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### Critical Success Factors in the Supply Chain: An Adaptive Approach

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#### ABSTRACT

This article studies the critical success factors in supply chain management. The objectives of this study is to review the critical success factors and show the major factors which are apparent in the literature of the supply chain literature. Studying the literature is performed by the published studies on the critical success factors in the supply chain management. In this study, the critical success factors in the different supply chain management areas have been obtained by data base. Finally, the main critical success factors which have the most usage in the supply chain and their related subjects are separately summarized in one model based on internal and external factors (sun model). It is hoped that the present review is considered as a kind of strategy for the future research in strategic management to recognize the concept of the critical success factors in the supply chain.

**Keywords:** critical success factors, Strategic management, supply chain.

#### 1. INTRODUCTION

In today's fully competitive global market, the productive supply chain management plays the major role and is accepted as a key factor for the competitive advantage (Schneller & Smeltzer, 2006; White & Mohdzain, 2009). Shortening the product life cycle, increasing competition and the customers' changing needs have resulted in changing the traditional approach of logistics management into modern supply chain management. In the modern industrial world any kind of actions in order to reducing the production costs take into account and effective and efficient attempt (Handfield, 2000). The supply chain management is one of the effective and efficient approaches resulting in the reduced production costs and expectation time. Supply Chain Management has changed the business through increasing business skills and all members' performance in supply chain as a business philosophy (Cooper et. al., 1997; ferguson, 2000).

The effective Supply Chain Management is considered as a key to provide a stable semi- competition through improving inside and outside firm relationships (Elinger, 2000). A competitive environment requires that the firms provide their own services and products in high quality, respond rapidly the services and improve the dynamic capabilities coordinating to the growing and changing trade environment (Teece, 2009; Lee, 2011).

In this unstable market, companies confront an impetuous competitive environment due to globalization, technological changes, goods shorter life cycles, reduced final utility, economic shortened markets, and more informed customers with rapidly changing ad unique needs. The strategy of supply chain has been changed from production efficiency into synchronization approaches of cooperation and customer –centered requiring high level cooperation among all supply chain partners (Lou et. al., 2005). These varying market situations require the organizations to change their supply chain pathways, in order to more responding to the today’s trade environment demands and challenges. Companies have become involved a great change and revolution to implement the new operational strategies and technologies (Gunasekaran et. al., 2008). There are many definitions of SCM that almost all of them include coordinating production, assets, transportation, information and knowledge between the components of a supply chain to obtain the best possible combination of responding and efficiency for the market feeding it (Soo Wook, 2006). Therefore, SCM is to manage all activities related to goods transfer from raw material through final user including resourcing and security, scheduling production, order processing, asset management, transfer, warehousing and customer services. It also contains the necessary information systems to monitor and coordinate activities (Quinn, 1997). Some authors in the theoretical literature have provided several definitions about the critical success factors. One of these famous definitions is a definition which Rockart (1979) has provided inspired by Daniel (1961), Anthony et. al., (1972). According this definition the critical success factors are “a limited numbers of area having the satisfactory results will guarantee a competitive successful performance for the organization”. Rockart emphasizes that these specific activity areas must be constantly and carefully managed by organization (Rockart, 1979). Since the supply chains have been provided and utilized aimed at promoting competition, improving the quality of products and services provided, increasing the customers ‘ satisfactory level, reducing costs and finally increasing total profitability as a necessitate in the economic activities area, studying the critical success factors related to them is very important .

This article reviews the literature related to the critical success factors in the supply chain management area. The objectives of this study is to review these critical factors and demonstrate the main critical success factor which are mostly and commonly utilized in the literature of supply chain management. This article has been carried out in the way of studying the literature from published studies and in the form of Sun Model.

