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Supply chain collaboration: A state-of-the-art literature review

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Global competition in the marketing has led organizations to be more responsive and efficient to the customers' needs through quick-new product development and minimized delivery time. Customer satisfaction becomes the major issue for organizations; therefore organizations focus more and more on the collaborative supply chain. Thus, supply chain collaboration has become a major success factor for the organizations to achieve their corporate goals. The current research study is an attempt to address the supply chain collaboration through a systematic literature review. In findings, various specific areas have been examined to understand the necessity, evolution, issues and challenges, types, drivers, benefits, and barriers in the context of supply chain collaboration. Further, the research gap and future agenda have been derived which is very helpful for academics and practitioners to understand supply chain collaboration, gaps in the literature, and future agenda about the supply chain collaboration.

1. Introduction

Global competition in marketing has led to companies to be more responsive and efficient to the customer's needs through quick new product development and minimize delivery time. Today, customer is more aware and wants large product variety and gives credit to companies to quickly deliver quality products. Customer satisfaction becomes the major issue for companies; therefore companies focus more and more on the collaborative supply chain. Collaboration in supply chain contributes to gain in overall performance by minimizing the uncertainty in demand and supply. Therefore supply chain collaboration has become a major success factor for management and partners of the supply chain. In global competition, the most discussed factor, which affects company performance, is surely the supply chain collaboration. Today almost every firm is in the process of applying collaborative activities in their supply chain to make the supply chain more competitive (Mathuramaytha, 2011). Collaboration is one of the emerging topics of research in today's business environment (Barratt, 2004). Many collaborative activities have added values to the whole supply chain by sharing investment, risk, resources and return

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on investment (Bowersox et al., 2003). Collaboration acts as a driving force for an effective supply chain management (Horvath, 2001), therefore collaboration plays a role of core capability in the chain (Barratt, 2004). Collaborative approach facilitates all member along common objective to improve supply chain performance (Bowersox et al., 2003). There are many benefits of collaboration like improve revenue, reduce cost, and increase flexibility to tackle with demand uncertainty (Fisher, 1997; Lee et al., 1997). Thus, the proper understanding of collaboration in supply chain becomes the necessity to remain competitive in this global environment.

Supply chain management (SCM) is an emerging area of research between researchers and practitioners from various disciplines. SCM has been evolving for the past seven decades, starts with traffic management (Forrester, 1961), order management, and it has come to warehousing departments. They ultimately came under the physical distribution. Subsequently, inventory management followed by customer service, then adding integrated logistics, and then production planning and procurement further become SCM, which is embedded into the value chain, which accounts for the importance of demand as well as supply. SCM puts organizations in a position of gaining better performance. To get benefits, all partners should sign all necessary arrangements for collaborative practices; do according to agreements and work to achieve the required supply chain benchmarks. Interest in the field of supply chain (SC) has been increasing exponentially in various journals since the 1990s (Burgess & Steenkamp 2006), it consists different areas like purchasing, production, inventory, logistic and organizational relationships followed by performance measures. The existence of the large numbers of papers and case studies motivates to study further issues of SC. It is a complex area having large number of activities containing multiple functions, therefore a collaborative system is required for smooth running of various processes to achieve the objective of SC (Arshinder et al., 2011). Collaboration in the supply chain, collaborate all the multiple functions and chain of organizations. Different partners of SC cannot compete independently, so a continuous dynamic system of SC is required, through which all partners become part of the unified system and come close and collaborate with other members of the chain. According to Yang et al. (2000) collaboration has acted as SC central lever. Stank et al. (1999) added that collaborating with firms is increased by exchanging information, providing better communication, and monitoring the performance. According to Lee et al. (2000) collaboration ultimately gains firms' performance in the form of profit and customer satisfaction by redesigning the rights, resources, and flow of work between partners of the SC.

Supply Chain Collaboration (SCC) is a powerful instrument for achieving effective and responsive SCM (Fu & Piplani, 2004; Mentzer et al., 2000). SCC is a responsible relationship among partners of SC, who share information with each other to improve the joint performance, they also redesign business practices to improve profit margin (Whipple et al., 2010). Supply chain collaboration looks for capitalizing on the expertise and skill of individual firms to collectively provide benefits to end consumers. Fawcett et al. (2007) elaborated that collaboration's goal is having all partners work together, solving problems and providing better customer satisfaction as per their expectation level. These collaborative relationships are long-term endeavors where partners know the capabilities and needs of each other and actively seek to develop new practices. Organizations having practice collaboration strategies in their supply chain gain large benefits as compared with the firms which perform individually. The benefits from collaboration are in the form of efficiency and effectiveness like they have less cost of the overall supply chain as compared with, non-collaborative supply chain organizations. Due to large benefits of SCC, very large numbers of organizations are going to apply collaborative strategies to enhance the performance of their supply chain (Mathuramaytha, 2011). Therefore, the study related with the collaborative supply chain is one of the emerging topics in this global environment (Barratt 2004). Collaboration is explained as two or more firms sharing the responsibility of exchanging management, planning, execution, and performance measurement information, and acts as driving force behind SCM (Horvath, 2001). Therefore, supply chain collaboration has become a major success factor for the supply chain. The current study is very helpful for academics and practitioners to understand supply chain collaboration, details about its past, gaps in the literature, and future agenda about the topic. By using

systematic literature review method we examine various specific areas to understand supply chain collaboration, as the necessity, evaluation, issues and challenges, types, drivers, benefits, and barriers of supply chain collaboration. Research gap and future agenda are helpful to solve practical and scholarly issues.

2. Supply chain collaboration

It is not easy to increase accounts in this tight economy, suppliers increasing their sales efforts to retain existing customers and remain competitive only if they add more value as compared with their competitors. Reduction in the product life cycle increases pressure on firms for developing new products. Due to competition globally, supply chain has created pressure on the member of the supply chain, which is tolerated by developing new processes that increases the cost efficiencies and customer satisfaction (Mentzer et al., 2004). In earlier, collaboration in the supply chain is represented by 'business partners'. But in the case of small business, those which are not familiar by the terms supply chain collaboration simply use the term 'business dealing'. The meaning of all these terms are the collaboration of partners along the supply chain. But the concept of collaboration is not well defined as it required (Sari, 2008). The Supply chain is a complete cycle of the product, starts from supplier to consumer, there are various stages among them, and the production line is one of important from them. Mentzer et al. (2001) elaborated SCC is a means in which companies involved in the supply chain are responsively working together to achieve common objectives, and this is possible by sharing knowledge, information, profits, and risk, and Collaboration is mutual objective that is more than a written contract. Simatupang and Sridharan (2008) concluded that SCC is the joint working among two or more firms through a supply chain to meet end customers satisfaction and the basic purpose of collaboration is to optimize profit, for all chain partners and create a competitive edge. SCC starts from the shallow transaction and ends with the responsive integrated relationship and collaborative relationship lies on sharing of information and distribution of risk among the partners (Goffin et al., 2006). Collaboration is mainly determined by trust and commitment which will change the efficacy of cost, quality and time (Carter et al., 2000). Companies are going to collaborate by changing the relationships between cost, value and profit equation. Therefore, companies work together by sharing information, process, risks, and rewards to achieve the mutual gain. SCC is very wide term usually span on the overall supply chain. According to Wilding and Wagner (2012), SCC is the working of two or more than two companies collectively to run supply chain operations and having the better result as compared to when these firms work individually (Simatupang & Sridharan 2002). The result of the collaboration is to response the uncertainties that arise from dependencies and having the successful agreement for all partners (Xu & Beamon 2006). Collaboration is a relationship between inter organizations by which all members collaborate to share resources, achieving the goal, sharing information, rewards, responsibilities and jointly solve problems (Barratt & Oliveira 2001; Phillips & Moon 2000). According to Hogarth-Scott (1999), collaboration is basically openness, sharing risk and rewards that improve performance, which is not possible without collaboration. According to Spekman (1998) collaboration is the alliance among organizations and formed for sharing large investment cost.

