How to Improve the Supply Chain Management Competency to Meet the Global Challenges

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Abstract :

Supply Chain Management (SCM) is today a multidisciplinary functional area and has stretched its boundaries beyond the usual traditional functions like purchasing,material control, inventory management, vendor development, and storage. With the advent of globalization, SCM is seen as an international phenomenon sans borders and thus demands more skills and knowledge to tackle the different issues that emerge from time to time. Because the subject of SCM is still evolving, the global issues have not been completely understood and different solutions are generated more on firefighting approach than on a permanent scale. In this paper an attempt is made to understand the global challenges so as to help the industries to avoid last minute traps and high risks. Different possible global challenges are listed and debated to develop an appropriate solution. It is stressed that a clear understanding of the global challenges is mandatory to succeed in today's intense competitive environment.

Key Words: *Supply, Chain, Management, Global, Competency, Challenges, CSR.*

Introduction

Supply chain management (SCM) and other similar terms, such as network sourcing, supply pipeline management, value chain management, and value stream management have become subjects of increasing interest in recent years, to academics, consultants and business management professionals, (Cohen & Mallik, 1997). It is interesting to note that there is no commonly agreed upon definition of SCM and several definitions have been put forth by researchers and practitioners. For example Saunders (1995) defines SCM as the total chain of exchange from original source of raw material, through the various firms involved in extracting and processing raw materials, manufacturing, assembling, distributing and retailing to ultimate end customers. Gattorna and Walters (1996) define SCM as the set of entities that includes suppliers, logistics services providers, manufacturers, distributors and resellers through which materials, products and information flow. Reck, Landeros, and Lyth (1992) define supply chains as network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate consumer. Supply chains exist in both service and manufacturing organizations, although the complexity of the chain may vary greatly from industry to industry and firm to firm.

Supply Chain Management (SCM) is about managing the flow of information, materials, services and money across any activity, in a way which maximizes the effectiveness of the entire process.

Growth of SCM can be attributed to many reasons as follows:

- Globalization and liberalization

- Removal of barriers in international trade and business

- Rapid developments in IT (Information Technology).

- Rising customers' demand towards new products and changes in existing products

- Significant changes in buying behavior across the globe

- Worldwide knowledge dissemination through electronic technologies

The supply chain network is a dynamic and integrated system in which all firms are integrated to increase the value of every chain. Integration is a process of redefining and connecting parts of a whole in order to form a new one. In traditional supply chain integration, the definitions of parts are usually limited by the boundary of the enterprises: the integration emphasizes connecting each enterprise with logistics and information communications, as stated by Juanqiong, Tingting, and Jingjing (2007).

The term globalization is now deeply rooted in everyday business and general talk. Wikipedia (www.wikipedia.com) defines globalization as "the process by which regional economies, societies, and cultures are integrated through a global network of communication, transportation, and trade". The term "globalization" is sometimes used to refer specifically to economic globalization: the integration of national economies into the international economy

through trade, foreign direct investment, capital flows, migration, and the spread of technology, (Bhagwati, 2004). Globalization is usually recognized as being driven by a combination of economic, technological, socio-cultural, political, and biological factors, (Sheila, 2004). The term can also refer to the transnational circulation of ideas, languages, or popular culture through acculturation. Ali, Winter, and May (2007) have given a good interpretation of globalization and its effects. According to them globalization is the interaction between economies, technologies and politics which creates an environment that reduces state regulation of the market promoting a more dominant role for large multinational corporations. Globalization is seen as a positive factor in improving the trade, commerce, and transportation industries.

To support the corporate strategies, supply chain professionals must make significant changes in how they run their global supply chain operations. The changes are occurring at a technology level (via a new wave of global supply chain automation), at a process level (with cross-functional processes and business partner collaboration), and at a staffing level (with increased attention on how to leverage business process outsourcing, managed services, and logistics service provider expertise).

Literature Review on Global Challanges of SCM and Competencies.

