Impact of Supply Chain Tiers on Supply Chain Performance through a Moderating Role of Knowledge Management Practices: A Case of Automobile Sector of Pakistan

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By
Kashif Mahmood
Roll No. PDBA 14207
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FACULTY OF BUSINESS & MANAGEMENT SCIENCES
THE SUPERIOR COLLEGE LAHORE

Abstract

Nowadays, businesses around the globe are competing based on their supply chains rather than their products. The reason behind this paradigm shift is the connectivity of entities and processes from end-to-end that enables businesses to visualize the actual data and to take decisions accordingly. Considering the situation prevailing in the current era, knowledge management has also become extremely important. Even economies are becoming knowledge-based economies. To check whether knowledge management truly impacts supply chains and the relationships of supply chain management practices with supply chain performance, the study aims to measure the moderating impact of knowledge management practices on the relationship of supply chain management practices with supply chain performance.

To achieve the objectives of the current study, quantitative methods were used under the positivist paradigm and deductive approach where the survey method served as data collection method. A questionnaire was adapted and data was collected from 53 CEOs of automobile companies in Pakistan. Data was analyzed by using SPSS 25 and SmartPLS. All ethical considerations were taken into account before approaching the respondents and collecting data from them. Data confidentiality, and use of collected data, was a major ethical issue that was ensured throughout the research.

The analysis of data showed that the direct relationships of supply chain management practices with supply chain performance were significant, which means that the activities of supply chains have a positive impact on supply chain management; however, the moderating hypotheses were mostly rejected. The industry dynamics were extremely important in the rejection of those moderating hypotheses. The study had a few limitations in terms of its data collection, application of the model to one sector and the respondents.

The study is unique in this regard as no prior study was found to have considered the complete supply chain network in one framework where an attempt has been made to check

the moderating role of knowledge management practices. In this study, the consideration of supply chain management practices, knowledge management practices and supply chain performance through their further dimensions has enhanced the scope of study and its uniqueness as compared to previous research.

Keywords**:** *Supply Chain Management, Supply Chain Management Practices, Supply Chain Performance, Supplier Relationship Management, Internal Supply Chain Management, Customer Relationship Management, Knowledge Management Practices, SCOR Model, Resource-Based View*

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List of Abbreviations

AVE	Average Variance Extracted
BSC	Balanced Scorecard
BSL	Business Systems Leveraging
CBR	Case-Based Reasoning
CMV	Common Method Variance
CFA	Confirmatory Factor Analysis
CR	Composite Reliability
CRM	Customer Relationship Management
GSCM	Green Supply Chain Management
HTMT	Heterotrait-Monotrait Ratio
IDIC	Identify, Differentiate, Interact, Customize
ISCM	Internal Supply Chain Management
KMP	Knowledge Management Practices
PAMA	Pakistan Automotive Manufacturers Association
PLS	Partial Least Squares
QCI	Quality Competitive Index
RBV	Resource-Based View
SCM	Supply Chain Management
SCMP	supply chain management practices
SCOR	Supply Chain Operations Reference
SCP	Supply Chain Performance
SEM	Structural Equation Modeling
SRM	Supplier Relationship Management

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Dedication

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Chapter 1: Introduction

1.1 Background

Businesses have always focused on introducing innovative and unique ideas, techniques, and methods to optimize their business processes, improve existing operational activities and gain efficient optimal output, which results in the increased performance of organizations. To maintain a trend of overall increasing performance, an organization depends on the integration of, and liaison among, its various stakeholders. The relevance to companies of the advent of SCM as a tool for optimum productivity and improvement in organizational efficiency is evident (Handfield & Cousins, 2015). SCM plays an important role in ensuring organizational stability in revolutionized and cost-effective markets (Christopher, Harrison, & van Hoek, 2016) where the nature of competition has transitioned from being within the business (Ansari & Kant, 2017) to an intensified point where the supply chains of a business are considered a new parameter of performance (Aköz & Petrovic, 2007) in terms of their various stages, aspects, perspectives and practices (Hugos, 2018).

