Critical Success Factors for the Implementation of Supply Chain Management in SMEs

G. Hariharan, P. Suresh, C. Sagunthala

Abstract--- The aim of this study is to find the critical success factors (CSFs) for the successful implementation of supply chain management in auto-components-manufacturing units Small Medium Enterprises--(SMEs), in Coimbatore district. The research method used was descriptive analysis, and the primary data were by structured questionnaires collected from 60 respondents of SMEs. The data were analyzed using mean, standard deviation, rank and Cronbach's Alpha. The findings show that ten CSFs namely, involvement of top management, collaboration with supply chain partners, information sharing, use of sophisticated technologies, less rigid production system, improvement in competitive priorities, long term goals, product differentiation, innovation as well as inventory Management, are identified for a successful execution of SCM in SMEs. The result also shows that SMEs should focus more on product differentiation, innovation and inventory management.

Keywords: Supply Chain Management, SMEs, Auto components manufacturing companies

I. INTRODUCTION

Of late, the role of supply chain has become vital in large, medium and small-scale industries. The supply chain is a key driver for attaining the maximum operating efficiency, flexibility and agility, and therefore it is important to sustain business. On other hand, revolution of technology like Artificial intelligence, block technology, big data analysis and Industry 4.0 will play a vital role in providing a competitive advantage among the industries. Irrespective of the size of the companies, one of the paramount goals of supply chain is to optimize the operational efficiency of delivering the right products at the right time to the right customers at minimum cost. Recently, the topic of supply chain management has been paid a significant attention among the academicians and industrialists.

In the early 1990s there was little competition among Indian industries. Indian companies were operated in a monopolistic condition. However, after liberalization many foreign firms entered the Indian industrial sector and created a competitive spirit among the Indian industries (Saxena*et al*., 2000).Small Medium Enterprises (SMEs) form a cluster for manufacturing a variety of products and offering adequate technical support services to Large Enterprises (LEs) (Hariharan Ganeshan (2013).

Manuscript received February 01, 2019

G. Hariharan, Assistant Professor, Department of Management, Karpagam Academy of Higher Education.Research Scholar, Bharathiar University, Coimbatore. Tamil Nadu, India.(e-mail: hari.hvbs@gmail.com)

Dr.P. Suresh, Professor & COE, Muthayyaml Engineering College, Rasipuram, Tamil Nadu, India. (e-mail: drsureshcoe@gmail.com)

Dr.C. Sagunthala, Assistant Professor, Department of Management, Karpagam Academy of Higher Education, Coimbatore, Tamil Nadu, India.(e-mail: sagu.swamy@gmail.com)

II. LITERATURE REVIEW

Supply chain Management can be defined as managing the entire chain i.e., providing an interconnection between product, process and members. It begins from supplier, manufacturer, wholesaler, retailer and ends with the customer. This chain process is not only for the movement of inventory from one origin to another origin, but also the movement of money as well as information in both directions. Gunasekaran, (1997) states that Supply chain management is a key strategic factor for advancing organizational effectiveness and achieve corporate objectives. There are five major activities in supply chain management: (i) Planning (ii) sourcing (iii) Manufacturing (iv) Delivering and (v) Returning (Huan, *et al*., 2004). In each of the activities, different types of risks exist and influence the entire supply chain.

Numerous research papers have attempted to identify the key success factors of SCM which are Enterprise Resource Planning (ERP) systems and Electronic Data Interchange (EDI). Bauer (2000) mentions that there are four success factors in the automotive industry which are social and business cultures, technology infrastructure, physical facilities of suppliers and internal hierarchy structure. Power *et al*. (2001) have examined seven critical factors that influence the agility of organizations in managing their supply chains. But, SMEs fail to practice the SCM in full, because they rely on a large number of internal and external customers (Singh et al. 2008). Wagner et al. (2003) is of the view that large scale companies can easily implement e-business and EDI systems compared to SMEs. On other hand, SMEs continue to face challenges for practicing EDI system due to financial constraints.

SMEs' management is simple. It is governed by one or a few people. Resources like men, machines, materials and money are easily controlled by a higher authority. Their support is very crucial for diversity training, collaboration with suppliers and customers for quick responsive supply chain (Ganesan et al. (2005). The major accountability of the higher authorities is to give adequate monetary support and development of resources for creating an affluent working system. Thus, a psychological support is crucial for the successful execution of SCM.

Stanley et al. (2009) mention that easy flow of information within supply chain is possible by an effective utilization of technology infrastructure such as usage of software packages, internet and decision support system.

