory to carry for each product line).
4. Design for robustness in order to anticipate unforeseen circumstances and possibilities.

Hicks (1999)

Hints and tips

- When integrating a supply chain it is important to align goals across functions (Wood, 1997).
- Successful integration of the supply chain requires commitment across all organisational level and functions (Hammant, 1997).
- Successful integration of the supply chain requires effective programme management (Hammant, 1997).
- Successful integration of supply chain requires an actionable, owned, manageable and measurable set of business benefits (Hammant, 1997).

Potential advantages

- The benefits of integrating a supply chain can include reductions in cost and cycle time (Power, 2005).
- Automation across the company as an attribute of an integrated supply chain can minimise the potential of errors by reducing manual processes and removing incorrect data entries (Power, 2005).
- The integrated supply chain can increase the efficiency of inventory management, thus increasing inventory cycles, reducing holding costs and incising cash flow (Power, 2005).

Potential disadvantages

- Integration of supply chain management can require heavy investment of the time, money and resources needed for implementation and management (Thornton, 2011).
- Choosing the correct suppliers when integrating a supply chain may be difficult: companies must consider price and quality and ensure that all organisations are willing to cooperate (Thornton, 2011).
- Integration of the supply chain can lead to control over the process, problematic sharing of information and asymmetric distribution of cost and benefits (Turkman and Groznik, 2006).

Performance monitoring

- External performance measures: customer perception measures, best practice benchmarking (Lambert, 2008).
- Internal performance measures: cost, customer service productivity measures, asset measurement, quality (Lambert, 2008).
- Logistics measures (Lambert, 2008).

Case studies

- Motorola's integrated supply chain (manufacturing, packing, programming, ramping, shipping and sourcing records in just about every facility and operation) integration of system allowed the company to improve its performance in the 2000s. Thus, in 2007 Motorola shipped 53.7m mobile devices, up 39% than in 2006 and up 3.6% than in the second quarter of 2006. In 2007 it set a new quarterly record in Connected Home Solutions, shipping nearly 2.5m digital entertainment devices (Motorola, 2006).
- HP's investment in the Non-Stop Integration Hub at the beginning of the 2000s was expected to return a net present value (NPV) of US$37m over five years. Complete investment was to be fully recovered in the second year and improvements expected included

reduction in order cycle time and inventory days, avoiding the build up of additional large operational data stores and the development of hundreds of custom interfaces (HP, 2004).

- Wal-Mart has over 40 different distribution centres located in different geographical locations across the US where the company stocks over 80,000 items. In 1991 Wal-Mart invested more than $4m in order to build a sophisticated integrated supply chain system. Since then, Wal-Mart has benefited from low transportation costs which were estimated to be approximately 3% of total costs, while the company's competitors were paying at least 5% of total costs on supply chains (Chandal, 2003).

Further Resources/Reading

Web

Supply Chain Integration: Overview/Resources of the Office of the Assistant Secretary of Defence, US

Strategies for integrating supply chain

ISC: Example on transportation.

Questions/answers on what supply chain integration is.

ISC organisation: An overview.

Books

Integrated Supply Chain Management and Total Quality Management: A New Challenge ISBN 978-3838369693

Global Integrated Supply Chain Systems ISBN 978-1591406112

Logistical Managements: The Integrated Supply Chain Process (McGraw-Hill International Editions: Marketing & Advertising Series) ISBN 978-0071140706

Integrated Supply Chain Design Under Uncertainty ISBN 978-1243666925

Integrated Supply Chain (Chapter 12 of Theory of Constraints Handbook)

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Video

Supply chain integration
https://www.youtube.com/watch?v=S_yMW2b0kNk

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