

Supply Chain Competitiveness: A Review of Select Enablers

Ajay Verma, Nitin Seth

Abstract—In present days market environment, supply chains has to be competitive enough to handle pressures like varying customer's expectations, low cost high quality products to be delivered at the minimum time and the most important is throat cutting competition at world wide scale. Recently, supply chain competitiveness has been, therefore, accepted as one of the most important philosophies in the supply chain literature. Various researchers and practitioners have tried to identify and implement enablers in supply chains which can bring competitiveness in the supply chains i.e. supply chain competitiveness. The purpose of this paper is to suggest select enablers for supply chain competitiveness in the Indian manufacturing sector using an integrated approach of literature review and exploratory interviews with eminent professionals from the supply chain area in various industries, academia and research. The aim of the paper is to highlight the important enablers in the area of supply chain competitiveness and suggest recommendations to the industry and managers of manufacturing supply chains with a view to encourage more efforts in this wider domain area.

Keywords—Supply Chain Competitiveness, Supply Chain Collaboration, Coordination, Quality Management, Cost.

I. INTRODUCTION

IN this complex and competitive environment, manufacturing organizations are evolving from traditional rigid structures to responsive and customer oriented business models and inter-organizational forms. Manufacturing organizations have to consider the concept of competitiveness to survive in the global marketplace by fulfilling requirements of the customers for high quality and low cost products [1]. Present-day market environment is characterized by product innovations, decreasing product lifecycles, assorted customer's tastes, rapid developments in technology, globalization of business, and turbulence and volatility in world affairs [2]. These forces make the survival of Indian manufacturing industries more difficult than ever. At the same time, manufacturing industries are among the most important sectors contributing highest to the GDP growth of India and hence a necessary part of economic growth for India.

Supply Chain Competitiveness (SCC) has been emerged as an approach where the cost, quality and delivery requirements of the manufacturing organizations are the objectives shared by every stakeholder in the chain. In recent years, several

Ajay Verma is with the National Institute of Technology, Bhopal (M.P.), India (corresponding autho: Phone 07554051633, Fax 07554051000.; email-avmanit@gmail.com).

Dr. Nitin Seth is with Indian Institute of Foreign Trade, New Delhi, India. (e-mail: nitinseth@iift.ac.in).

changes in the market place, such as increasing diversity and competition, have stimulated theory and practices in supply chain competitiveness [3].

The Indian manufacturing sector is the mainstay of entire Indian industry as manufacturing output constitutes over 75 per cent of the index of industrial production. Indian manufacturers have adopted a global mind-set while carefully selecting their product segments. They are continuously working to achieve cost excellence and marketing capability which has even attracted foreign players to proactively develop India as their sourcing and manufacturing hub [4]. Fig. 1 shows sectorwise GDP growth rate of India from 2010 to 2012.

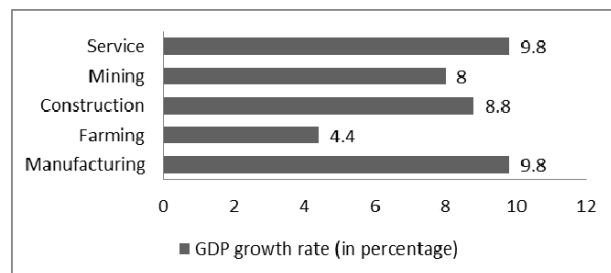


Fig. 1 Sector wise GDP growth rate of India from 2010-12 [4]

Manufacturing is an important sector of Indian economy that needs more focus on competitiveness especially in supply chains. Manufacturing Industries in India are attempting to move from the era of efficiency in the manufacturing processes to that of effectiveness in providing customized products to the consumers. These firms are realizing the global competition and rapid changes in the demands of the ultimate customers [2]-[5]. So, to provide products of customer's choice is becoming more and more difficult due to technology changes, rapid change in requirements, globalization and many such forces [6]. A simple manufacturing supply chain comprises of three components, i.e., the supplier, the focal organization and the distributor as shown in Fig. 2 [7].



Fig. 2 A simple manufacturing supply chain [7]

Manufacturing firms mainly operate in a dynamic supply

chain consisting of a network of companies with interdependent entities. These business entities may have manufacturing plants or facilities which span beyond the national boundaries encompassing several countries around the globe.