## **2. SUPPLY CHAIN MANAGEMENT**

The Council of Supply Chain Management Professionals has defined it as “integration of supply and demand including suppliers, intermediates, third-party service providers (3PL) and customers”. Cooperation and collaboration of suppliers, producers and customers in the supply chain include 8 business processes as customer relation, customer service, demand management, order completion, production flow, supplier relation, development of product, commercialization and reverse logistics (Cooper & et. al., 1997; Bowersox et. al., 2010; Lambert et. al., 1998). Additionally, use of the supply chain management in the firms results them in obtaining the lower operational costs, the better service reliability, inventory level reduction, order time cycle reduction, return order numbers reduction, improving the customer satisfactory, and improving total competitive advantage (Shaw & Chuang, 2000; Beamon,1999; Cooper & Ellram,1993; Ellram,1991, Ballou,

2007). The term of supply chain management was firstly introduced by Cooper in 1982 (Cooper et. al., 1997) and is explained as systematic and strategic integration of business functions from consumer through major supplier (Cooper et. al., 1997; Mentzer et. al., 1995; Lambert et. al., 1998). Supply chain is a process including all activities from identifying customer needs through product selection, suppliers negotiation, payment, storage, redistribution, improving and maximizing total value provided and its profitability is each objective of supply chain and its success is based on total chain profitability and not on each profit of component in the different stages. Therefore in a supply chain, it is attempted that instead of cost transitions into upstream and downstream parts, firms are encouraged to improve the flow in total chain and with participative thought. However exercising intersectional coordination in a supply chain is hardly performed. However, the long -term relationship between chain components has been significantly considered (Kim, 2000).

### **3. CRITICAL SUCCESS FACTORS**

According to Rockart, the Critical Success Factors include “a limited number of areas having satisfactory results will guarantee a successful competitive performance for the organization (Rockart, 1979). Critical Success Factors are introduced as tools to define the top managers information needs (Martin, 1982; Boynton & Zmud, 1984). In addition because of solving and correcting the present problems, executive directors attempted to determine and identify the best and the most critical information from all reports being critical for the present operational actions and its future success (Rockart, 1979; Boynton & Zmud, 1984). Besides, critical success factors can be used to develop strategic planning, environmental analysis and strategy evaluation (Munro & Wheeler, 1980; Leidecker & Bruno, 1984). Not only this, but also Critical Success Factors are important to identify the important and critical subjects to execute planning, help approach a better organizational performance, help the manager to allocate the better resources and also use to provide guidelines to monitor the organization activities. One can totally emphasize that Critical Success Factors are reliable tools because they help the managers to approach the strategic objectives and better success through more participation (Munro, 1983; Quesada et. al., 2007). Although critical success factors were firstly considered to plan management information system (Munro & Wheeler, 1980; Martin, 1982), they were used by different studies outside of their traditional area. According to these studies, coordination and participation as the most major supply chain success factors play a strategic role in the relationship between the independent components of supply chain. Increasing information flow, reducing uncertainty, utility of total chain, controlling better the supply and distribution pathways and so on. To approach a more desirable result, an appropriate bedding and acculturation among managers and employees of a chain is necessary. (Lonngren et. al., 2010).

### **4. DISCUSSION**

Success factors application in the supply chain management studies can be searched in the studies performed by Chiu, 1995; Tate, 1996; Korpela & Tuominen, 1996; Chuang & Queeada et. al., 2011; Syazwan & Ab Talib & Muniandy, 2014, Syazwan AbTalib & Hamid, 2014; Attaran, 2012, Manian et. al., 2010). Nonetheless, the studies performed consist of successful logistic participation fundamentals including operational, cultural and value consistency, understanding business needs, effective communication, mutual commitment, flexibility and trust (Tate, 1996). Additionally, one can conclude (Lonngren et. al., 2010) that trust among partners in supply chain can be increased through establishing a constant relationship between partners (Razzaque & Sheng, 1998; Thakkar et. al., 2013; Dinter, 2012; Ngai et. al., 2004; Ogden, 2006). Also studies related to the critical success factors in E-SCM are influenced by works performed by (Cullen .Taylor, 2009; Akyuz