Early empirical research focused on developing instruments that could be utilized to measure SCM practices (SCMP) (Kumar & Reinartz, 2018; Maestrini, 2017; Schaltegger & Burritt, 2014); however, in the last decade, the relationship between SCM and organizational performance has been widely discussed (Mumtaz & Ali, 2018; Paulraj, 2017) where organizational performance is synonymous with improved supply chain performance (SCP) and refers to a continuous striving for the optimization and integration of the whole supply chain process (Chan, Ngai, & Moon, 2017; Handfield & Cousins, 2015). Organizational success depends on the effectiveness and vitality of SCP as a constituent of SCM (Li & Ragu-Nathan, 2006). For managers, an effective SCP process generates viable profitability and financial assets for the organization. Shepherd and Günter (2010) explored the relationship between SCP and organizational performance by critically studying performance measurement

systems and they devised a taxonomical system for the measures. Similarly, Gunasekaran and Kobu (2007) focused on devising minimum performance measures to obtain accuracy in the operational functionalities of supply chain and logistics. Furthermore, Cuthbertson and Piotrowicz (2008) adopted a case analysis approach to highlight the best practices within the domain of supply chain which can be attributed as performance boosters and reflectors of organizational performance improvement (Leksono, Suparno, & Vanany, 2017). A literary study of performance metrics was carried out in which the performance level of supply chain was associated with an organization's sustainable standing (Narimissa, Kangarani-Farahani, & Molla-Alizadeh-Zavardehi, 2020). However, Leksono et al. (2017) confined their studies to the service sector. Likewise, review-based publications have been presented considering the integration of supply chain practices with SCP, information technology, business process management and knowledge management, which covered a huge and wider perspective by including people, processes and numerous functional or operational aspects (Akyuz & Erkan, 2010; Ansari & Kant, 2017; Meixell & Luoma, 2015; Roy & Schoenherr, 2018; Touboulic & Walker, 2015). Another important contribution focused on analyzing the driving forces of a supply chain, considering aspects of performance measures and buyer–supplier partnerships specifically within small and medium industries; they highlighted four functional parameters of performance: performance level of marketing, sales, research and logistics departments (Somarin, Asian, Jolai, & Chen, 2018). Given the connection between the success of operations in the supply chain and the performance of a business organization, an evaluation criterion or a set standard should be opted for at all levels or degrees of supply chain activities (Troselj, 2014).

SCP is recognized as the performance driver for an organization; success plays a critical role in giving the company a competitive advantage in the industry and, hence, performance is considered synonymous with the viability of the supply chain (Barney, 2012). SCP

effectiveness refers to taking the necessary action at the right time while achieving the lowest cost and optimum efficiency where performance management tools are the central controlling factors of the whole supply chain process (Taticchi, Tonelli, & Cagnazzo, 2010). The performance management tools aid in achieving objectives, attaining excellence, and devising strategies based upon competitive research analysis and suggestions (Croom, Romano, & Giannakis, 2000). The competition in the industry majorly depends upon the extent to which SCP evaluation has been well structured and strengthened in an organization, to better evaluate factors relevant to the overall success of a company along with the methods and techniques to be used (Bai, Sarkis, Wei, & Koh, 2012). SCP evaluation tools majorly reflect on the strengthened aspects and weaker perspectives of SCP (Azevedo, Carvalho, & Matias, 2017; Tseng, Lim, & Wong, 2018). Furthermore, they also identify potential threats along with the opportunities which a firm can grab immediately in order to excel in the market by considering proactive actions to improve SCP, which would lead to improved organizational performance (Bhattacharya et al., 2014).

An analysis of supply chain research clearly indicates that SCP management measures include: integrated indicators related to individual and collective approaches of supply chain (Bechtel & Jayaram, 1997), systematic and hieratically structured drivers (Azevedo, Carvalho, & Machado, 2011; Carvalho, Barroso, Machado, Azevedo, & Cruz-Machado, 2012; Chan et al., 2017; Holmberg, 2000) as well as referent modelling aspects (Bai et al., 2012; Bhagwat & Sharma, 2007; Brewer & Speh, 2000). In brief, different dimensions of SCP management systems have been studied to better evaluate factors relevant to the overall success of a company along with the methods and techniques to be used (Lin & Li, 2010). Aramyan (2007) considered the level of responsiveness, quality, efficacy and flexibility to further extend evaluation studies of SCP management. The literature shows that SCP is a powerful foundation of business that has been studied by scholars, specialists and business administrators using

different SCM approaches which include the integrated procurement approach (Burt, 1984; Guerrero & Kirkpatrick, 2001), suppliers' amalgamation (Autry & Golicic, 2010; Griffith & Zhao, 2015), customer relationship management (CRM) perspectives (Behrad & Mozaffari, 2016; Kasemsap, 2018) and internal SCM (ISCM) (Wong, Lai, & Cheng, 2011) while ensuring strategic alliances (Dyer, Cho, & Cgu, 1998; Dyer & Singh, 1998) among these processes.