II. THE COMPETITIVENESS ISSUE AND SUPPLY CHAIN COMPETITIVENESS

Competitiveness can be defined as the ability of firm to design, produce and or market products superior to those offered by competitors, considering the price and non-price qualities [8], [9]. The word competitiveness is originated from the Latin word, *competere*, which means involvement in a business rivalry for markets. It has become common to describe economic strength of an entity with respect to its competitors in the global market economy in which goods, services, people, skills, and ideas move freely across geographical borders [10].

Supply Chain Competitiveness (SCC) refers, in general way, to gain competitive advantages by one supply chain on the other [1]-[11]. Supply chain competitiveness comprised of competitiveness of the elements of supply chain viz. supplier's competitiveness, manufacturer's competitiveness and distributor's competitiveness as shown in Fig. 3 [12].

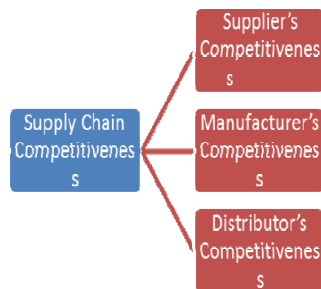


Fig. 3 Components of supply chain competitiveness [12]

Supply Chain Competitiveness has been described as a multidimensional and relative concept. The significance of different criteria of competitiveness changes with time and context. Theories and frameworks must be flexible enough to integrate the change with key strategic management processes if their utility is sustained in practice. Thus, organizations need to manage their resources and processes more efficiently than their competitors [13]. In the subsequent sections, various important enablers for supply chain competitiveness are identified and described.

III. SELECT ENABLERS OF SUPPLY CHAIN COMPETITIVENESS

Based on the literature review and consultation with eminent practitioners, academicians and researchers, various enablers have been identified. But the most important select enablers are shown in the Table I.

TABLE I
SELECT IMPORTANT ENABLERS TO ACHIEVE SUPPLY CHAIN COMPETITIVENESS

S.No.	Enabler	Reference
1	Coordination	[14]-[16]
2	Supply Chain Collaboration	[1], [17]-[19]
3	Cost Efficiency	[20], [1]
4	Quality Management	[2], [21], [22]
5	Supply Chain Flow Cycles Efficiencies	[23], [1], [13]

These enablers are further described in the following section.

A. Coordination

Coordination, from the Latin *co*, meaning “together”, and *ordino*, meaning “order” refers to working together across functions of departments. Hence coordination takes place between the functions within a firm, in which tight control is involved under the same leadership [1]. The most important enablers to achieve coordination are Management Control [14], [15] and Standardization [16].

B. Supply Chain Collaboration

Lorentz define supply chain collaboration as “Two or more chain members working together to create a competitive advantage through sharing of information, making joint decisions, and sharing benefits which result from greater profitability of satisfying end customer needs than acting alone” [17], [18]. Supply chain synergy can be achieved by exploitation of the resources and collaborative efforts [19], [20]. Collaboration reduces inventory as well as personnel. It improves customer service and focuses on core competencies. It can be achieved by sharing of resources, information, risk and profit [1].

C. Cost Efficiency

Cost refers to the total cost of delivering satisfaction to the customers. It includes not only the cost of design to manufacture but also other costs such as service costs, logistics costs, information costs etc. [20]. The cost efficiency concentrates on the key activities of the supply chain with a focus of reducing various components of cost so as to minimize the total cost of the product/service and thus results in better services and quality products to the customers [1].

D. Quality Management

Quality is the conformance with the predefined objectives. Quality of the product depends on many aspects such as functions performed by the product, price of the product, use of TQM and Six Sigma concepts in the design and manufacture of the product and quality of raw material from the supplier [2]. If quality of the product is high, more is the trust, satisfaction and demand fulfillment in terms of customer's expectations and supply chain competitiveness will be more [21], [22].

E. Supply Chain Flow Cycles Efficiencies

There are many flows in supply chain such as product flow

from suppliers to final customers, services flow to the customers, information flow among the chain elements, flow of financial resources, fund flow, and many more [1]. Companies can achieve competitive advantages through understanding various supply chain flows and bottlenecks of these flows in their supply chain [23].