& Rehan, 2009; Ngai et. al., 2004; Favilla & Fearne, 2005; Gunasekaran & Ngai, 2004, Hwang & Lu, 2013, Puschmann & Alt, 2005; Farzin & Nezhad, 2010; Chow, 2004). According to all of them, information technology is one of the critical success factors in electronic supply chain. Technological fundamentals such as Web-based Information System, Electronic Data Interchange (EDI) Extensible Markup Language (XML) and Organizational Resource Planning and hardware and software reliability are of critical fundamentals to form electronic supply chain and effective relationship between supply chain members (Cullen & Taylor, 2009; Akyuz & Rehan, 2009; Ngai et. al., 2004; Gunasekaran & Ngai, 2004). Information technology is also apparent in studying the other critical factors of supply chain management such as partnership in supply chain and adapt to information technological logistics service and communications and transportation (Hidalgo & Lopez, 2009; lonngren et. al., 2010), Green supply chain management (Kim & Rhee, 2012), reverse logistics (Hong et. al., 2008), humanitarian supply chain (Pettit & Beresford, 2009) and agile supply chain (Power et. al., 2001). Although, information technology is the main factor in studies of critical success factors in supply chain management, if it doesn't receive any support from organization it will not approach its desirable goal. Information Technology and organizational support should be parallel to each other (Farzin & Nezhad, 2010; Hwang & Lum 2013; Ngai et. al., 2004). Organizational commitment and support have a positive influence on the company's performance and utilization, in addition to organizational participation can improve supplier- firm relationship and provide a better evaluation from supplier (Hu & Hsu, 2010; Wu & Hsu, 2009; Routroy & Pradhan, 2013; Wu & Weng, 2010). If organization participative culture is weak, top management support in supply chain will be unrelated. (Thoo et. al., 2011). Developing effective supply chain management strategies and emphasizing on main strengths are critical success factors studied in the different studies (Kumar et. al., 2015; Lee, 2000). Also, the other factor which has been studied and emphasized in the area of common critical factors is quality (Lin et. al., 2013; kuei et. al., 2013). Studies related to critical success factors in supply chain in some cases are performed such as reverse supply chain (RSC) (Hong et. al., 2008), auxiliary supply chain (Pettit & Beresford, 2009), food supply chain (Fearne & Huges, 2000), small logistics firms (Gunasekaran & Ngai, 2003), Third- party Logistics (3PL) and customer relationship in third- party logistics (Mothilal et. al., 2012; Lao et. al., 2011; Ragesh et. al., 2011), knowledge management system ( Wu & Weng, 2010; Skyrme & Amidon, 1997; Hasanali, 2002; Chourides et. al., 2003; Yu, 2004; Jennex & Olfman, 2005; Migdadi, 2009; Linder & Wald, 2010), book supply chain (Drotos & Morics, 2006), supply chain management in high- tech firms (Soin, 2004), health care supply chain management (Pinna et. al., 2015) and many other cases. According to previously mentioned, it is clear that critical success factors are studied in supply chain management areas and repeated critical success factors in many of supply chain management studies imply that the success factors are based on the different functions areas in supply chain management. The goal of this research is to study literature emphasizing on critical success factors in supply chain management areas reviewing academic works. The most important critical success factors studied are as follows. This article also determines common and main critical success factors which are apparent in supply chain management areas by many reviewed data bases and articles. In order to finding critical success factors in supply chain, this study utilizes subject literature study method and establishes the possibility of providing the important variables from the previous studies which should be carefully checked. Additionally, subject study uses various databases. Scholar Google is also used because research work range in Scholar Google was extensive and included the most important archive of academic publishers (Jasco, 2005). Totally, a lot of academic subject literature including journal articles, conference meetings and PhD thesis were collected. In the following, studies and research performed on critical success factors in SCM have been summarized and it has attempted that common critical success factors obtained from various studies take into account. (Tables 2.1 and 2.2).