Bianchi et al. (2010) stated that commitment is vital for developing importer performance in developing countries. Hariharan et al. (2017) suggest that trust among the supply chain members is the most important aspect of improving the supply chain performance. Kumar et al. (2012) is of the opinion that SMEs may be developed with the focus on product differentiation strategies, product customization strategies, Just in Time approach, TPM, quality improvement in continuous basis, 5s, and implication of technology to lessen lead time in a range of processes. Upgraded technology like Supplier relationship management, CRM and E-commerce combats existing challenges in Indian SMEs (Symbiosis Centre for Management, 2013). More &Basu (2013) think that Information Technology will reduce the poor visibility in the movement of goods in supply chain. A few studies view Information Technology as CSFs in supply chain management in logistics aspects (Gunasekaran et al. 2003), Green SCM (Kim et al. 2012), electronic SCM (Ngai et al. 2004; Gunasekaran et al. 2004), supply chain performance (Thoo et al. 2011), supply chain quality management (Kuei et al., 2008; Lin et al., 2013), supply chain risk management and risk mitigation strategies (Hariharan et al. (2018), supply chain strategy development in SMEs (Hariharan et al., 2016) and Green Supply chain Management practices among SMEs (Hariharan et al. 2015). The table below shows the number of critical success factors identified among the industries.

Table 1: Number of CSFs across the Industries

S.No	Authors	Year	No. of CSFs	Industry
1	Dinter	2012	09	Germany Multi Industry
2	Kim et. al.,	2012	05	Korea Multi Industry
3	Mothilalet al. ,	2012	06	India 3PL Industry
4	Wittstruck et.al,	2012	08	Germany Electrical and electronics Industry
5	Hwang et.al,	2013	15	Taiwan Semiconductor manufacturing Industry
6	Luthra et.al	2014b	26	India Automobile Industry
7	Kumar et al.	2014	25	India Green product Industry

Based on a comprehensive literature review the authors have identified 10 critical success factors among Indian SMEs of auto-components-manufacturing companies:(1) Involvement of top management (2) Collaboration with supply chain partners (3) Information sharing (4) Use of sophistication technologies (5) flexibility in production system (6) focus on competitive priorities (7) Long term vision (8) Product differentiation (9) Innovation and (10) Financial support.

III. STATEMENT OF THE PROBLEM

To face competition in the global market, SMEs should maintain a strong relationship with suppliers and customers which will give a competitive edge over cost, price, quality, reliability, delivery speed and accuracy. In this scenario, Indian SMEs have been facing a lot of challenges for decades like supplier bankruptcy, poor quality of raw materials, cost reduction, lack of technology up gradation, imbalance of supply and demand and so on. On other hand, to overcome these issues they can consider Supply Chain Management (SCM) as a strategic weapon to improve their performance in the competitive market (Hariharan et al. 2016). SMEs should implement their Supply chain activities in an efficient manner in order to survive in the market. So, an attempt has been made to identify the key CSFs for a successful implementation of SCM in SMEs.

IV. RESEARCH OBJECTIVE

1. To find the key factors for successful implantation of SCM in Small Medium Enterprises (SMEs) in Coimbatore District

V. RESEARCH METHODOLOGY

This paper aims at studying the key critical factors relating to the supply chain management in Small Medium Enterprises (SMEs) of auto component units in Coimbatore district. One hundred and thirty-two auto component units are functioning in Coimbatore district. By adopting simple random sampling, 60 SMEs units have been considered for the study. The collected data have been analyzed by employing mean, standard deviation, rank and Cronbach's Alpha by SPSS 24.0

VI. FINDINGS AND RESULTS

The following table enlists the result of the study.

Table 2: Critical Success Factors for Successful Implementation of SCM for SMEs

S.N	Key CSFs	Mean	Standard Deviation	Rank	Cronbach's Alpha (α)
1	Involvement of top management	4.843	0.923	1	0.843
2	Collaboration with supply chain partners	4.654	0.738	2	
3	Information sharing	4.563	0.825	3	
4	Use of sophistication technologies	4.329	0.653	4	
5	Flexibility in production system	4.215	0.710	5	
6	Focus on competitive priorities	4.003	0.530	6	
7	Long term vision	3.871	0.637	7	
8	Product differentiation	3.690	0.710	8	
9	Innovation	3.518	0.829	9	
10	Inventory Management	3.247	0.562	10	