The paradigm of supply chain collaboration has gone through major development globally. Collaboration among all the partners of the supply chain is a dominant theme for the last decade of research (Singh & Power, 2009). Firms think beyond their boundaries to cope with the increasing completion and globalization to find sustainable solutions (Mehrjerdi, 2009a). The connection between global commerce, outsourcing and specialized organizations, inter-organized system, increasing competition and customer demand are the major factors for supply chain collaboration outcome (Zacharia et al., 2009; Madlberger & Roztocki, 2009; Kotler & Scheff, 1997). To increase performance in global environment supply chain members increase relationship among themselves (Mehrjerdi 2009a; Matopoulos et al., 2009; Katobe et al., 2003) and also inspire of more supplier consider less and regards as partners (Hadaya & Cassivi 2007; Sengupta & Korinek, 2006; Paulraj et al., 2006). The firm having more network gains more as compared with individual firms (Frels et al., 2003). There are many

disciplines in which collaboration has been studied, like management, marketing, psychology, sociology, but in SCM context collaboration comes in light with 'collaborative planning forecasting and replenishment' in mid-1990 (Barratt, 2004). SCC is increasingly important in organizations (Cao & Zhang 2011; Kocoglu et al., 2011). Partnerships can be seen as the determining factor in the process of exchange among the members of the supply chain, its importance allows members of the system to achieve the set-out objectives and meet the expectations of the consumers at the end. In reality, the establishment of a perspective on partnerships is a strategic decision by the common goal (Samaddar et al., 2006). According to Whipple and Russell (2007) the coordination of the process of product supply is the prerequisite for developing between the owner of the resources as well as the efforts of the relationship. Perspectives of collaboration in relation to exchange are one of the effective means to develop and control and also to reduce the competitiveness among the subject. Furthermore, the partnership provides members in the distributed system with efforts to achieve the firm objectives, improvement of efficiency in the relations and improve the ability to provide and serve the customers (Vereecke & Muylle 2006). Supply chain collaboration is widely studied from many different points of view source and collaborative concepts began to be widespread in the areas of SC in the mid-1990s (Barratt, 2004). Collaboration is defined as "two or more members working together to create a competitive advantage through information sharing, joint decision making, and sharing the benefits from greater profits by satisfying the customer needs than acting alone"" (Simatupang & Sridharan, 2002). Pedersen and Andersen (2006) explained that collaboration is the understanding between independent, but related companies to share their resources and their ability to meet the needs of customers. According to Anthony (2000) the term "collaboration is two or more companies share the responsibility to exchange the spreading, management, implementation, and performance measurement information plans". Soosay et al. (2008) concluded that the cooperation can be described as "a reciprocal relationship type organization, in which participants agree with the investment of resources, along with achieving goals, sharing information, resources, rewards, and responsibility as well as to make decisions and solve problems together". Supply chain members who have a higher level of standalone can achieve better operational performance and innovation (Simatupang & Sridharan 2008). SCC helps a company coordinating and operating effectively, improve supply chain efficiencies, reduce costs and inventory, and increase the level of customer's service (Holweg, 2005; Soosay et al., 2008).

Two or more companies become partners by sharing information and gain more surpluses towards achieving a common goal (Cao et al., 2010). SCC creates a commitment to supply chain partners to work as a partnership and collaborating on core operations to obtain mutual objective (Cao & Zhang 2013). SCC is a corporate operation based on the relationship and communication through the chain and all partners of supply chain (Liao & Kuo 2014). Collaboration is a trustful relationship among the firms where rewards and risks are shared between partners (Olorunniwo & Li 2010).

3. Methodology

Qualitative methods favor exploring rich explanation of the facts in a special context (Näslund, 2002). These explanations are used to further explain the fact of interest (Sachan & Datta 2005). The aim of this paper is to develop the relationships from the identified data which may be in the theoretical or explanatory form (Strauss & Corbin 1998). Five approaches to explore qualitative inquiry are the case study, ethnographic research, grounded theory, phenomenological research, and narrative studies (Creswell & Poth 2017). Case study improves an object in real life (Pagell & Wu 2009). Ethnographic study improves in depth entanglement with a specific group for a continued time period to explore the nature of the group (Voss et al., 2002). Grounded theory study related to interpreting reactions to the fact and results of those opinion (Strauss & Corbin, 1998). The phenomenological study describes the single meaning for various unique entities about on fact to create one fundamental meaning (Clandinin, 1989). Narrative research mainly presents a told story of a person for a specific topic area (Clandinin, 1989). If the study gives us a bigger explanation of how the thing works in the world, then using a fundamental methodology is the review of the past related study, it is also developing the grounded

theory, and also acts the true value from past literature (Smelser & Baltes 2001). Literature review is a tool to analyze the diversity of information under inquiry and enabled researchers to assess existing knowledge and further research, therefore we employ a technique of systematic literature review (Tranfield et al., 2003).

3.1 Systematic literature review

Systematic literature review uses the relevant literature about collaboration in the supply chain, and interprets the facts about deciding the relevant study in future (Rousseau et al., 2008). However there are large ways to review past studies, the purposes of the current study is a systematic literature review (SLR), used for large information (Petticrew & Roberts, 2008). SLR has enhanced the awareness of a specific phenomenon as well as shaping practical practice (Tranfield et al., 2003). SLR is a systematic and visible review method, which provides a consistent result, irrespective of the researcher team, conducting SLR. The current study approach is followed as to identify the urgency for a review (Strauss & Corbin 1998). Research starts with preparing the proposal for review, followed by making the review protocol, and reviewed the previous literature, systematically. Check the applicability of the identified articles, then followed by quality assessment and data extracting process, the synthesize the data to conclude results, then report the finding and getting information into practice (Denyer & Tranfield, 2009; Briner et al., 2009; Tranfield et al., 2003)

4. Results

4.1 Systematic literature review

The following section has the finding from the SLR. To make reporting more clear, different topics were identified which gives an understanding of previous findings. These topics include the necessity of collaboration, evaluation of collaboration, issues, and challenges of collaboration, types of collaboration, drivers of collaboration, benefits of collaboration, and barriers to collaboration. Each topic is deliberated further below.