To improve dyadic performance, Supply chain Performance is presented as a constructive approach for both the business and its stakeholders (Eltantawy, Fox, & Giunipero, 2009; Wang, Wee, & Tsao, 2010). Effective integration with internal as well as external. Transactional and operational expenses for involved parties can be lessen through effective integration with internal as well as external partners. Opportunistic behavior and cost of controlling and regulating the economic interactions can be controlled by developing good relationship between partners (Anderson & Weitz, 1992; Heide & John, 1990). Exchange of knowledge or information is the key source to develop integrated partnership between business and its stakeholders while ensuring products, plans and capabilities are kept on the same node (Yang, Rui, Rauniar, Ikem, & Xie, 2013). Overall Supply Chain Process can be improved through amalgamation of customers, suppliers and internal stakeholders, It improves productivity and hence increases the performance of the organization.

Supplier relationship management (SRM) and organizational performance are interrelated where the integration of suppliers of a business is considered to be a vital contributor towards an improved SCP level leading to improved business performance (Fredendall & Hill, 2016). SRM enables organizations to develop strategic as well as operational business capacities and capabilities through unifying the individual suppliers of the business. It helps in attaining ongoing benefits and to accomplish business goals (Lee, Padmanabhan, & Whang, 1997). A strategic partnership between businesses and their suppliers fosters mutual efforts towards solving their business problems and emphasizes mutual planning

that considers the shared benefits of the organizations and suppliers while leading to long-term associations (Kroes & Ghosh, 2010). Strategic alliances enable the suppliers to share the responsibilities of the business in terms of products' success. Furthermore, the amalgamation of suppliers into the product design phase may yield cost effective alternative choices for the businesses and aid in choosing the best designs through considering multidimensional perspectives, opinions and criticism (Min & Kim, 2012). The supplier relationship approach is also considered time efficient where the integrated approach provides a broader and multidimensional view and hence eliminates wasteful time as well as efforts which might hinder organizational performance. Deficiencies in building strong and long lasting relations with suppliers and most companies, especially those who do not understand the need for SRM, are threatened by their lack of integration with other supply chain activities. (Afolayan, White, & Mason-Jones, 2016). Considering the highly complex, dynamic and continuously evolving nature of SRM and the considerable expansion of distribution channels (Golicic & Smith, 2013), there is a dire need for companies to understand the comprehensive yet highly challenging and critical nature of buyer–supplier relationship and its connectivity to the organization's competitive edge, sustainability of business in the market, SCP and organizational performance (Akyuz & Erkan, 2010; Azevedo et al., 2017).

Likewise, collaborative behavior between the business and its stakeholders positively impacts interorganizational relationships. Interorganizational collaboration is the primary governing factor, the determinant of future actions and standing of the organization, which is considered to strengthen the pillar of the organizational supply chain process (Guarnieri, 2014). However, the value of exchanged information among the interdepartmental participants is considered the major influencer to enhance collaboration and motivation level. More information pertaining less worth is useless (Ellinger, 2000). The supply chain has always been an area of interest since 1980, for researchers from the perspective of collaboration and

coordination : identifying the collaborative approach among buyers and sellers specifically as being related to determining the performance level of the supply chains (Maestrini, 2017). Many studies (Chan, Shen, & Cai, 2018; Eltantawy, Paulraj, Giunipero, Naslund, & Thute, 2015; Heydari, Govindan, & Jafari, 2017; Sarkar, 2016) in the current era of 2000s have also validated the extent to which coordination schemes influence the decisions regarding supply chain integration along with its impact on SCP (Boonjing, Chanvarasuth, & Lertwongsatien, 2015).

