CHAPTER – VI
CONCLUSION AND SUGGESTIONS

In today’s highly competitive and global economy there is ample evidence that customers are demanding lower prices, better quality, more variety and faster delivery (Zhang et al., 2003). In order to compete in this environment, it is believed that firms must become more flexible, agile and responsive to the demands of their customers. It is also believed that competition in this global economy will not be company versus company but will be supply chain versus supply chain (Chandrashekar, 1999; Christopher & Towill, 2001). As the concept of SCM gains popularity and prominence, its focus and objective have broaden from mere production, inventory and logistics to a more strategic pursuit of SCM practices such as, supply chain integration, flexibility, agility and leanness (Lee, 2004).

Although many theories from the strategy field have relevance to the SCM research, such these concepts are extremely significant in the fast-paced and knowledge intensive of business environment, where ‘self sufficiency’ is often not a viable option for competitive advantage and firms need to rely on partners for specialized resources, capabilities and techniques. Hence, firms must not only being integrated internally but of course with their key customers and suppliers into supply chains and these integrated of supply chains must also be responsive (i.e. flexible, lean, agile) to the wants and needs of the customer. The notion of supply chain management practices has implications for both practitioners and academics. It is important for an understanding as to how organizational integration (internal, supplier and customer integration) and operational characteristics of an organization (flexibility, agility, leanness) effect on supply chain performance and creating competitive advantages with respect to the potential barriers that a supply chain management might be faced.

The present study aimed to investigate the SCM practices in the selected firms in India. It focuses on supply chain orientation, supply chain integration (internal, supplier, and customer integration) and operational characteristics of supply chain management (flexible, agile and lean supply chain). It also planned to identify the main barriers and obtained benefits of implemented supply chain management in the selected cases. This chapter provides a summary of conclusion of the research, firstly, by reviewing the statement of the research issue followed by research objectives and the methodology adapted to achieve these objectives. Secondary, it presents the final conclusion based on the analysis of secondary and primary data, suggestions and further research directions.
6.1 Definition of SCM Practices

Supply Chain Orientation (SCO) is, thus, defined as the recognition by a company of the systemic, strategic implications of the activities and processes involved in managing the various flows in a supply chain (Mentzer et al., 2001).

Internal firm integration refers to the degree to which a firm can structure its internal organizational strategies, practices, procedures, and behaviors into collaborative, synchronized and manageable process to fulfill its customer’s requirements (Cespedes, 1996; Chen and Paulraj, 2004; Kahn and Mentzer, 1996; Kingman et al., 1995).

Supplier firm integration refers to the degree to which a firm can structure its strategies, practices, procedures, and behaviors into collaborative, synchronized and manageable process with its external suppliers (Cespedes, 1996; Chen and Paulraj, 2004; Kahn and Mentzer, 1996; Kingman et al., 1995).

Customer firm integration refers to the degree to which a firm can structure its strategies, practices, procedures, and behaviors into collaborative, synchronized and manageable process with its external customers (Cespedes, 1996; Chen and Paulraj, 2004; Kahn and Mentzer, 1996; Kingman et al., 1995).

Supply chain flexibility is the organization ability to meet an increasing variety of customer expectations without excessive cost, time, organizational disruptions or performance losses (Zhang et al. 2003).

Supply chain leanness is characterized by the never ending pursuit of the elimination of waste and doing more things with less in different process of SCM (Christopher, 2000; Christopher and Towill, 2000; Naylor et al., 1999; Smart et al., 2003).

Supply chain agility is the successful exploration of competitive bases (speed, flexibility, innovation pro-activeness, quality and profitability) through the integration of reconfigurable resources and best practices in a knowledge-rich environment to provide customer-driven products and services in a fast changing market environment (Yao & Carlson, 2003).
6.2 Objectives of the Study

The study is designed with the following specific objectives:

I. To evaluate the present status of supply chain orientation in the firms under study.

II. To assess the supply chain integration in the firms under study, in terms of,
   a. Internal-firm-integration,
   b. Supplier-firm-integration, and

III. To evaluate the level of operational characteristics of supply chain management in the firms under study, in terms of,
   a. Supply chain flexibility,
   b. Supply chain leaness, and
   c. Supply chain agility practices.