The main goal of the supply chain also called as the value chain is to create value to the end-customers by meeting their requirements in terms of a product and its related

services (Bowersox, Closs, & Cooper, 2002). According to Cooper, Lambert, and Pagh (1997) the integration of business operations in the supply chain should include the following eight processes: (1) customer relationship management, (2) customers' service management, (3) demand management, (4) order fulllment, (5) manufacturing ow management, (6) supplier relationship management, (7) product development and commercialization, and (8) returns management. These functions are cross disciplinary in nature and for successful supply chain management operations have to be performed diligently. In other words competencies are expected across all these dimensions.

Traditionally supply chains are categorized as responsive or efficient. As stated by Randall, Morgan, and Morton (2003) responsive supply chain is distinguished by short production lead-times, low set-up costs, and small batch sizes that allow the responsive firm to adapt quickly to market demand, but often at a higher unit cost. An efficient supply chain is distinguished by longer production lead-times, high set-up costs, and larger batch sizes that allow the efficient firm to produce at a low unit cost, but often at the expense of market responsiveness. It is natural that competencies have to be carefully developed based on the strategy the supply chain managers take while deciding the type of operations.

It can be understood that the challenges faced by the supply chain managers while operating on the global scales are in no way different from similar challenges faced by

professionals in other fields. Airline operators, educational entrepreneurs and manufacturers who went global in terms of operations and spread, faced enormous tasks of establishing themselves and subsequently becoming profitable. Supply chain professionals are already feeling the heat due to expansions, and cross border acquisitions. Substantial research work has been done to investigate and describe the impact of globalization on the world as well as individual countries and sectors. It is interesting to note that both positive and negative impacts have been narrated by the researchers thus providing a contradictory opinion about the globalization. But globalization is inevitable and cannot be rolled back. In their literature review, Meixell. and Gargeya (2005) have discussed the on-going and emerging models pertaining to global supply chain design.

It is necessary that SCM professional understand the challenges and develop suitable strategies to meet the objectives successfully. Typically supply-chain management includes determining the following:

(1) transportation service providers,

(2) credit and cash transfers,

(3) suppliers,

(4) distributors,

(5) accounts payable and receivable,

(6) warehousing and inventory,

(7) order fulfillment, and

(8) sharing customer, forecasting, and production information.

In addition in the recent times the other responsibilities include strategic outsourcing and partnering, collaboration, and supporting the vendors in terms of technology, finance, and other functional requirements. The objective is to build a chain of suppliers that focuses on maximizing value to the ultimate customer. Competition is no longer between companies; it is between supply chains, which are often global. The global challenges can be classified under different categories as given in Table 1.

Table 1 : Different categories of challenges and related issues

No.	Category	Typical Issues
1	Finance	Currency convertibility, currency fluctuations, banking facilities
2	Logistics	Depth and reach of the transport service providers, physical and legal restrictions, ability to handle volume and variety, reliability, special services like containers to specific products.
3	Trade	Legal and statutory regulations, licenses, WTO and GATT related.
4	Technology	Technology status, advancements and absorption of technology at various functional levels, effective blending of information and communication technology like e-auctions, and e-tendering.

5	Government	Diplomatic relations, barriers and tariffs, policies and practices, standards, controlling authorities
6	Operations	People management, job design, work environment, risk coverage
7	Catastrophe	Ability to deal with the uncertainties and risks involved when natural calamities occur
8	Social and cultural	Mutual trust, organizational culture, compatibility, language barriers, Networking and knowledge sharing

It is evident from Table 1 that the supply chain managers should be capable of apprehending and understanding the different issues under different categories and be capable of developing appropriate solutions. Secondly because of dynamic changes occurring regularly the solutions also need to revise frequently to these issues and quite often it is developing short term solutions only.

In the white paper published by Cisco, Schwarz (2008) has given a summary of global challenges faced by auto makers as shown in Table 2.

Table 2 : *Summary of Global Challenges in Automotive Supply Chains*

External	Customer
Legislation (environment, safety, others).	Stagnating demand and price pressure in.
Raw material and energy costs.	established markets.
Exchange and interest rates.	Segmentation and polarization (low cost vs. premium).
	Decreasing loyalty.
Capacity and growth	**Industry**
Quickly entering every segment·	Global overcapacity
Moving targets—everyone optimizing or restructuring·	Complex alliances, partnerships, mergers and acquisitions.
Global game (for example, aggressive Asian companies, new entrants)	Consolidating ecosystem (suppliers, dealer groups).