4.2 The Necessity of Supply chain collaboration

Large numbers of companies have applied collaboration in their SCs throughout the world. Initially, the adaptation of collaboration mainly starts from North America, then Europe, and then followed by Germany, Austria, and Switzerland, and then other parts of the world. Collaborative partner has large numbers of benefits in many forms like efficiency and responsiveness in their supply chain. Collaboration adopter firms have lower cost, less inventory, short cycle time, and more responsiveness, and the least error in forecasting as compared with non-collaborative adopter firms. The Wal-Mart retailers has adopted collaboration and gained significantly by sharing its point-of-sale (POS) data with upstream in the supply chain to enhance collaboration. The company jointly forecast operations with Procter & Gamble (P&G) to tackle the uncertainty in demand and supply, and adding the value in the supply chain through collaborative approach (Mithas et al., 2005). Dell assembles PC after receiving an order from the customer and sells directly to the customers. It leverages the Internet in collaborating with customers and suppliers. By using collaboration Dell manages its inventory and worldwide supply chain by sharing the demand data. It also minimizes bullwhip effect and also reduces its delivery time up to less than 5 days. Therefore, by using collaboration Dell leads in computer market (Attaran, 2007a).

Herlitz AG wanted to join the collaboration program; it is the leading manufacturer firm of office supplies in Europe. By using the collaborative approach, the company shared demand and supply in real time with other collaborating partners and also was able to study seasonal fluctuations on sales. As a result, customer service became more satisfactory and company reduced 50 percent shelf stock-outs, and gained 15 percent in inventory turns and also reduced stake holding cost (Attaran, 2007b). The Heineken

took ten to twelve week for delivery. In 1995, the company decided to reduce its time to deliver the finished product up to four and six weeks so the company decided to adopt the collaborative strategy, it also helps from the private network connection, to connect the partner of the supply chain. The company used real time forecasting, ordering, and replenishment with its partners. Distributors can see sales forecasting online, and review their order accordingly. It reduces the order cycle times to four weeks which is earlier three months. It also lowers procurement costs, reduces inventory, and fresh delivery to customers (Attaran, 2004). Coca-Cola FEMSA (KOF) is bottler and distributor of Coca-Cola products in Latin America, with 63 distribution centers and eight production plants. The company wants to reduce stock-outs and also wants to reduce inventory, and increases customer satisfaction. Using collaborative strategy, KOF has gained accuracy in demand planning up to 93 percent and also stock-outs have been reduced to less than one percent. Also collaboration in supply chain increased efficiency and customer satisfaction (Attaran, 2007b). Colgate-Palmolive in 1995 planned to improve its operations to gain in efficiency. By using the collaborative approach, the company has collaborated its information access, forecasts, production schedule, and inventory to upside and downside supply chain. The collaboration increased Colgate's global SC performance. It also increases the visibility of logistic data. The company increased orders by 18 percent, reduced inventory by 10 percent and gained customer order fulfill rates by 95 percent (Attaran, 2004). Palm, Inc. is handheld computers providing company, having the problem of competitive environment and wished to reduce planning cycles, and increase visibility. By collaborating, the results were ultimate. The company reduced planning cycle time by 50 percent, gained 4 percent in inventory turnovers, and decreased the overall level of inventory by 32 percent. Also, the company gained in sales and loosed in stock-outs (Attaran & Attaran, 2004). In the earlier time producers and retailers follow certain product flow strategies to gain the profits, the new competitions raised in the form of partnerships than came to the joint venture, that mainly increases the flow of information and communication. Competition arises in the companies to increase their margin. Globalization needs greater collaboration than ever before. For the case of the food industry, customer demands fresh fruits throughout the year and growth as well as demand increases and it is possible for 'just –in –time' distribution and it ultimately needs the collaboration among retailer and suppliers (Wilson, 1996). Collaborative supply chain is best suited for fresh and processed perishable food and also increases safety and quality controls and easy achieve economy of scale and best managing risk among suppliers, producers, purchasers, and exporters. Therefore, the firm used collaborative strategies to enhance a competitive advantage (Meer, 2006).

Collaboration within the supply chain solve the problems like sharing risk and responsibility and the profit gain from common objective, as well as increase flexibility in administration. Collaboration has created a balance between supply and demand and increased profit for entire supply chain (Andraski, 1998; Christopher 2005). SCM has very large literature, but collaboration came in mid-1990, but some firms have been using collaboration in different ways for several years (Danese, 2007). For the last three decades, academics have been interested in various types of SC collaboration (Danese, 2006). Working together for gaining common objective is a successful factor (Lumsden & Brewster 2003). In this globally competitive environment (Gudehus & Kotzab 2009), the competitive edge becomes the success factor (Laseter & Gillis 2012; Zhang & Cao 2011; Walker et al., 2000). Firms have concentrated more on increasing the overall profit supply chain rather than the individual partner, therefore main competitive edge is the competition in the supply chain (Gadde et al., 2010). However, an appropriate observation of the meaning of collaboration for whole supply chain members is still a challenge (Fawcett & Desanto-Madeya, 2012; Kotzab et al., 2009; Soni & Kodali 2012). Therefore, by reviewing the literature on SC collaboration, the study of collaboration in the supply chain is still under research, and in isolation collaboration in the SC is impossible. Therefore urgency for more research on collaboration is required. Collaboration is the requirement of the supply chain to construct more responsive and efficient supply chain to deliver values to the customer (Gunasekaran 2001). There are some important areas of collaboration discussed in the literature are shown in Table 1.

Table 1
Area of growing importance of collaboration

Area of importance of collaboration	References
Collaboration for sustainable supply chain	Varsei et al., 2014; Beske et al., 2014; Theißen & Spinler, 2014; Nakano & Hirao, 2011; Ramanathan et al., 2014; van Hoof & Thiell, 2014; Albino et al., 2012; Vachon, 2007; Vachon & Klassen, 2008; Jr & Zelbst, 2012; Benjaafar et al., 2013; Gold et al., 2010; Ramanathan & Gunasekaran, 2014
Collaboration for technology-enabled supply chains	Nakano, 2009; Danese, 2006; Danese, 2007; Paulraj & Chen, 2007; Sari, 2008; Derrouiche et al., 2008; Attaran, 2007a; Jahre et al., 2007; Ralston et al., 2015; Wiengarten & Humphreys, 2010; Jennette et al., 2014; Yoon & Kwon, 2006; Chong et al., 2009; Sari, 2010; Doukidis & Pramatari, 2007; Wu et al., 2006; Colicchia et al., 2013
Collaboration in humanitarian supply chains	Maon et al., 2009; Scholten et al., 2014; Ergun et al., 2014