IV. To identify the specific barriers to effective supply chain management practices in the firms under study.

V. To identify the benefits and competitive advantages that can be derived from implementation of SCM in the firms under study.

6.3 Hypotheses of the Study

The following research hypotheses have been constructed in order to satisfy the research objectives.

I. There is no significant difference between expected score and obtained score in Supply Chain Orientation (SCO) practices.

II. There is no significant difference between expected score and obtained score in Internal-Firm-Integration (IFI) practices.

III. There is no significant difference between expected score and obtained score in Internal-Firm-Integration (IFI) practices.

IV. There is no significant difference between expected score and obtained score in Customer-Firm-Integration (CFI) practices.

V. There is no significant difference between expected score and obtained score in Supply Chain Flexibility (SCF) practices.

VI. There is no significant difference between expected score and obtained score in Supply Chain Leanness (SCL) practices.

VII. There is no significant difference between expected score and obtained score in Supply Chain Agility (SCA) practices.
VIII. There is no significant difference between expected score and obtained score in the barriers to supply chain management.

IX. There is no significant difference between expected score and obtained score in the benefits of supply chain management.

X. There is no significant difference between Automotive Components (AC) industry and Electronic Industry (EI) in different SCM practices.

6.4 Research Methodology

In order to fulfill the research objectives, the following methods for collecting data were adopted. The multiple case study research design including six companies was chosen with the help of structured interview, administrated questionnaire, documentation and observation to collect the data based on the defined objectives. Each of the firms is treated as a unit of analysis. First within-case analysis is performed followed by a synthesis case analysis to identify the present status of different practices of SCM in the selected cases and explore the barriers and benefits of implemented supply chain in each cases. Different data analysis tools such as one sample t-test, two sample t-test and factor analysis (PCA) have been extensively used to provide useful and relevant information from the data collected on each of the issues considered in this study.

6.5 Conclusion and Suggestions

The different surveys independently conducted by researchers have revealed that importance of effective supply chain management practices has grown substantially in the world. But there are a few researches in this regards in India (Srivastava, 2006). Therefore this study has tried to identify the present status of these SCM practices as summarized as follow:

Supply Chain Orientation: As part of the strategic aspects, the Supply Chain Orientation (SCO) plays a very important role prior to the implementation of SCM practices. In individual case report, firms 1, 2 and 3 have performed better than firms 4, 5 and 6 in recognition of SCM practices. In aggregate, this research identified that, respondents have proved the existence of an overall recognition of supply chain management philosophy in their firms, where, almost all of the questions get mean score above than midpoint 4 (eighteen out of twenty). It is interesting to note that
“SCOR Model” as the standard diagnostic tool to implement supply chain management has the lowest mean score. The SCOR model is a diagnostic tool provides a common language and framework for building SC effectively. This result might be an indication that most of the top management was unaware of the SCOR model. Therefore, it suggested that managers have to pay more attention to identify the importance of this model in their SCM. Because clear understanding of this model can help managers for successful implementation of SCM. “JIT philosophy” also as an important factor in competitive SCM, scores a low mean. Hence, JIT philosophy should be considered and improved as an important variable in the studied SCM.

Internal firm integration: In individual case report, all items under internal firm integration practices have means score even above than five in all six firms. It means that all of the firms are highly integrated within their internal functions and managers truly understood the necessity of internal integration in their firms. Because, overall supply chain integration starts from integration internal functions and moves to the integration of external parties.