Considering the importance of these enablers, a conceptual model of supply chain competitiveness has been thought of and represented in Fig. 4.

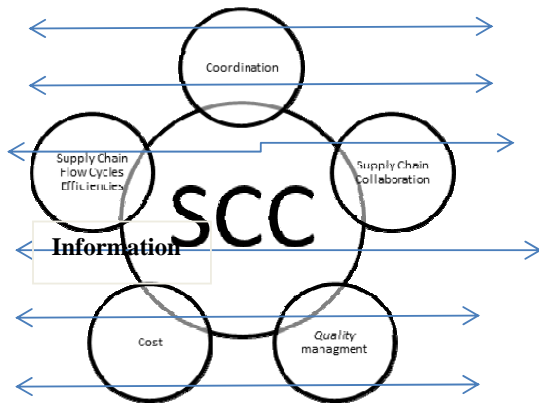


Fig. 4 SCC model based on the enablers

The model highlights the importance of the enablers to achieve SCC. From the Fig. 3, it is clear that supply chain competitiveness can be achieved only when these enablers are performed in an integrated way of information flows in both the directions i.e. forward and backward. All these enablers are impacting the supply chain performance as well as SCC if given due considerations.

IV. CONCLUSION

Supply chain competitiveness has been emerged as one of the most important philosophies in the recent supply chain literature as now a days companies are not competing with each other but supply chains are competing with one another. In this paper, select enablers to achieve supply chain competitiveness have been comprehensively identifies using an integrated approach of literature review and exploratory interviews with experts in the subject area from industries and academia. Further, a supply chain competitiveness model based on these enablers has also been discussed. This model can be empirically tested using any adequate method such as Interpretive Structural Modeling or Structural Equation Model. The model also provides insights to the managers of supply chain in respect of that more attention should be focused on more important enablers. The paper has threefold objectives i.e. identification of the select enablers of supply chain competitiveness, a comprehensive description of these enablers and modeling these enablers to better understand the rarely explored area of supply chain competitiveness.