Based on these challenges, the Cisco Internet Business Solutions Group identified eight major trends affecting the automotive supply chain, classified as supply- and demand-side trends, as shown in Table 3.

Table 3 : *Trends in the supply and demand sides of global supply chains*

Demand-Side Trends	Supply-Side Trends
Uneven Growth	Differentiated Outsourcing.
Fragmentation	Low-Cost-Country Sourcing.
Accelerated Volatility	Risk Management
Importance of Aftermarket	Transparency / Accountability

In addition to SCM, on its own or in parallel, logistics plays a crucial role in successfully improving the supply chain operations. In fact logistics is said to provide the backbone for successful supply chain operations. The five key issues of logistics according to Deveshwar and Rathee (2010) are as follows:

- Movement of Product.

- Movement of Information.

- Time/Service.

- Cost.

- Integration, both internal and external, both organizations and systems.

Global supply chain management has significant "built-in" time because of the distance involved. This usually turns into cost and also leads to time extensions. Hence distance proves to be a critical factor. Secondly quick response

logistics being the order of the day, distance can affect the efficiency of the entire chain. Thus it is necessary to keep proper time estimates all across the chain.

Supply Chain Management and Corporate Social Responsibility (CSR)

Supply chain management is nowadays being discussed for its role in contributing towards CSR. The reason is quite obvious. Any manufacturer deciding to adopt environmental friendly practices cannot do so successfully without the support of suppliers. CSR has become a popular trend among the corporate like many other corporate practices in the past that include BPR (Business Process Reengineering), TQM (Total Quality Management), and ABC (Activity Based Costing). While many of the practices were inward focused that is targeted to improve the internal operations and improve the financials, CSR is an outwardly attempt to give something back to the society by the companies. While this also earned the sobriquet of corporate fad, slowly it has set its footprints firmly and reached an enviable status. Silberhorn and Warren (2007) comment that the first decade of the new millennium seems to be the one where corporate social responsibility (CSR) became a real issue unlike in the past when it was getting less importance.

What exactly is the interpretation of CSR and how well it has blossomed to expand in scope and meaning is lucidly illustrated by Silberhorn and Warren (2007). They state

that the new conversation about CSR in business suggests that it is a normative, multi-level concept, whose meaning depends on various perspectives and relationships, and, that it changes in response to social trends. Further, earlier notions of CSR often had a regional, person-centered philanthropic focus, and recent conceptions of CSR are broad and diverse and range over a wide spectrum of activities. This kind of rethinking is happening in the light of depleting resources, damage to environment, ecological imbalance, threat to human life, and more important providing a safe living environment to the people. Hence a comprehensive definition of CSR is given by European Commission (2002) which states CSR as "a concept whereby companies integrate social and environmental concerns in their business operations and in their interactions with their stakeholders on a voluntary basis".

According to Dominick (2006) the public judges a business by the companies with whom it spends its money and such judgments are usually negative in nature. The example of actress Pam Anderson along with her supporters urging to boycott the KFC food chain, claiming that KFC used suppliers that abused animals has been documented by Dominick (2006). Several years ago retailers in Netherlands refused buy carpets from India accusing that the carpet making industry used child labor.

Further Dominick (2006) comments that, while an infinite number of items can be addressed in a supplier code of

conduct, the ten most commonly addressed points are:

1. All employment must be freely chosen.

2. All employees must be of specified age.

3. All employees must work less than a specified number of hours per week.

4. The supplier must comply with wage laws.

5. All employees must receive humane treatment.

6. The supplier may not be discriminatory in its employment decisions.

7. The supplier's facility must meet safety standards.

8. The supplier must have a plan for emergencies.

9. The supplier must notify its employees of the applicable supplier code of conduct.

10. The supplier's compliance with the supplier code of conduct is subject to audit.

Considering the nature of supply chain today that spans several countries it is quite logical to presume that any globally reputed manufacturer or assembler would expect the supply chain to be lending a helping hand in meeting their CSR. It is imperative that the supply chains have to rise up to the expectations by providing proper support in terms of their own operations being clean and environmental friendly. Suppliers non-complying with these new initiatives are likely to fall out of favor.