Supplier firm integration: In individual case report, firms, 1 and 2 have performed better than firms 3, 4, 5 and 6 in integration practices with their external suppliers. In aggregate, this research identified that, almost all items of supplier firm integration activities have mean scores above than midpoint 4. Only two items that have mean scores below than midpoint 4 are; “pull system shipment” and “quality inspection for new products arrived”. Therefore, it suggested that firms must manage the shipment of raw material from suppliers based on pull production, because it is a prerequisite of lean supply chain in terms of cost reduction in inventory management. And also firms must improve a level of trust and commitment between themselves that quality and quantity inspection of new product arrived is not required. Because, elimination of this kind of inspection is a source of cost and time reduction in SCM.

Customer firm integration: In individual case report, firms, 1 and 2 have performed better than firms 3, 4, 5 and 6 in integration practices with their external customers. In aggregate, this research identified that, seven items on CFI have means score less than midpoint 4, namely are, “share risks and rewards”, “production plans are shared”, “involvement in product customization”, “JIT delivery”, “interaction with
production employees”, “share cost reduction and efficiency gains”, “inventory level is shared”. As these results show firms are less integrated with their customers compare with other types of supply chain integration practices. It means still there is still a lot of room to improve the integration practices of firms with their external customers.

Several researches have emphasized that sharing risks and rewards, sharing production plans and sharing inventory level with key customers are the main antecedents of supply chain integration. Therefore, it suggested that managers have to pay more attention to these important factors in their SCM, because a successful implementation of JIT delivery is closely dependent on these factors. JIT delivery to the customers is also dependent on the geographical distance of customer that has been recognized by managers as very important barriers to SCM. It will be explained in barriers section in this chapter.

Supply chain flexibility: In individual case report, firms 1, 2, 3 and 6 have performed better than firms 4 and 5 in their supply chain flexibility practices. In aggregate, this research identified that, the mean scores of all thirteen items of SCF are between 4.60 and 5.66 and it shows that all of cases (firms) are highly flexible in their supply chain. Quickly changes the quantities and quickly changeover from one product to another have mean scores lesser than other practices of SCF, which these practices considered as volume flexibility and mix flexibility. The volume flexibility and mix flexibility have been emphasized by researchers to be an antecedent of supply chain agility. If a firm exhibits volume flexibility it can vary the output of its production process without negatively impacting the cost or capability of the process.

Mix flexibility is the ability of the organization to produce different combinations of products economically and effectively given certain capacity (Zhang et al., 2003). Mix flexibility is concerned with product variety and the ability of a firm to produce a wide range of products effectively and efficiently. This too supports the notion of supply chain agility in that market demand in a global and competitive environment may require different varieties or a range of varieties in order to satisfy demands at various markets throughout the world. Therefore it suggested that, firms have to improve their ability in quickly changes the quantities of the products and quickly changeover from one product to another in their SCM, because it results the more competitive supply chain agility in the business environment.
Supply chain leanness: In individual case report, firms 1, 2, 3, 5 and 6 have performed better than firm 4 in their supply chain leanness practices. In aggregate, this research identified that, almost all items of lean supply chain have mean scores above midpoint 4. However, “pull production system” as a lowest mean score has a mean of 3.49. This is consistent with a low mean score of “JIT philosophy” on SCO components, “pull system shipment” on SFI components and “production plans are shared” on CFI. As pull production system is an important variable in lean supply chain, therefore it suggested that, sharing the production plans and sharing the inventory level with key suppliers can be a good solution to successfully implementation of pull production system in the SC of studied firms.

Supply chain agility: In individual case report, firms 1, 2, 3 and 4 have performed better than firms 5 and 6 in their supply chain agility practices. In aggregate, this research identified that, almost all items of supply chain agility have mean scores above midpoint 4. Only two items have means scores below than midpoint 4, namely, “rapidly reduce inventory level” and “rapidly improve manufacturing process”. Rapidly reduce inventory level is consistent with low mean score of “pull system shipment” on SFI components and also consistent with low mean scores of variables “production plans are shared with customer” and “inventory level is shared with customers” on components of CFI. As management of inventory level is related to pull system shipment and JIT philosophy therefore it suggested that, implementation of these two practices seems to be very necessary in the studied firms.