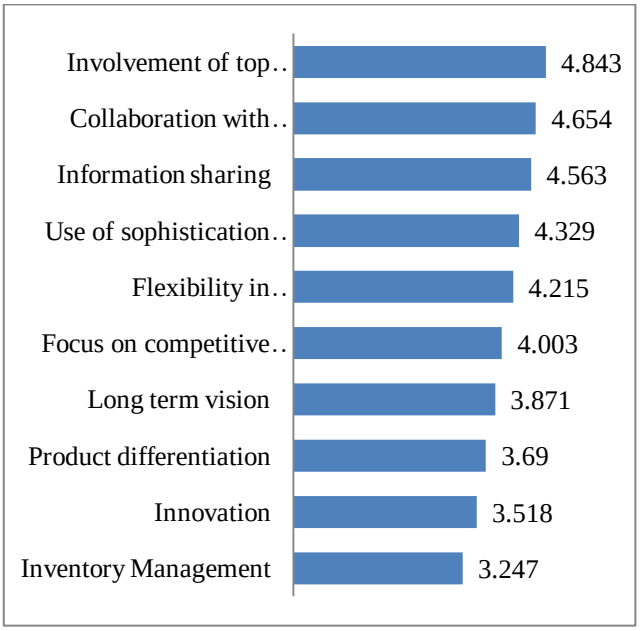

Chart No: 01 CSFs for Successful execution of SCM for SMEs of Auto Component Manufacturing Companies

Based on a comprehensive survey of literatures, the authors have found ten CSFs for successful implementation of SCM for auto component manufacturing companies. According to the statistical analysis, the involvement of the top management of SMEs has obtained the highest mean value of 4.843. It reveals that SMEs' top management is governed by one or a few people. Resources like men, machines, materials and money are easily controlled by the top management. Ganesan et al. (2005) state that the top management's commitment and involvement are very crucial for diversity training, collaboration with suppliers and customers for a quick and responsive supply chain. The Second major CSFs is collaboration with supply chain partners (4.654). Kumar et al. (2015) indicate that SMEs have to give the highest importance to networking with suppliers and customers (3.6853). The third major CSFsare sharing information with supply chain partners (4.563). Hariharan et. Al (2017) notes that trust among the supply chain members is the most important aspect for improving the supply chain performance. The fourth CSF for a successful implementation of SCM in SMEs is the use of advanced technology (4.329). IT has got a huge attention in the implementation of SCM. Upgraded technology like Supplier Relationship Management, CRM and E-commerce combat existing challenges in Indian SMEs. The fifth CSF is flexibility in the production system (4.215). SMEs' production system can be modified based on supply and demand. SMEs focus on short term production planning system. The sixth CSF is that SMEs should focus on their competitive priorities (4.003). The competitive priorities are quality, optimum production cost, timely delivery and flexibility. The seventh CSF is long term vision (3.871), followed by product differentiation (3.690), innovation (3.518) and, lastly, inventory management (3.247).

VII. SCOPE FOR FURTHER RESEARCH

The study was limited to auto components units in Coimbatore district, and so the sample was restricted. Further, future research will be carried out by defining the relationship between the CSFs and supply chain performance of SMEs.

VIII. SUGGESTIONS

a) SMEs of auto component manufacturing companies may select reliable and trustworthy suppliers for procuring quality materials and make long term strategic partnership with them.
b) SMEs may approach financial institutions for obtaining fund for plant development.
c) SMEs owners may update their technical knowledge by attending conferences and workshop.
d) SMEs may closely work with both Central and State government.

IX. CONCLUSION

This study was to identify the CSFs for the execution of Supply Chain Management in SMEs of auto component manufacturing companies. Ten critical successful factors are identified in SMEs while practicing SCM. The CSFs are involvement of top management, collaboration with supply chain partners, information sharing, use of sophistication technologies, less rigidity in production system, competitive priorities, long term goals, product differentiation and innovation as well as inventory Management. The result shows that SMEs should focus more on product differentiation from their competitors, innovation and better inventory management techniques to handle their operations effectively.

REFERENCES

1. Bauer, M. J. (2000). The Effect of the Internet on supply chain &logistics.*World Trade*, 13, 71-78.
2. Bianchi, C., and Saleh, A. (2010). On importer trust and commitment: a comparative study of two developing countries. *International Marketing Review*, 27(1), 55-86.
3. Dinter, B. (2013). Success factors for information logistics strategy an empirical investigation. *Decision Support Systems*. 54 (3)1207-1218.
4. Ganesan, K., and Saumen, B. (2005). Corporate turnaround through effective supply chain management: the case of a leading Jewellery manufacturer in India. *Supply Chain Management: An International Journal*, 10(5), 340-348
5. Gunasekaran, A (1997). Performance Measure and Metrics in A Supply Chain Environment. *International Journal Operation and Production Management*, 28, (4):71-81.
6. Gunasekaran, A.,and Ngai, E. W. T. (2003). The successful management of a small logistics company. *International Journal of Physical Distribution & Logistics Management*.33(9),825-42.
7. Gunasekaran, A. and Ngai, E. W. (2004). Virtual supply chain management. *Production Planning & Control*.15 (6)584-595.
8. Hariharan Ganeshan and Dr P Suresh. (2016). Strategy Development by SMEs' While Practicing Supply Chain With Respect To South Indian Textile Sectors. *International Journal of Management Research &*