**Table 27.1**  
**Studying critical success factors in supply chain management**

<i>Supply chain management field</i>	<i>Critical success factors</i>
Critical success factors of supply chain management (Chuang & Shaw, 2000)	Top management commitment; consultant skills; schedule reliability; budget reliability; implementation team skills; compatibility with legacy system
Transport and Logistics Services ICT Adoption (Hidalgo & Lopez, 2009)	Market competence; skilled employees; inter-firm collaboration
Supply Chain Partnership in Construction (Lonngrén et al., 2010)	Decentralized task management; application of information technology; mutual trust
ERP II Implementation in Supply Chain (Koh et al., 2011)	Operational efficiency; efficient legacy enterprise system; common partner goals; similar partner priority; collaboration partner support; partner trust; partner culture similarity; relationship change management; data standard consistency
Green Supply Chain (GSC) (Kim & Rhee, 2011)	Collaboration with partners; mutual trust; green business understanding; planning and implementation; standardizing and integration; activation of supporting for GSC; strategic use of IT
E-commerce in Supply Chain (Cullen & Taylor, 2009)	System quality; information quality; management and use; world wide web-assurance and empathy; trust
E-supply chain requirements (Akyuz & Rehan, 2009)	Replacement of, or integration with legacy system; streamlining and standardizing internal processes; implementation, adoption or updating ERP system; streamlining external processes; strategic business alliance; basic technologies; security and trust
Supply Chain Management in SME (Takkur et al., 2013)	Effective partnership; improve communication; logistics integration; supply chain business strategy; buyer -supplier relationship; effective planning and control; trust among supply chain partners; availability of performance management tools.
Information logistics strategy (Dinter, 2012)	Comprehensiveness; flexibility; top management support; communication; IT strategy orientation; business it partnership; project collaboration
Web-based supply chain management (Ngai et al., 2004)	Communication; top management commitment; training and education; data security; reliability of hardware and software
Virtual supply chain (Gunasekaran & Ngai, 2004)	Strategic alliance; web-based information system; automation for business process and re-engineering; supply chain visibility; performance management system
Supply Base reduction (Ogden, 2006)	Top management support; cross-functional teams; standardize part and descriptions; supplier performance evaluation system; good communication; win-win relationship; good information system; hiring right people
Supply Chain software implementation (Favilla & Fearne, 2005)	Commitment of senior management; business; project business goal alignment; software capabilities; partner selection; apply proven; implementation methodology; incremental value gain approach; prepare for business changes; keep end users informed; measure success with KPI
E-supply chain management implementation (Hwang & Lu, 2013)	Top management commitment; clear goals, objectives and business requirements; key business process reengineering; project implementation strategy; policies and regulation; process to ensure interdependent cooperation; integrate process into system; data quality and information transparency

*Supply chain management field*

*Critical success factors*

	in SCM; change management; formation of a project team; direct cross-organizational communication; joint agreement of performance and value evaluation; underlining infrastructure and application readiness; process and data exchange standardization; supply chain partnership selection
E- procurement in supply chain (Farzin & Neghad, 2010)	Introduction project; organization support; content and catalogue management; supply chain process; operation efficiency
Green supply chain (HU & Hsu, 2010)	Supplier management; product recycling; organizational involvement; life cycle management
Fresh Produce Supply Chain (Fearne & Hughes, 2000)	Good quality employee; continuous investment; cost control; innovation; improvement of measurement
3PL Selection (Lao et. al., 2011)	Quality improvement; cost reduction; service quality; reputation; primary customer loyalty; complaint
3PL Customer Relationship (Rajesh et. al., 2011)	Service relationship elements; role of organization; organization hierarchy; operational elements; performance elements
Supply Chain Quality Management (Lin et. al., 2013)	Supplier relationship; information technology; process management; top management support; human resource management; quality management; strategic planning; knowledge management
Supplier development in manufacturing supply chain management (Routroy & Pradhan, 2013)	Long-term strategic goal; top management commitment; incentives; supplier's condition; proximity to manufacturing base; supplier certification; innovation capability; information sharing; environmental readiness; external environment; project completion experience; supplier status; direct involvement
Supplier selection in supply chain management Selection in Supply Chain Management (Wu & Weng, 2010)	Price response capability; quality management capability; technological capability; delivery capability; flexible capability; management capability; commercial image; financial capability
Green supply chain drivers in Malaysia; conceptual framework of critical success factors (Syazwan Abtalib & Muniandy, 2013)	Information system/technology, human resource management/knowledge, cooperation and integration, government support
Critical success factors application in supply chain management, (Syazwan Abtalib & Hamid, 2014)	General study of critical success factors
Critical knowledge management factors in temporary organizations (Linder & Wald, 2010)	Culture and leadership (informal networks, fault tolerance rate, research culture, management commitment), organization and process (control activities of knowledge management, institutionalization of knowledge management, and project management, project management, communications and information technology support (systems communications)
Emerging trends in healthcare supply chain management, an experience from Italy (Pinna et. al., 2015)	Costs reduction rate and waiting time, new operational strategies creation, quality provision and flexibility development to encounter rapid changes in economic- social area
Critical success factors and functional challenges of Radio frequency Identification in supply chain management work (Attaran, 2012)	Defined business needs, top management participation, business advantages, Radio frequency, group work
Identification of effective factors on supply chain performance (case study of automobile spare parts making industry (Manian et. al., 2010),	Customers, cost, flexibility, provider and time