4.3 Evolution of Supply chain collaboration

With the development of computers during the early 1970s, collaboration has been started within trading partners. The foremost computer application was Material requirement planning (MRP); it is mainly used for inventory and production planning. By the addition of the financial system of the company, it becomes manufacturing resource planning (MRP II) in the 1970s. In order to increase productivity and profit, companies needed information within the SC and enterprise resource planning (ERP) came to light. ERP used information technology extensively. With increasing competition, managing customer relations, and uncertainty in demand became company's requirement to optimize the supply chain. To solve these problems the next generation software was 'Advanced planning and scheduling' (APS) which is used for optimum production. To increase responsiveness companies drove further advancements in APS as Business process optimization (BPO) (Joshi, 2000). To increase the flow of information and material some practice has been used in literature like Accurate response (AR), Continuous replenishment (CR), Efficient consumer response (ECR), and Vendor managed inventory (VMI) (Mark Barratt & Oliveira, 2001). In the mid-1980s Procter and Gamble started a pilot project as VMI. By gaining the successful result, other companies like Tesco and Nestle, Alcoa and Boeing also implemented VMI (Micheau, 2005). VMI is important partnering concept to increase collaboration in supply chain members. The vendor maintains required level of inventory, and follow appropriate policy to maintain the inventory level, and retailers give real time information about inventory (Sari 2008). Communication technology plays an important role to share inventory information between vendors and retailers (Waller et al. 1999). further regards the computers, information technology, electronic data interchange (EDI), fax, emails, spreadsheets, and tracking system between the partners (Holmstrom, 1998). VMI gains competitive value like improving product availability, improve service level, decrease order cost (Sari, 2008), reducing bullwhip effect (Disney & Towill, 2003) and better replenishment process (Waller et al., 1999). The disadvantage of VMI was not properly used retailers information (Sari, 2008). In the late 1980s, a company Campbell Soup applied a new practice, Continuous replenishment (CR) that reduces its supply chain cost. For replenishment, CR uses Point of sale (POS) data and continuously replenishing inventory in small batches (Cachon & Fisher, 1997). Due to lack of coordination between buyers and suppliers, CR did not provide many benefits (Fisher, 1997). For better collaboration, some companies used mix practice of VMI and CR. Some companies used Electronic data exchange (EDI) practice, in which information technology is used to share POS data among all supply chain partners. A mix of all the three practices; VMI, CR, and EDI, also known as Efficient consumer response (ECR) which has been beneficially used by some companies like I.E., P&G and increase information accuracy and reduction in lead time, but not effectively observe customer demand (Andraski,1994). In 1997, a sports company 'sports Obermeyer' has used new concept 'Accurate Response' (AR), in which observation of customer demand is the accurate forecasts and this demand information is used in production planning. AR reduces demand uncertainty, improve flexibility, and reduce lead time and production costs. But not effective during high uncertainty in supply (Fisher, 1997). Evolution of Supply Chain practices is shown in Fig. 1.

ECR brings a revolution in the way of collaboration between supply chain members. The collaboration between marketing and logistic brings a new strategic approach to collaborative planning, forecasting, and replenishment (CPFR). It is one of the most efficient practices in the value chain. CPFR is the further development of efforts done by SCC. It was started in the United States and published by Voluntary Inter-industry Commerce Standards (VICS) Association. CPFR enhances the collaboration and reduces uncertainty in demand and supply, ultimately adding the value in the supply chain (M Barratt & Oliveira, 2001). CPFR is the important strategy for competitive advantage and value sharing value propositions in the whole supply chain. (VICS, 2004).

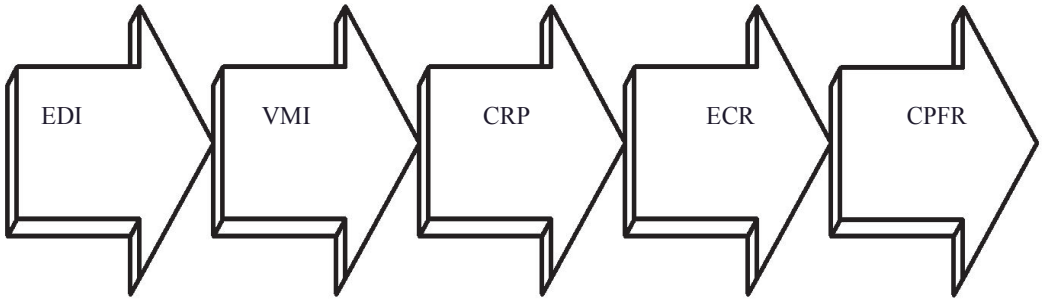

Fig. 1. Evolution of Supply Chain practices (Source: Synca Systems)

4.4 Supply chain collaboration issues and challenges

Barratt (2004) focused more on the understanding of collaboration, such as, what's the need, why we, where, with, and activities that we need to collaborate. Simatupang and Sridharan (2002) concluded that managerial inertia is the barrier, which is overcome by using the collaborative approach. Hyland and Beckett (2005) suggested the use of collaboration in strategic phase and defined the importance of trust in collaboration. Horvath (2001) suggested restructuring the traditional process used in the supply chain. Benson and Dresdow (2003) provided a model by focusing on collaboration by using the components: generative conversation, complexity dynamics, emotional orientation, systems perspective, development orientation, and self-awareness. Bowersox et al. (2003) developed a benefits oriented model for the collaborative mindset. Holweg et al. (2005) elaborated the reason of slow progress of collaboration, was that it was not defined as required. Min and Roath (2005) developed a model for better understandings the collaboration by discussing the antecedents and consequences. Fawcett et al. (2004) suggested guideline to manage the supply chain collaboration. Mehrjerdi (2009b) elaborated the relationship between commitment and trust with collaboration and described collaboration as one of the important strategies of the supply chain. Ismail and Alina (2008) focused on the need of proper understanding supply chain collaboration.

In spite of large number of literature some terms related to collaboration is still not clear. By review of this term it is clear that collaboration affects both directly and indirectly on the performance of supply chain, but the concept of collaboration is still not understood properly and also the concept is not defined in an understandable way (Holweg et al., 2005; Busi & Bititci, 2006; Barratt, 2004; Fawcett et al., 2004; Mehrjerdi, 2009a; Min & Roath, 2005). Singh and Power (2009) argued that the term cooperation is when companies exchange basic information with multiple customers or suppliers and having some long term relationships. The term coordination occurs when information technology is used for flow of essential information between supply chain partners. The term collaboration occurs when the high level of commitment, information sharing, and trust is present between supply chain partners. Each of the relationships has factors that motivate the drivers and governs the environment of the supply chain. The closeness of the relationship between partners of supply chain varies over time and according to the firm (Schoenherr et al., 2008). The basic meaning of the word 'collaboration' and its different interpretations is that the firms cannot compete individually so they make the establishment of relations with other

members of supply chain. Different interpretations of the word collaboration are summarized in Table 2. Terms like integration coordination and collaboration are complementary to each other in a supply chain as they consist of similar elements (Arshinder et al., 2011).