Review, 6(6):861-870. ISSN:2249-7196.
9. Hariharan Ganeshan, and Dr P Suresh. (2017). An Empirical Analysis on Supply Chain Problems, Strategy, and Performance with Reference to SMEs. *Prabandhan: Indian Journal of Management*. 10 (11), 19-30
10. Hariharan Ganeshan, S. Nagarajan and Dr P Suresh. (2018). Supply Chain Risk Mitigation Strategies and Its Performance of SMEs. *International Journal of Pure and Applied Mathematics*. 119 (15), 741-749.
11. Huan, S., Sheoran, S dan and Wang, G., 2004. A Review and Analysis of Supply Chain Operations Reference (SCOR) Model. *Supply Chain Management: an International Journal*, 9, (1): 23-29
12. Hwang, B. N. and Lu, T. P. (2013). Key success factor analysis for e-SCM project implementation and a case study in semiconductor manufacturers. International Journal of Physical Distribution & Logistics Management. 43 (8)657-683.
13. Kim, J. and Rhee, J. (2012). An empirical study on the impact of critical success factors on the balanced scorecard performance in Korean green supply chain management enterprises. *International Journal of Production Research*. 50 ,(9). 2465-83.
14. Kuei, C. H., Madu, C. N. and Lin, C. (2008). Implementing supply chain quality management. *Total Quality Management*.19 (11)1127-1141.
15. Kumar S.R. &Pugazhendhi S. (2012). Information Sharing in Supply Chains: An Overview. *Procedia Engineering*. Vol.38, 2147–2154.
16. Kumar, S., Luthra, S., and Haleem, A. (2014). Critical success factors of customer involvement in greening the supply chain: an empirical study. International Journal of Logistics System and Management. 19(3)283-310.
17. Kumar R., Singh R K. & Shankar R. (2015). Critical success factors for implementation of supply chain management in Indian small and medium enterprises and their impact on performance. *IIMB Management Review*.
18. Lin, C., Kuei, C. H. and Chai, K. W. (2013).Identifying critical enablers and pathways to high performance supply chain quality management. *International Journal of Operations & Production Management*.33 (3)347-370.
19. Luthra, S., Garg, D., and Haleem, A. (2014b)Critical success factors of green supply chain management for achieving sustainability in Indian automobile industry. *Production Planning & Control*.
20. Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D. and Zacharia, Z. G. (2001). Defining supply chain management. *Journal of Business Logistics*,22 (2) pp. 1-25.
21. More D. &Basu P. (2013). Challenges of supply chain finance: A detailed study and a hierarchical model based on the experiences of an Indian firm. *Business Process Management Journal, Vol. 19,* No. 4, 624-647.
22. Mothilal, S., Gunasekaran, A., Nachiappan, S. P. and Jayaram, J. (2012). Key success factors and their performance implications in the Indian third party logistics (3PL) industry. *International Journal of Production Research*.50(9)2407-2422.
23. Ngai, E. W. T., Cheng, T. C. E. and Ho, S. S. M. (2004). Critical success factors of web based supply chain management systems: an exploratory study. *Production Planning &Contro*. 15(6),622-630.
24. Power, D. J., Sohal, A. S., and Rahman, S. U. (2001). Critical success factors in agile supply chain management. *International Journal of Physical Distribution & Logistics Management*, 31, 247-265.
25. Saxena, K. B. C., & Sahay, B. S. (2000). Managing IT for world class manufacturing: The Indian scenario. *International Journal of Information Management*, 20, 29-57.
26. Singh, R. K., Garg, S. K., and Deshmukh, S. G. (2008a). Challenges and strategies for competitiveness of SMEs: a case study. *International Journal for Services and Operations Management*, 4(2), 181-200.
27. Stanley, E. F., Cynthia, W., Chad, A., and Gregory, M. (2009). Supply chain information-sharing: benchmarking a proven path. *Benchmarking: An International Journal*, 16(2), 222-246.
28. Symbiosis Centre for Management. (2013). India Retail Supply Chain Study. *Retailers Association of India*.
29. Thoo, A. C., Huam, H. T., Rosman, M. Y., Rasli, A. M. and Hamid, A. B. A. (2011). Supply chain management: success factors from the Malaysian manufacturer's perspective. *African Journal of Business Management*.5 (17)7240-7247.
30. Wagner, B. A., Fillis, I., and Johansson, U. (2003). E-business and e-supply in small and medium sized businesses. *Supply Chain Management: An International Journal*, 8(4), 343-354.
31. Wittstruck, D., andTeuteberg, F. (2012). Understanding the success factors of sustainable supply chain management: Empirical evidence from the electrics and electronics Industry.*Corporate Social Responsibility and Environmental Management*. 19(3)141-158