Although external factors and resources are important, the production and delivery of a quality product cannot be guaranteed in the absence of internal alignment of the supply chain within an organization, which refers to strengthening the internal processes. A few important constituents of ISCM include optimized internal processes, strategic and in-depth planning, production and marketing aspects, comprehensive management, human capital management and adoption of a proactive approach against unforeseen circumstances; all of which combine to promote the efficiency, improved ability and affectivity of an organization's SCP (Turkulainen & Ketokivi, 2012). It is a multifunctional approach adhering to the involvement of manufacturing, sales and distribution departments within the business where the organization's success as a whole and explicitly the supply chain, is dependent on the ISCM status of an organization. Virpi Turkulainen and Mikko Ketokivi (2012) stated that ISCM refers to an achieved integration level among the various organizational components, processes and activities. According to their study, achieved integration has been presented as being connected to the whole organization where high integration leads to highly unified organization and vice versa.

When the performance of supply chain practices in relation to improved organizational performance is discussed by considering integrated approaches, CRM has dominated all the industries where the relationship between customers and suppliers is another significantly

important constituent of SCMP. It includes developing and upholding strong and long lasting connections with customers, with an ultimate focus on fulfilling their needs (Nyadzayo & Khajehzadeh, 2016). The CRM system proves to be highly useful in order to get an in-depth insight about the tracking, preferences, needs, likes and dislikes of customers; the departments of marketing and sales rely more than other departments on such systems to track and structure their strategic moves, which are based on customers' information, to fulfil customers' expectations through using the purpose-built tool of CRM (O'donnell et al., 2016). CRM is not confined to outperforming the industrial competition, it has also been integrated into other SCMP to get breakthrough into the industry based on customer-focused needs while improving the financial metrics of an organization; hence, it necessitates the integration of business and supply chain practices to avoid the complexity which a standalone constituent might have faced (O'donnell et al., 2016).

The concept of SCM amalgamates a huge network while encompassing all the internal and external components where collaborative and coordinating approaches towards the business stakeholders are considered bridges to eradicate the gap in information flow and lead the organization towards the progressive and developmental track (Christopher et al., 2016). However, globalization, increased competition and transformed the industrial economies into knowledgeable assets because in the current age of information has given rise to the concept of intellectual capacity or strength of an organization, which is termed knowledge management. To achieve viable benefits in business, knowledge-based competencies have been used as a tool (Afolayan et al., 2016). This transition has shifted the focus of business ventures from fundamental working structures to adopting modernized patterns resulting in enhancing the level of knowledge implication in the organization (Kidd, 2012). Knowledge-based economies consider the inculcation of optimized knowledge databases and reserves which a company's

human capital can utilize to further their horizons and proactively achieve organizational objectives (Felfernig, Hotz, Bagley, & Tiihonen, 2014; Jansen, 2017; Kogut & Zander, 1992).

Despite the reality that it is certainly vital to comprehend the know-how of knowledge management methods, techniques, processes and frameworks along with an understanding of knowledge development, management and expert level incorporation and consideration of the controlling aspects, very few studies have been conducted considering the subject (Hislop, Bosua, & Helms, 2018). Academicians and industry representatives consider knowledge management a strategic tool focused on maximization of intellectual capital (Ansari & Kant, 2017), productivity improvement (Wiig & Jooste, 2003), an innovative and progressive approach (Pitt & MacVaugh, 2008), increased agility and, lastly, improved operational efficacy (Hult, Ketchen Jr, & Slater, 2004). In short, it can be concluded that information management approaches are influential competency blocks of a business venture that emerged to give the business venture a distinguished standing in the competitive market (Foss & Mahnke, 2003).

From the organizational context, knowledge management assists the decision makers and other management representatives to enhance their knowledge capacity by providing a structured guideline on how to develop and explore the knowledge base, think to innovate, disseminate the learned knowledge and eventually succeed to automate the company's operations and functional domains (Becerra-Fernandez & Sabherwal, 2014). In simpler words, it refers to efficient information management with an integration of culture, organization, procedures and functional capacities of an organization. People are the knowledge creators and for the company they prove to be the most vital resources (Grant, 1996). These human resources, being synonymous with knowledge creators, follow an integrated approach through the organization's structural capacity, activities, processes and competencies. In simpler words, the knowledge-based view emphasizes the concept of capabilities synonymous with a crucial explanatory variable of performance.