**Table 27.2**

**Common critical success factors obtained from studying various articles on supply chain management**

External Factors	Reliable suppliers	Olorunniwo and Hartfield (2001), Petersen, Handfield, and Ragatz (2005), Othman and Ghani (2008), Singh, Garg, and Deshmukh (2008c), He, Zhao, and He (2009), Kumar et al., (2013), Kumar et. al., (2015), Kim & Rhee (2012), Drotos & Moricz (2006), Kumar et. al., (2015).
	Group participation	Koh et. al., (2011), Dinter (2012), Hu & Hsu (2010), Power et. al., (2001), Routroy & Pradhan (2013).
	Focus on customer	Razzaque & Sheng (1998), Lao et. al., (2011), Soin (2004), Chen & Paulraj (2004), Kuei et. al., (2008), Queeda et. al., (2011), Manian et. al., (2009), Farsigany & Falahhossani (2011).
	Trust development in SC partners	Anderson and Narus (1990), Morgan and Hunt (1994), Sahay (2003), Bianchi and Saleh (2010), Singh (2013), Tejpal, Garg and Sachdeva (2013), Chuang & Shaw (2000), Lonngren & et. al., (2010), Koh et. al., (2011), Tate (1996), Korpela & Tuominen (1996), Kim & Rhee (2012), Cullen & Taylor (2009), Akyuz & Rehan (2009), Thakkar et. al., (2013), Kumar et. al., (2015).
Both External & Internal	Laws and regulation	Hwang & Lu (2013), Salami et. al., (2011).
	Devoted resources for supply chain	Shin et. al., (2000), Gunasekaran, Mcnell, Mcgaughey, and Aja (2001), Singh et. al., (2010), Singh (2013), Migdadi (2009), Kumar et. al., (2015).
	Developing just in time capabilities in SC	Gittel and Weiss (2004), Arshinder, Kanda, and Deshmukh (2007), Othman and Ghani (2008), Singh (2013), Power et. al., (2001), Soin (2004), Kumar et. al., (2015).
	Top management support and commitment	Fisher (1997), Shin, Collier & Wilson (2000), Arshinder, Kanda & Deshmukh (2008), Singh et. al., (2008c), Stanley et. al., (2009), Sandberg and Abrahamsson (2010), Singh (2010), Singh (2013), Chuang & Shaw (2000), Cooper & Ellram (1993)Chiu (1995), Dinter (2012), Ngai et. al., (2004), Ogden (2006), Chen & Paulraj (2004), Cai et. al., (2003), Favilla & fearne (2005), Hwang & Lu (2013), Farzin & Nezhad (2010), Al-Fawaz et. al., (2008), Lin et. al., (2013), Routroy & Pradhan (2013), Syazwan Ab Talib & Abdul Hamid (2014), Yu (2004), Jennex & Olfman (2005), Migdadi (2009), Linder & Wald (2010), Attaran (2012), Soin (2004), Kumar et. al., (2015).
	Development of effective SCM strategy	Lee (2000), Cao, Zhang, To and Ng (2008), Soroor, Tarokh, a Shemshadi (2009), Singh et. al., (2010), Singh et. al., (2012), Kumar, Singh, and Shankar (2014). Chen & Paulraj (2004), Hwang & Lu (2013), Petti & Beresford (2009), Chourides (2003), Migdadi (2009), Kumar et. al., (2015).
Internal Factors	Logistics synchronization	Bowerbox (1990), Simatupang, Wright, and Sridharan (2002), Thakkar, Kanda, and Deshmukh (2008), Singh et. al., (2012), Kumar, Singh, and Shankar (2013), Kumar, Singh, and Shank (2015), Kumar et. al., (2015).
	Use of information technology	Lee, Padmanabhan, and Whang (1997), Arshinder et. al., (2008), Thankkar et. al., (2008), Singh (2013), Lonngren & et. al., (2010), Kim & Rhee (2012), Akyuz & Rehan (2009), Dinter (2012), Ogden (2006), Mothila et. al., (2012), Gunasekaran & Ngai (2003), Tummala et. al., (2006), Wu & Hsu (2009), Lin et. al., (2013), Kong (2005), Queeda et. al., (2011), Hasanali (2002), Chourides (2003), Yu (2004), Linder & Wald (2010), Attaran (2012), Kumar et. al., (2015).
	Information sharing with supply chain members	Ramdas and Spekman (2000), Ozer (2003), Stanley et. al., (2009), Singh et. al., (2012), Koh & et. al., (2011), Cai et. al., (2013), Wu & Hsu (2009), Routroy & Pradhan (2013), Routroy & Pradhan (2013), Kumar et. al., (2015), Francesca et. al., (2008), Arshinder et. al.,