Table 2
Different interpretations of word 'collaboration'

Different interpretations of word 'collaboration'	References
Integration between parties	Bagchi et al., 2005; Frohlich & Westbrook, 2001; Pagell, 2004; Petersen et al., 2005; Vaart & Donk, 2008
Supply chain collaboration	Caridi et al., 2005; Holweg et al., 2005; Min & Roath, 2005; Shirodkar & Kempf, 2006; Stank et al., 2001; Vereecke & Muylle 2006
About alliances	Chung et al., 2008
Dyadic (e.g. buyer - supplier or buyer-manufacturer) relationships	Fynes et al., 2005a; Goffin et al., 2006; Kozan et al., 2006
Collaborative relationships	Hoyt & Huq, 2000; Johnston & McCutcheon, 2004
Partnerships	Gadde & Snehota, 2000; Spina & Zotteri, 2000
Supplier – retailer collaboration	Fu & Piplani, 2004

4.5 Types of Supply chain collaboration

In literature, SCC has classified in several ways (Simatupang & Sridharan, 2005a). Holweg et al. (2005) used inventory and planning combination and classifies SCC into four types (Mena et al., 2009). (Barratt 2004) and Simatupang and Sridharan (2002) classifies it as horizontal and vertical collaboration. Soosay et al. (2008) divided SCC into three types: horizontal, vertical, and lateral collaboration. Horizontal collaboration is when firm collaborates at the same level with its competitors that may have different supply chains (Manning & Baines, 2004). Vertical collaboration forms when partners of supply chain collaborate to gain supply chain success. The combination of both horizontal and vertical collaboration intends to achieve more flexibility in the lateral collaboration. In spite of all types of collaboration internal collaboration is inherited; that is also known as cross-functional or intra-organizational collaboration. This is the collaboration within various departments in a firm (Sandler & Hartley, 2007). Other types, like collaboration among firms called external collaboration. Lateral, vertical, and horizontal are the external type of collaboration. In literature, other types of collaboration term like, virtual collaboration (Byrne, 1993; Mathwick et al., 2001), cooperative arrangement (Ring & Ven, 1992; Girardi et al., 2002; Cousins, 2002; Kumar, 1996; Hines Jr, 1995), joint venture (Collins & Doorley, 1991; Hennart, 1988), strategic alliance (Vyas, 1995; Bruner & Spekman, 1998). Lorange and Roos (1991) were come under the forms of collaboration (Bowersox et al., 2003; Singh & Power, 2009; Soosay et al., 2008; Golicic, 2003). Types of collaboration are shown in Fig. 2.

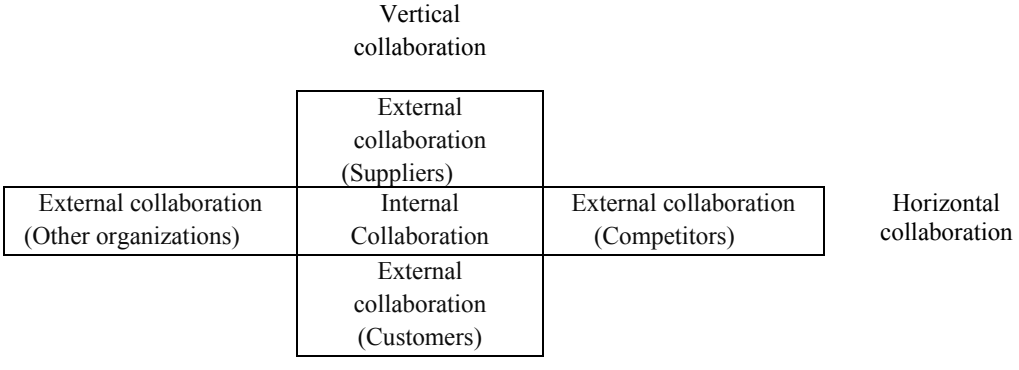

Fig. 2. Types of collaboration
(Source: Barratt, 2004)

To classify SCC, the collaboration literature has been viewed and classified according to different categories. In earlier supply chain, partners perform various functions individually, but now all partners perform different functions of supply chain, collectively. The different functions, according to which SCC can be classified, are forecasting, product design, inventory, and logistics. In the case of product design, Kim et al. (2005) used a system dynamic approach for new product development and quality because the customer's expectations are increasing with a change of technology, so it is a challenge for cost effective product design and entry of new product. The best result appears when both collaborate that decision making have increased their expected profits. Petersen et al. (2005) presented that collaboration during design stage makes better design and increases financial performance, communication and organized culture plays good organizational culture. Inventory management decisions are replenishment of inventory, reorder point, timing of order and order quantity and the factors of consideration for inventory policy are stock out, obsolescence opportunity cost, maintained insurance, taxes, transportation, production cost, required service level, planning horizon length, lead time, number of partners in chain and customer demand, etc. Any one discussed above can affect inventory policy and these are highly dynamic in nature, to tackle that dynamic situation, importance of collaboration in inventory management is realized (Cardenas-Barron, 2007). Partners of supply chain collaborate by considering system costs (Huq et al., 2006), sharing information about cost and price (Piplani & Fu, 2005) and sharing order processing time (Corbett et al., 2004). Sometimes the collaborative decision does not fit for one of supply chain partner, therefore to compensate this; different mechanisms have been used like incentive alignment policies, revenue sharing contracts and quantity discount (Paulraj & Chen 2005). Verwijmeren (1996) suggested network inventory management information system for exchange and transform information among partners, and gained reduction in system wide cost, purchasing/holding/and order cost and availability, variety, and customer satisfaction increases.

Traditionally, logistics means to plan and manage the flow of services and goods as they go from raw material origin to finished product consumption, but due to diversification in customer requirement, increasing uncertainty leads to the need for collaboration in the logistic process (Huiskonen & Pirttila, 2002). A single site has become the geographically dispersed network, and manage these complex network to create value for the customer (Stank & Goldsby, 2000) and logistic and supply chain becomes a single unit (Stank & Goldsby 2000). SC process is a set of activities, and collaborating these processes into a model and by optimizing decision variables of different processes improves the performance of supply chain (Park et al., 2005). Collaboration in production and distribution leads to reasonable saving in costs by exploiting scale economies of distribution and production. Total inventory and stock out are reduced by balancing vehicle load and production lots. Chikan (2001) suggested production/distribution model on the basis of institute economy. Jayaraman and Pirkul (2001) suggested integrated production/ distribution model by considering distribution cost, production cost, purchasing cost and fixed cost. Pyke and Cohen (1993) defined performance characteristic of production/distribution model. Kim (2006) defined a model used for joint optimization cost to find production cycle length. Dotoli and Fanti (2005) used operating cost, product quality, energy saving, cycle time and environment impact as performance measures and developed three-level hierarchical method supply chain network design, in which members are chosen to measure the performance by optimizing the transportation and communication in the supply chain. Manufacturers do not want to hold inventory, they need small batches and just in time (JIT) supply. But suppliers like large quantities and flexibility in delivery dates. Goyal and Deshmukh (1992) Studied various model of integrated production and procurement (IPP) and classified these models based on planning period, product quantity, and type of solution employed. Munson and Rosenblatt (2001) compared the centralized and decentralized supply chain and reported similar results by considering quality discounts. Lu (1995) studied by using the same vendor multi buyer heuristic approach and reported that the vendor could reduce 30% of the total annual cost. Hoque and Goyal (2000) designed optimal solution system for single vendor and buyer production system. Hill (1997) designed a schedule of production and shipment which is used for an integrated system and minimized total cost. Grubbstrom and Wang (2003) considered stochastic demand and capacity constrained and by using Laplace transform, finds net present value, for the multi-level model. Kim (2006) developed joint