In the wake of increased awareness and adoption of CSR, suppliers are also expected to comply with the local and

global environmental standards that lead to a safe and clean environment. Amaeshi, Osuji, & Nnodim (2008) have explored the supply chain practices across the multinational companies and suggest ways of building up pressure to influence the supply chain through code of conducts. These steps taken by the combined efforts of manufacturers and suppliers are commonly referred to as "green initiatives" and are considered to be having a significant impact on CSR, (Carter and Jennings, 2002).

In fact many of the awards instituted by professional, industrial and government bodies have made it mandatory for the companies to innovate, improve and practice green initiatives, if they have to compete for the awards (McAdam.& Leonard, 2003: ASQ Executive Brief, 2011).

Companies can explore cost savings by reducing the environmental impact of their business processes. By re-evaluating the company's supply chain, from purchasing, planning, and managing the use of materials to shipping and distributing final products, savings are often identified as a benefit of implementing green policies. Hence it is obvious that companies have to put their best efforts and ensure that their suppliers too fall inline displaying similar efforts to minimize the damages caused by their supply chains.

Towards Developing Competencies

How to improve the competency to meet the global challenges can be best understood first by looking at the competitive priorities of manufacturing and service organizations as defined by several authors and

researchers. Typically the three parameters namely quality, cost, and delivery, are used to measure the competitiveness and the ability of the organization to convert these parameters into success demands new competencies. Though they are still being debated many variants have been proposed in addition to certain new parameters particularly so in the advent of information and communication technologies.

Aberdeen group (www.aberdeen.com) is a world recognized research group that has specialized in many business related areas and has given good support to numerous organizations in improving their business operations. For example in one of their reports titled "Multi-Enterprise Collaboration: Reducing Costs and Risks in the Aerospace and Defense Supply Chain" they have explained how innovation would be necessary to stay in business. As stated in their report, the aerospace and defence (A&D) sectors have historically been behind other industries in supply chain process and software advances, due to highly conservative and security-oriented attitudes and practices. However, intense global competition and increased supply chain risks have prompted A&D companies to re-examine their supply chain to find ways to minimize inefficiencies. Hence leading A&D manufacturers have started adopting innovative approaches and technologies to managing their supply, demand and logistics networks.

In a two-parts report titled "Operational Intelligence - The Path to Best-in-Class Performance, Aberdeen have examined the impact of business analytics on a tactical level.

Based on feedback from 293 executives across the globe, part 2 describes the internal capabilities and competencies shown to contribute to the Best-in-Class operational performance discussed in part 1.

In their report in 2006, Aberdeen comments that most companies are woefully inadequate in their automation and staff support for global trade. To keep up with global trade growth and increased competitive pressures, corporations are finding they must make significant changes in how they run their global supply chain operations. One of the most commonly provided suggestion from the Aberdeen group is benchmarking against the best in class. According to Aberdeen best practice research, among the most critical areas that companies are revamping are:

1. Supply chain visibility to increase the transparency and velocity of global activities

2. Business-to-business collaboration to improve supply/demand synchronization

3. Trade compliance to ensure undisrupted movement across borders and take advantage of preferential trade agreements to lower total landed costs

4. Risk management to ensure resiliency in face of supply chain disruptions

To measure how a company stacks up, the Aberdeen research group has provided a Global Supply Chain Maturity Framework to assess a company's global supply chain maturity across seven critical dimensions, as shown in Table 4.