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Forecasting demand based on point of sales	Francesca et. al., (2008), Arshinder et. al., (2008), Marek and Malyszek (2008), Kumar et. al., (2015).
Flexibility	Das (2001), Olhanger and West (2002), Arshinder et. al., (2007), Singh (2013), Tate (1996), Korpela & Tuominen (1996), Inter (2012), Wu & Weng, (2010), Yu (2004), Pinna et. al., (2015), Manian & et. al., (2009), Farsigany & Falahhossani (2011), Kumar et. al., (2015)
Focus on core strengths	Singh, Garg, and Deshmukh (2008b), Thakkar et. al., (2008), Kumar, Singh, and Shankar (2012), Kumar et. al., (2014), Kumar et. al., (2015).
Long-term vision for survival and growth	Ganesan (1994), Morgan and Hunt (1994), Thakkar et. al., (2014), Ganesan (1994), Morgan and Hunt (1994), Thakkar et. al., (2008), Singh et. al., (2012), Kumar et. al., (2013), Kumar et. al., (2015).
Human resource	Razzaque & Sheng (1998), Mothilal et. al., (2012), Soin (2004), Pettit & Beresford (2009), Ln et. al., (2013), Migdadi (2009), Mahdavi et. al., (2008).
Quality improvement	Lao et. al., (2011), Soin (2004), Chow (2004), Hong et. al., (2008), Kuei et. al., (2008), Lin et. al., (2013), Wu & Wang (2013) Chourides (2003), Pinna et. al., (2015).
Cost reduction	Lao et. al., (2011), Hong et. al., (2008), Pinna et. al., (2015), Manian et. al., (2009), Farsigany & Falahhossani (2011).