Supply chain barriers: The potential benefits for an effective supply chains are compelling. However, barriers to success can be daunting. Understanding these barriers can lead to designing bridges as solution to allow companies obtain SCM benefits. In individual case report, firms 1, 2, 3 and 5 have performed better than firms 4 and 6 in overcoming of different barriers in their SCM practices. In aggregate, this research identified that, studied firms are facing some barriers in their SCM, which major barriers are belong to inter firm rivalry factors. The top six barriers namely are: “supplier geographical distance”, “customer geographical distance”, “lack of interest to participate in SCM”, “lack of willingness to share information”, “Lack of cooperation” and “lack of sharing risks and rewards”.

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Variables, supplier geographical distance and customer geographical distance seems to be the main reason that JIT philosophy has not been implemented successfully in the studied firms. JIT philosophy was selected as a low mean score in SCO, SFI and CFI practices. It is suggested that establishing the storage of raw material near to the manufacture place by suppliers and storage of finished goods near to the customer deliver point by manufacturers can help the firms to implement JIT philosophy in their SCM and produce the products based on pull production system. Work with well known third party logistics for transport the products and be a good solution to overcome the problem of product delivery Sharing information and sharing risks and rewards between supply chain members can also be used as stimulus to encourage the SC members to cooperate and participate in different practices of SCM.

Supply chain benefits: In individual case report, firms 1, 2, 3 and 6 have performed better than firms 4 and 5 in obtaining the benefits of SCM practices. In aggregate, this research identified that, the mean scores of all items of supply chain benefits are above than midpoint 4. As it was discussed in previous chapter some benefits such as; sales growth and profitability, productivity and market share are the major benefits of SCM practices implementation in studied firms are fall under company focus benefits, where customer are the main drivers of business activities in competitive environments. Therefore, it suggested that firms have to be more customer oriented in their supply chain practices. It is interesting to note that “inventory days/cost of raw material” and “on-time product delivery” are the less important benefits of SCM in the studied cases, which are consistent whit “JIT philosophy”, “pull shipment system”, “suppliers geographical distance” and “customers geographical distance”.

It seems that issues such as inventory management, JIT philosophy and pull production system are the main worries of studied firm’s manager in their supply chain management. Finally, regardless of functional nature of SCM, manager should believe that an effective SCM can help their companies thrive in today’s intensely competitive market place and change their attitudes toward implementation of strategic partnership with upstream supplier and downstream customers to gain more and more benefits.
6.6 Further Research Directions

Based on research findings discussed in previous chapters and careful examination of the different practices of supply chain management, a number of interesting future research directions are suggested as follow:

- The present study is basically exploratory in nature. More research in this area is still needed in order to confirm the findings that supply chain management practices have to be emphasized more on the quantity aspects and strengths of the results and implications.

- This study was confined only to the few automotive and automotive components industries and also electric and electronic industries. It is suggested that future research should cover not only these industries but other manufacturing and service industry as well. Manufacturing and service industries differ widely as service firms depend basically on people to produce and sell their products which are intangible services. Therefore, both industries may be different in nature of their supply chain practices with internal and external partners. A comparison can be made in terms of supply chain integration practices, operational characteristics of their supply chain and also potential barriers and benefits of SCM in this regards.

- For future research, the study could focus on small and medium sized enterprises (SMEs) and investigate the implementation of SCM practices in SMEs and compare with large scale companies.

- The supply chain management practices involves different parties both internally and externally, and managers from different areas within a firm or from different partnering firms (suppliers and customers) may have different perceptions of their SCM practices. Therefore, dyadic or triadic data collection from different parties in a supply chain may generate more significant results by comparing and contrasting the responses from various practices.

- This research was a multiple case study and limited to some selected firms. Further empirical studies can be carried out by increasing the sample size in other parts of the country. Efforts to include companies in other part of country will certainly enhance the significance as well as the validity of the results. Lastly, we collected data from India only; therefore we should carefully interpret the findings.