Table 4: *Global Supply Chain Maturity Framework*

Dimension	Laggard	Industry	Best in Class
Automation	Mostly manual and spreadsheet driven	Fragmented or departmental IT approach	End-to-end and cross-functional automation
Supply Chain Visibility	No visibility technology	Use homegrown visibility solution and logistics provider systems to monitor shipment status	Use commercial visibility solution to monitor order-line level status, inventory, and mobile assets
B2B Collaboration	Collaborate across one process across one tier of suppliers and customers	Collaborate across 2 processes across 2 supplier and customer tiers	Collaborate across 3+ processes across multiple supplier and customer tiers
Trade Compliance	Manual-intensive processes with little enterprise-wide consistency	Fragmented IT approach with separate import and export databases per country	Enterprise-wide trade compliance platform that includes preferential trade agreement optimization

Logistics Agility	Rarely perform logistics agility actions (e.g., in-transit order redirection supplier drop ship)	Sometimes perform 3+ logistics agility actions	Frequently perform 3+ logistics agility actions
Staffing	In-house s taffing	Use managed services or business process out-sourcing (BPO) solution to augment staff	Use managed services or BPO solution to augment staff, supported by visibility and collaboration technology
Risk	Concerned about supply chain resiliency but taking no action.	Assessing supply chain resiliency to risk-related events	Managing supply chain resiliency to risk-related events

Based on their survey report Aberdeen group has also suggested actions for three types of companies namely laggards, industry-average companies and best-in-class companies.

It is equally important to measure the supply chain performance. Kim (2006) provides a summary of a variety of measures that have been developed by various

researchers during the last several years and categorizes them as measures to judge (a) supply chain operational capability, (b) competitive capability, and (c) firm performance

Some of the suggestions by Deveshwar and Rathee (2010) to improve the effectiveness of SCM are as follows:

- collaboration and co-operation within the company organization and between and among trading partners

- removing waste across the entire supply chain

- accelerating cycle time, increasing inventory velocity and

- reducing costs for the high-volume and high-margin products

- adopting lean principles for every operation

- value stream mapping for understanding the present supply chain and designing a new one.

In addition it is now a trend to use:

- Cross docking system instead of warehousing at various transit points

- Using technology to the fullest extent like RFID (Radio Frequency Identification tag) to identify and accurately check the contents for quality and quantity

- Minimum inventory and adopting JIT (Just In Time) techniques

Nissan Motors of Japan adopted the following strategies to overcome the international challenges when they decided to go global: (http://www.nissan-global.com)

- Minimum inventory

- Further improvement in quality

- Effective information sharing

- Efficient logistics in total

- Friendly competition between plants

- Efficient global production

- Flexibility

- Minimum investment

- Optimum utilization ratio

- Easy to produce anywhere

While analyzing the auto industries in Brazil and India, Humphrey et. al. (1998) comment that the development of global supplier networks is increasing the centralization of design activities in the core operations of the leading component producers while decentralizing production activities around the world. These developments are having a significant impact on the distribution between countries and companies of the various activities involved in the production and consumption of automobiles (design, components, assembly, finance, and marketing). Thirdly, liberalization policies have greatly freed up the flow of capital and products into and out of developing countries.

The IBM Institute for Business Value (http://www-935.ibm.com /services/ us/gbs /consulting/) has developed fact-based strategic insights for senior executives to

provide analysis and viewpoints that help companies realize business value. They recommend that

- Make major efforts to better link forecasts to material requests in order to control costs and improve customer satisfaction and loyalty

- Integrate functions across SCM to improve performance, reduce organizational complexity, and reinforce consistent organizational cultures

- Use portal technology to integrate processes internally, as well as to collaborate with and monitor suppliers

- Rationalize their supply bases to allow for better integration of their suppliers into product development and improved cost reduction opportunities

- Improve the supply chains by combining organizational changes with technical tools.

Conclusion

SCM professionals are expected to meet the global challenges by a mix of strategies to successfully carry out the operations across the globe. The traditional categories of supply chain may well provide an initial hint as what strategies the supply chain managers have to take and late based on the sector and domain configurations and challenges the required competencies need to be developed. This paper describes the challenges and also suggests how such challenges can be encountered by using the recommendations of well known experts who have been at the forefront of globalization. The Indian

manufacturers and all those related to SCM business can pick up from these recommendations to improve their supply chain management function so as to become efficient and competitive.

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