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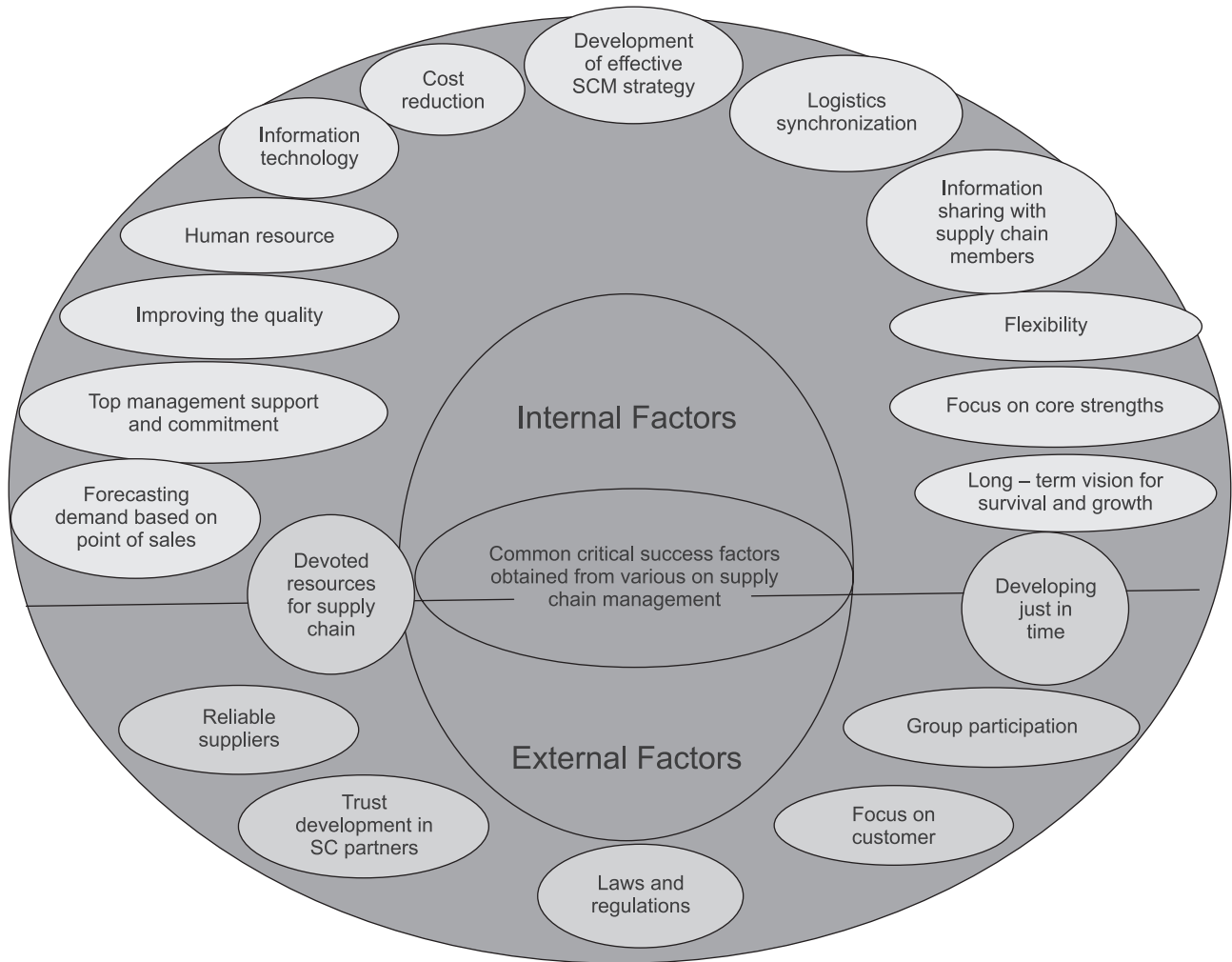
## 5. CONCLUSION

This research has been performed in order to show critical success factors in supply chain management fields resulting from the review of articles related to critical success factors in supply chain management. Some common factors had been investigated in the previous studies and in the present study it has been attempted that more studies and references are studied and the more common critical success factors are extracted among various investigations. For this reason in order to summarizing and integrating, critical success factors were extracted in the form of a Sun model based on external and internal factors .Critical success factors are used to developing strategic planning, environmental analysis and strategic evaluation. Organizational commitment and support have a positive influence on firms' utility and performance and also increase customer satisfaction and devoted resources better. If organization participative culture is weak, top management support in supply chain will be unrelated. Participation and coordination as the most critical supply chains success factor play a strategic role in the relationship between supply chain independent components. Supply chain participation results in increasing financial and executive efficiency and effectiveness through reducing total costs, reducing inventory along chain and increasing information exchange level. Organizational participation can improve firm – supplier relationship and provide a better evaluation from supplier. Forecasting demand just in time based on point of sale is also a critical success factor in the successful supply chain increasing organization effectiveness.

For more explanation Some of effective factors to success supply chain include an uniform behavior between customers and suppliers, having long-term vision for survival and growth in chain, sharing information with all supply chain levels, coordination and cooperation in along supply chain and developing coordination needed, integrating the current activities in supply chain processes, developing effective strategies, providing participation and partnership based on mutual trust and reliability among partners, using various suppliers ( outsourcing ), using devoted resources, providing quality goods or services, providing goods or services considered just in time and logistics synchronization, flexibility in supply, effective use



of information systems to transfer supply chain information, focus on core strengths, sharing knowledge and technology, considering constraints and opportunities provided by laws and regulations. These critical success factors are supported well by the articles related to supply chain management. Generally, research design and methodology also confirm that critical success factors are an appropriate approach and tool in supply chain management studies. Additionally, by reviewing methods it hopes that the future studies related to supply chain management attempt to use these factors and show their function. A schema of main critical success factors in supply chain management based on external and internal factors is shown below. (Sun model)



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