economic procurement model for three levels SC, by considering common cycle length of production and delivery schedule. Jayaraman (1998) designed a model for minimizing distribution cost associated with facility, inventory, and transportation. Yokoyama (2002) designed optimum model for inventory distribution schedule and used simulation to calculate the cost and target inventory. SC dependencies are also managed by using coordination mechanism, which improves SC performance. To gain more collaboration in SC, contracts are the mainly defined parameters (like quality, quantity, price, and time) which are used by buyer and supplier to increase SC profitability (Tsay, 1999). These are the main responses to SC inefficiencies. One of the contract 'buyback' is, buyer return unsold inventory at agreed amount upon prices (Padmanabhan & Png 1997). There are a number of extensions in literature for a buyback contract (Zou et al., 2008; Ding & Chen 2008). Cachon and Lariviere (2005) discussed in revenue share contract retailer share fraction of revenue with the supplier, in this type of contract members of SC select order quantity, which is beneficial for whole SC. Tsay (1999) suggested in quantity flexibility contracts, both buyer and supplier accept uncertainty in inventory and stock out and their related cost. Orders are flexible to some extent in this case according to demand. Inter-organizational collaboration has the positive effect on SC performance (Sanders, 2008). Information technology (IT) is the main tool to increase inter-organizational collaboration. IT connects all the partners of SC, large numbers of IT applications are used like EDI, ERP etc. (Liu et al., 2005). SC partners sharing various types of information regarding demand, inventory, POS data, orders, etc. throughout the SC (Reddy & Rajendran 2005).

4.6 Drivers of Supply chain collaboration

Almost, a large number of literatures on SCC fall in 'drivers' section. These are the various crucial factors which makes SCC more successful. The study of drivers explores the factors that drive firms to implement collaboration initiatives. Leeuw and Fransoo (2009) divided the drivers into three categories; market characteristic, product characteristic, and partner characteristic. In market characteristic the factors considered are demand and supply uncertainty, in product characteristic, the considered factors are product criticality and product customization level, in partner's characteristic the factors are superior partner capabilities and dependence on partners. SalmaAhmed (2012) suggested the driving factor for collaboration in case of manufacturing companies are trust, commitment, leadership, interdependence, technology, and organizational compatibility. Krause (1999) divided the drivers into three categories; environmental, barrier, and attitudinal. In environmental, the drivers are the potential of a chain member such as globalization and competition. In barrier, the drivers are the conditions for competitive advantage such as communication, delivery, quality, and resources and attitudinal show perspective towards partners, such as trust. Barratt and Oliveira (2001) discussed having the same driver as in CPFR. Soosay et al. (2008) classified drivers as external and internal, the external drivers are related with environment and internal drivers are related to characteristics of the firm. Rosenzweig (2009) described the relationship of information technology with collaboration and its positive effect on business and operational performance. Fawcett and Allred (2009) defined three stage collaboration model; various internal and external drivers are considered which influence firm performance. Simatupang and Sridharan (2004b) concluded that the drivers of collaboration are incentive alignment, decision synchronization, and information sharing.

The focus on managing collaborative practices in the supply chain has increased in last few decades. Pressure from internal and external agents, stakeholder requirement, product and service quality, manage uncertainties in demand and supply, compel firms to take collaborative steps (Alblas et al., 2014). Soltani (2006) stated that organizational culture is a major driver for collaboration. Trust, power and dependency are the key factors for collaboration in supply chain (Wagner et al., 2011; Wu et al., 2014; Co & Barro, 2009; Chen et al., 2014; Whipple et al., 2010; Islam & Olsen 2014; Zeng et al., 2012; Bo & Hammervoll, 2010; Chae et al., 2005; Wang et al., 2011). There are large numbers of driving forces to supply chain collaboration; some of the major drivers of supply chain collaboration are shown in Table 3.

Table 3

Literature review driver of supply chain collaboration

Drivers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
Commitment				√	√	√	√		√						√		√		√														√									
Trust				√	√	√	√	√	√						√	√	√	√	√	√						√	√	√													
Adaptations				√					√																											√	√						
Relationship promoter				√			√																					√											√	√			
Competition											√																		√	√	√	√	√	√				√	√				√
Technology								√			√										√								√		√			√		√	√						
Collaboration level											√				√																												
Business strategy											√	√	√			√						√						√															
Innovative SC process							√			√	√			√																							√						
Collaborative communication	√								√							√						√																	√		√		
Joint long term relations									√								√							√																			
Cooperation									√	√										√			√											√									
Collaborative agreement													√					√															√									
Better Information sharing	√	√	√		√		√			√			√	√	√		√	√	√	√		√		√	√	√	√								√		√		√	√		√	
Joint decision making		√				√				√				√		√		√					√		√																	
Incentive alignment		√	√							√				√								√			√															√		
Resource sharing					√		√										√					√																				
Knowledge sharing			√				√	√							√					√		√		√																		
Behavioral uncertainty																			√											√								√					
Organizational culture					√														√		√							√				√			√							
Management policies												√	√													√														√			
Appropriate Performance measure		√					√			√		√														√				√									√			
Globalization		√					√							√		√									√	√	√	√	√	√	√	√	√	√	√	√	√	√	√			√

Sources: 1- (Zhao et al., 2001); 2- (Simatupang & Sridharan 2002); 3- (Simatupang 2002); 4- (Walter et al., 2000); 5- (Kwon & Suh 2004); 6- (Simatupang & Sridharan 2004a); 7- (Fawcett et al., 2007); 8- (Sengupta et al., 2006); 9- (Fynes et al., 2005b); 10- (Simatupang & Sridharan 2005b); 11- (Angerhofer & Angelides 2006); 12- (Zhang et al., 2006); 13- (Yang & Choi 2007); 14- (Simatupang & Sridharan 2008); 15- (Zacharia et al., 2009); 16- (Forslund & Jonsson 2009); 17- (Whipple et al., 2010); 18- (Cai et al., 2010); 19- (Chen & Yen 2011); 20- (Fawcett et al., 2012); 21- (Xie et al., 2011); 22- (Cao & Zhang 2011); 23- (Wang & Liu 2007); 24- (Koçoğlu et al., 2011); 25- (Simatupang & Sridharan 2005a); 26- (Rowe et al., 2012); 27- (Shore & Covey 2006); 28- (Bäckstrand & Säfsten 2007); 29- (Cox & Watson 2004); 30- (Glen Richer & Autry 2009); 31- (Soosay et al., 2008); 32- (Mehrjerdi 2009b); 33- (Fawcett 2010); 34- (Fawcett & Magnan 2004); 35-(Lee & Whang 2004); 36- (Ghemawat 2007); 37- (Mattsson 2003); 38- (Crone 2007); 39- (Mentzer et al., 2007); 40- (Daugherty et al., 2006); 41- (Chen & Yen 2011); 42- (Hartmann & Grahl 2011); 43- (Fawcett et al., 2012).