REFERENCES

- [1] J.T. Mentzer, *Supply Chain Management*, Response Books, New Delhi. 2008, ch. 2, 3.
- [2] A. Rajagopal, "Impact of Quality Programs on Supply Chain Performance", *Global Management Review*, vol.4, No. 3. 2010, pp. 1-14.
- [3] K.H. Shang, S.X. Zhou and G.V. Houtum, "Improving Supply Chain Performance: Real-Time Demand Information and Flexible Deliveries", *Manufacturing and Service Operations Management*, Vol. 12, No. 3. 2010, pp. 430-448.
- [4] FICCI Quarterly survey on Indian Manufacturing Sector, 2012
- [5] B.S. Sahay, J.N.D. Gupta and R. Mohan, "Managing Supply Chains for Competitiveness: The Indian Scenario", *Supply Chain Management: An International Journal*, Vol. 11 No. 1, pp. 15-24.
- [6] R.P. Mohanty and S.G. Deshmukh, *Supply Chain Management: Theories and Practices*, Biztantra Publication, Delhi. 2012, ch. 8.
- [7] A. Verma and N. Seth, "A Conceptual Framework of Supply Chain Competitiveness", *International Journal of Human and Social Sciences*, Vol. 6, No. 1, 2011, pp. 5-10.
- [8] R.W. Pace and F.G. Stephan, "Paradigms of Competitiveness", *Competitiveness Review*, Vol. 6 No. 1, 1996, pp. 8-13.
- [9] B. Bravo, K. Kortez, M. Aguilar, S. Granados, and J. Amaya-Leal, "Competitiveness in the Supply Chain Management: An Overview in an Oils and Greases Manufacturer", *Ingeniería and Desarrollo. Universidad del Norte*. Vol. 22, 2007, pp. 38-53.
- [10] T.P. Murths, "Country Capabilities and the Strategic State: How National Political Institutions Affect MNC Strategies", *Strategic Management Journal*, Vol. 15, 1998, pp 113-129.
- [11] D.M. Lambert and M.C. Cooper, "Issues in Supply Chain Management", *Industrial Marketing Management*, Vol. 29, 2000, pp. 45-56.
- [12] A. Verma and N. Seth. "Achieving Supply Chain Competitiveness: Some Critical Issues". *International Journal of Science Engineering and Technology*, Vol. 2 No. 11, 2010, pp. 6209-6213.
- [13] M. Christopher, *Logistics and Supply Chain Management-Strategies for Reducing Cost and Improving Services*, Second Edition, Pearson Education Ltd., New Delhi, 2012, ch. 1-6.
- [14] G.P. Cachon and M.A. Lariviere, "Supply Chain Coordination with Revenue Sharing Contracts: Strengths and Limitations", *Management Science*, Vol. 51, No. 1. 2005, pp. 30-44.
- [15] A. Kaur, A. Kanda and S.G. Deshmukh, "Supply Chain Coordination: Perspectives, Empirical Studies and Research Directions", *International Journal of Production Economics*, Vol. 115, No. 2, 2008, pp. 316-335.
- [16] H. M. Wee and W. T. Wang, "Supply Chain Coordination for Short-Life-Cycle Products with Option Contract and Partial Backorders", *European Journal of Industrial Engineering*, Vol. 7, No. 1, 2013, pp. 78-99.
- [17] H. Lorentz, "Collaboration in Finnish-Russian Supply Chains Effects on Performance and the Role of Experience", *Baltic Journal of Management*, Vol. 3, No. 3, 2008, pp. 246-265.
- [18] R. Anbanandam, D.K. Banwet and R. Shankar, "Evaluation of Supply Chain Collaboration: A Case of Apparel Retail Industry in India", *International Journal of Productivity and Performance Management*, Vol. 60, No. 2, 2011, pp. 82-98.
- [19] M. Barratt, "Understanding the Meaning of Collaboration in the Supply Chain", *Supply Chain Manage: An International Journal*, Vol. 9, No. 1, 2004, pp. 30-42.
- [20] N. Lehoux,, S. D'Amours and A. Langevin, "Win-Win Collaboration Approach for a Two-Echelon Supply Chain: A Case Study in the Pulp and Paper Industry", *European Journal of Industrial Engineering*, Vol. 4, No. 4, 2010, pp. 493-514.
- [21] K.N.S. Iyer, "Demand Chain Collaboration and Operational Performance: Role of IT Analytic Capability and Environmental Uncertainty", *Journal of Business & Industrial Marketing*, Vol. 26, No. 2, 2011, pp. 81-91.
- [22] S. Min and J.T. Mentzer, "The Role of Marketing in Supply Chain Management", *International Journal of Physical Distribution and Logistics Management*, Vol. 30, No. 9-10, 2000, pp. 765-787.
- [23] A. Verma, N. Seth and N. Singhal, ""Enablers of Supply Chain Competitiveness: An ISM Based Approach", *International Journal of value chain management (Inderscience Publishers)*. Vol. 5, No. 3/4, 2011, pp. 212-231.



Ajay Verma is an Assistant Professor in the Department of Mechanical Engineering in Maulana Azad National Institute of Technology NIT Bhopal, Bhopal (M.P.), India. He has first class degree in B.E. and honors in M.E. He is pursuing his Ph.D. in the area of supply chain management from Institute of Engineering and Technology, Devi Ahilya University, Indore (M.P.), India. He has guided many M.Tech. thesis and published more than twelve research papers in national/international journals/conferences to his credit. He has more than eleven years of teaching experience and his specialization includes supply chain management and operations management along with manufacturing technology.



Dr. Nitin Seth is an Associate Professor in Indian Institute of Foreign Trade, New Delhi, India.. He has doctoral degree (PhD) in the area of supply chain management from Indian Institute of Technology Delhi (IIT Delhi) and Post-Doctoral Experience (+6 Months), at GIZ/DIE Germany and Ecole Des Mines, Saint Etienne France (Programme Sponsored by Federal Ministry of Economic Cooperation and Development, Germany). He has many research papers and articles to his credit. He is actively involved in the research on supply chain, total quality management, service quality and other related areas. He has about 17 years of experience in teaching and consultancy which includes three years of industry experience at middle level. He has delivered invited talks on several issues spanning SCM, operations management etc at National and International level,