4.7 Benefits of Supply chain collaboration

In this global competitive business world, effective supply chain management is a key for gaining competitive advantages (Park & Krishnan, 2001; Quayle, 2003; Li & Rao, 2005). SCM refers collaborative relationship between supply chain members to make benefits, like inventory reduction, on time delivery service, and lesser product development Cycles (Fawcett et al., 2007). Decision makers have still necessity to understand various direct and indirect benefits from SCC (Richey et al., 2010). Numerous researchers studied collaboration reported a positive effect on firm performance. Bagchi et al. (2005) reported the major benefits of collaboration as the reduction in logistic cost and better order fulfillment rate. Sanders (2007) discussed the positive effect of collaboration on quality, cost, and delivery. Cao and Zhang (2010, 2011) identified the benefits in the way like the growth of sale and profit margin. Fawcett et al. (2012) defined collaboration in the supply chain has a dynamic capability, which is able to deliver performance. One of the greatest benefits of long term collaboration is the cost saving. These saving costs are shared by all members of the supply chain.

There is an evidence for the effectiveness of collaboration in the supply chain. In the 1970s, Japanese auto makers collaborated with their trading partners by sharing manufacturing costs, common objectives and risk. The benefits of this collaborative approach reduced 22% manufacturing cost of Japanese automakers (Hoyt & Huq, 2000). The major benefits of collaboration were increased visibility, improved service levels, higher flexibility, increase customer satisfaction, decrease cycle time, and more ability to tackle during demand uncertainty (Smirnova et al., 2011; Nyaga et al., 2010; Daugherty et al., 2006).

The objective of collaboration depends on the level of trust, bargaining power and commitment between the supply chain partners and the benefits of collaboration in terms of price stability, financial returns, and contributes to the economy of scale. Various objectives exist like sharing the risk of responsibility, investments, information, vision, goal, problem-solving, planning and decision making (Lee & Billington, 1992; Spekman, 1998), large number of benefits are the result of collaborative relationships, all the partners are gaining through better performance, competitiveness, capability of knowledge, revenue, pricing, cost and increased flexibility of operations to tackle the market diversity and high demand uncertainties (Hogarth Scott, 1999; Robinson & Malhotra, 2005; Fisher, 1997). Mentzer et al. (2001) defined two types of benefits: financial and not financial benefits. The benefits like inventory reduction, improvement in customer service, efficient utilization of human resources, and reduction in cycle time come under the finical category. The benefits like reduction in time to market focus on core competencies, better public image, greater trust, increasing information sharing, improved market value, and competitive gain over other competitors come under the category of no financial advantage. The benefits like increment in inventory turnover, revenue, and reduction in cost across the supply chain are most sought by Min et al., 2005; Attaran, 2004; Ferdows et al., 2004; Leonard & Cronan, 2002). Collaboration does not reduce simply the cost of the supply chain but also faster inventory cycles (Fawcett et al., 2007). Two major benefits of collaboration in the supply chain are more product availability and reduction in order cycle time (Leonard & Cronan 2002). However, a large number of literature has acknowledged various benefits of SCC, that is different from market to market and even sector to sector (Kouvelis & Milner 2002). SCC is perceived as a value addition for all members of the supply chain (Leeuw & Fransoo 2009). In spite of large numbers of benefits, some of the major benefits of the supply chain collaboration are summarized in Table 4.

Table 4

Literature review benefits of supply chain collaboration

Benefits	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Faster inventory turns	√	√	√	√	√					√	√		√												√		√		√	√	√							
Increased revenues		√			√					√	√		√	√	√				√	√									√	√	√			√	√	√	√	
SC costs reduction								√		√		√									√														√	√	√	
Product availability		√							√	√									√																			
on time delivery					√	√				√	√					√			√			√	√	√					√	√	√							
responsiveness	√						√		√							√		√	√	√	√	√	√	√	√	√	√	√		√		√		√				
Increased economy				√			√	√			√			√				√											√		√				√			
Capital utilization										√				√					√																			
Time to market decreased									√		√				√													√										√
Improved quality									√										√		√	√		√												√		√
Reduced inventory																													√	√	√							
Improved customer services						√	√		√							√			√		√	√	√	√											√			
Better SC relationship														√			√		√		√											√				√		
Continuous process improvement							√									√	√	√		√																		
Increased sharing information							√		√								√				√	√	√	√	√	√	√	√						√				
Accurate forecasting																			√							√			√	√	√		√					
Enhanced competitiveness									√										√		√	√	√	√												√		√
Reducing lost sales																			√			√	√	√									√			√	√	

Sources: 1- (Gupta et al., 2001); 2- (Attaran 2004); 3- (Callioni et al., 2005); 4- (Min et al., 2005); 5- (Ferdows et al., 2004); 6- (Hult et al., 2004); 7- (Jayaram et al., 2004); 8- (Kaas & Ohl 2002); 9- (Lee 2004); 10- (Leonard & Cronan 2002); 11- (Min & Mentzer 2000); 12- (Rajib et al., 2002); 13- (Zahedirad & Shivaraj 2011); 14- (Timme & Williams-Timme 2000); 15- (Tyndall 2000); 16- (Waller 2000); 17- (Ramanathan 2013): 18- (Wagner et al., 2002); 19- (Simatupang & Sridharan 2004a); 20- (Min et al., 2005); 21- (Khan et al., 2006); 22- (Daugherty et al., 2006); 23- (Smirnova et al., 2011); 24- (Nyaga et al., 2010); 25- (Kim et al., 2005); 26- (Sheu et al., 2006); 27- (Li et al., 2006); 28- (Simatupang & Sridharan 2005a); 29- (Lau et al., 2008); 30- (Flynn et al., 2010); 31- (Nyaga et al., 2010); 32- (Simatupang & Sridharan 2002); 33- (Chen et al., 2013); 34- (Kache & Seuring 2014); 35- (Kim 2013); 36- (Yazar Soyadı & Ince 2015); 37- (Tokman & Richey 2007); 38- (Nooteboom & Haverbeke 2007).

4.8 Barriers of Supply chain collaboration

The objective of the collaboration is to achieve desired customer satisfaction level and loyalty for the firm. Therefore, collaboration is the most important issue achieved by collaborating all the internal and external members of the supply chain at desired levels. But there are certain barriers of collaboration that have moderating effects on the collaboration as well as on the performance of the firm. Humphries and Wilding (2004) demonstrated that benefit in SCM does not always happen and failure within the partners could develop, which results no benefits for SCM partners. However, many guide lines have been available to support and set up and running collaboration (Daugherty et al., 2006). However, starting phase of collaboration costs significantly, in spite of that their results is often unpredictable. Otchere et al. (2013) conducted a study for implementation integration in the supply chain in Ghana within the cocoa industry, and reported major challenges as the lack of information sharing, poor database, and poor technological innovations. Collaboration has large numbers of advantages to industry, having great benefits, but at same time, there are many companies that use little collaboration in their supply chain. There is something unusual; expectation from collaboration is sometimes not seen. This is due to the lack of understanding and awareness about the barrier of collaboration and not tackling the barriers to collaboration in an effective way.

Due to not properly overcoming the barriers, the collaboration would not be required and therefore uncertainty in the firm's performance is increased, which leads to collaboration failure in the supply chain (Gunasekaran & Ngai, 2012; Ha et al., 2011; Kotzab & Munch 2011; Nicholls & Quinn, 2012; Hofman & Aronow, 2012; Yuan et al., 2011; Fyall & Garrod, 2005). There is a managerial drawback for collaborating intricate business network (Lambert & Cooper, 2000). Barratt (2004) defined one of the important barriers is the members of the supply chain who are not sharing information willingly. Delbufalo (2012) discussed the lack of trust between supply chain's members is the important barrier. Merchant et al. (2011) elaborated the barrier is the members who do not want to handle additional work and responsibility. Palmer et al. (2012) defined the requirements of mutuality and symmetry as the barrier. Cruijssen (2012) discussed that the hindrance were the members with no commitment about clearly of benefits, costs, and risk. Org and Woodman (1982) discussed that all the barriers of collaboration are highly complex in nature. Horvath (2001) divided the barriers into two types of technology and human related. Hoffman and Mehra (2000) discussed that the one important barrier that can cause a breakdown in any best supply chain, is the technology barrier. Horvath (2001) argued that some barrier is emerging with technology, which was not a challenge before. Collaboration between firms are often the major difficulties to overcome the structural and the cultural barriers (Fawcett, 2010; Fawcett et al., 2012; Stank et al., 2001). Behavioral issues, such as trust, cause to prevent firms from sharing information (McCarter & Northcraft 2007). A large numbers of the barriers to SCC are related to heterogeneous structure and industry complex (Kitsiou & Matopoulos 2007). In spite of large numbers of benefits, some of the major barriers to supply chain collaboration are summarized in Table 5.

Table 5

Literature review barrier to supply chain collaboration

Barriers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Turf war	√	√			√	√		√		√			√																					√					√						√
Poor strategic planning		√	√	√					√			√																			√	√					√			√	√	√				
Poor SC vision	√									√	√			√								√									√	√	√			√			√						
Lack of trust		√					√			√	√						√					√		√	√	√	√												√						
Lack of Top management commitment	√						√				√			√														√					√						√				√		
Lack of training		√		√						√	√				√					√											√			√						√		√	√		
Disparity in technology		√		√				√	√	√	√																		√	√			√						√					
Organizational culture	√							√				√	√															√					√	√	√								√	√	√
Lack of performance measure		√								√											√																				√				
Inadequate information sharing																√												√	√	√					√					√					
Lack of competitiveness																		√		√			√											√						√		√	√		
Lack of flexibility in SC																													√				√									√		
Resistance to change																		√	√	√											√	√		√		√							√		

Sources: 1- (Akkermans et al., 2004); 2- (Mark Barratt 2004); 3- (Mark. Barratt 2004); 4- (BENDER n.d.); 5- (Frohlich 2002); 6- (Harland et al., 2001); 7- (Kilpatrick & Factor 2000); 8- (Londe 2003); 9- (Lee 2004) ;10- (Mentzer et al., 2000); 11- (Moberg et al., 2003); 12- (Pitera 2000); 13- (Smagalla 2004); 14- (Timme & Williams-Timme 2000) ; 15- (Tyndall 2000); 16- (D. Bowersox et al., 2003); 17-(J. Chung et al., 2008); 18- (Sahay & Maini 2002); 19- (Kaufman et al., 2002); 20- (Kotabe et al., 2003); 21- (Fawcett & Magnan 2001); 22- (Olafsen & Cetindamar 2005); 23- (Xu et al., 2007); 24- (Agarwal & Shankar 2003); 25- (Heikkilä 2002); 26- (Fu et al., 2008); 27- (Sahay & Mohan 2003); 28-(Ageron et al., 2013); 29- (Prater et al., 2001); 30- (Janita & Chong 2013); 31- (Doukidis & Pramatari 2007); 32- (Power 2005); 33- (Varma 2006); 34- (Thakkar et al., 2012); 35- (Rao & Goldsby 2009); 36- (Abdolvand et al., 2008); 37- (Charan et al., 2008); 38- (Singh & Kant 2008); 39- (Ramesh 2010); 40- (Chellappan & Natarajan 2011); 41- (Leung 2009); 42- (Fugate et al., 2006); 43- (Kelliher & Anderson 2009); 44- (Sladek & Hollander 2009); 45- (Upadhye et al., 2010)

5. Gaps in literature

In recent years, supply chain collaboration has become an emerging area of importance for every supply chain. Therefore, collaboration is a subject which needs more exploration. While large numbers of issues of collaboration have been researched but still there is few literature about the understanding of the concept of collaboration. Large numbers of organizations are failing and reluctant in the application of collaboration; this is due to lack of understanding of collaboration and not proper knowledge about initiative strategies of collaboration.

- Collaboration is a broad term; there are many short coming in the literature about the understanding of collaboration that needs to be further explored. The main gap is, the concept of collaboration is not discussed in an understandable way and therefore lack of understanding of collaboration is still present in the literature.
- Very few literature discussed the preparedness towards collaboration and there is not an appropriate measurement system by which depth of collaboration is to be measured. The literature on the topics like a relationship, commitment, and trust between partners of the supply chain is not well studied.
- Various types of technologies and skills are requiring executing long term collaborative relations, which also require attention in literature; this is mainly the readiness to collaboration.
- Very fewer numbers of studies include multi industry for their data collection; more studies have focused on single industry. There would be more techniques like stratified sampling should be used in data collection.
- Large numbers of study used the same individuals to collect data; by this same people give information on all performance measures. Therefore multi respondents should be considered to make more valuable results for the performance measure.
- The information regarding the collaboration is still abstract, the knowledge and a clear path are essential which guide the firms about the implementation and initial steps of collaboration and remove confusions like what and how to do to achieve collaboration.
- There is also a lack of literature on the pre requisite required to implement collaboration. How to resolve conflicts between partners, which is the best policy of governance about collaboration, these are some important aspects to be considered.
- There must be an appropriate collaborative culture, which provides the collaborative friendly environment. For achieving effective supply chain collaboration, there must be a burning desire for a deeper understanding the concept of collaboration. There must be the collaborative environment in which people get appreciation and regard for their views.
- Life cycles of products manufactured by companies have not been discussed in the literature.

6. Conclusion and Limitations

The comprehensive literature review addresses how the knowledge body on supply chain collaboration resembles with contemporary society and provides a summary to understand supply chain collaboration in a better way. The aim of current research is to understand the concept of supply chain collaboration. Collaboration within supply chain partners becomes a key concept to remain competitive in the global business environment, so understanding the concept of collaboration is the need of time for every supply chain to remain successful in the business. Collaboration is a vast term and it needs further clarification in the context of the supply chain. The complex type of supply chain nature has also been seen in the elements of supply chain collaboration. The undertaken literature review acts as a comprehensive for understanding the concept of supply chain collaboration. In results, various driving forces have been identified which are very important to implement collaboration in the supply chain. A large number of identified drivers & benefits may work as a motivation, whereas the identified barriers are the points under consideration for supply chain managers. The emerging theme like collaboration plays a

significant role to understand the supply chain collaboration in the context of its needs, types, evolution, and challenges. The outcome of this study is helpful for researchers in assessing a quick literature review about supply chain collaboration.

SLR is one of the objective methods to conduct a literature review and a subjective review may also be included to understand more in this area as a future study. The literature is segregated on the basis of a year of publication, sector, geographically based, types of organization etc. in the current study. However, the ranking of the identified drivers, benefits, and barriers may also be considered as the future scope of this study.

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