Knowledge management impacts organizational performance due to its capability to deliver strategic results related to capacity enhancement within an organization, which leads to improved profitability and competitive standing of the organization in the industry (Chua, 2009). It is a necessary tool for the survival of businesses which aids organizations in creating economic as well as social value for their stakeholders. The concept of knowledge-based economies has established a direct association between knowledge competency and performance level of an organization to assess and forecast the company's longevity in the market (Bettis & Hitt, 1995). Kenneth Derr, who has been working as the chief operating officer of Chevron, shared that the practical implementation of a knowledge-based approach throughout the supply chain process of the company reduced the cost (Sabherwal & Sabherwal, 2005). Likewise, British Telecom noted an increase in their sales to about $1.5 million after acquiring a knowledge-based approach (Sabherwal & Sabherwal, 2005). Such recent examples validate the importance of further exploration of knowledge-based management within the context of SCM and the level to which the performance of the entire operation of the supply chain is affected.

Successful businesses realize the importance of creating, transforming, disseminating and utilizing knowledge in effort to accomplish their planned priorities and targets, ; hence, they consider knowledge management as the primary driver of organizational performance (Bosua & Venkitachalam, 2013). Due to the global emergence of knowledge management in all the organizational disciplines, SCP has been integrated with the knowledge competency of organizations; hence, a new concept of knowledge-based approach of the supply chain has been introduced (Nilsson-Lindén, Baumann, Rosén, & Diedrich, 2018). A knowledge-based approach within the context of the supply chain refers to the ability of a company to strengthen and develop its ability to understand in regards to its partners and subsequent supply chain processes (Tweedale, Jain, Watada, & Howlett, 2015). Numerous research studies (Craighead,

Hult, & Ketchen Jr, 2009b; Fugate, Stank, & Mentzer, 2009; Lin & Germain, 2003) have been conducted in the concerned domain so far and consistent results have been found in relation to amalgamating a knowledge-based approach of SCM with performance. Although a lot of studies have been presented, which validate the connecting of dots along the supply chain, knowledge-centered approach and SCP, there are several aspects and questions which are still unanswered (Ariffin, Abas, & Baluch, 2015; Song, Kim, Chai, & Bae, 2014).

Previous research has clearly validated that the adoption of a knowledge management approach into a business, redesigns its SCM process and performance evaluation measures, seeking the ultimate benefit of the business venture (Handfield & Cousins, 2015; Maestrini, 2017). It is very important for businesses to concentrate on improving their information management capabilities in order to guarantee their long-term existence in the marketplace while adhering to prevailing industry norms with regard to an effective supply chain. In addition, the introduction of knowledge management practices (KMP) into all facets of the supply chain increases the productivity of both the supply chain and the enterprise (Becerra-Fernandez & Sabherwal, 2014). The underlying principle of integrating KMP into a supply chain is to enhance capability and to synergize various components (Cormican, Gill, & Folan, 2010) to attain a pervasive and insightful standing in the market through innovative knowledge management incorporation into the business, which results in the improved expertise of assets. In brief, amalgamation of knowledge management refers to the effort of a company to gain operational efficacy in all the respective disciplines, activities and procedures at all levels in order to utilize the established synergized power to influence supply chain practices and hence yield an enhanced progression and improved level of performance.

1.2 Industrial Overview

Pakistan is a growing market for vehicle and allied industries, in particular, the groups concerned with the manufacturing or assembling of cars, other vehicles which are solely used

for business purposes, freight-carrying trucks, bikes and many other vehicles. Car enterprise has witnessed a boom in the modern era within the timeframe of a few years; hence, novel and innovative forms of cars and other automobiles equipped with modern era facilities and components have evolved domestically (Arifeen, 2018). The automobile industries perform a pivotal position within the big-scale manufacturing sectors in terms of stimulating a financial boom. Pakistan occupies an eminent position among the various automobile manufacturing and assembling nations. Pakistan's automobile industry is one of the oldest in Asia. A dramatic boom has been visible in this zone in the past few years. A significant growth pattern was witnessed in car and jeep production in the year 2016/2017 with an increase of 5%, and for motorcycles it was 20.7%. Similarly, an increase of 54.9% has been recorded in the area of truck manufacturing where the outputs have crossed an inflection point from 5000 units to 7712 units., the automobile sector of Pakistan has advanced its GDP contribution to 12 billion rupees in last three years, so even though 30 billion rupees in taxes and duties are allocated to the state budget, (PABA, 2017). In 2018, the automobile industry had a spectacular start with an increase of 13% in sales, which is the highest record at the beginning of the year. Online cab services – Careem and Uber – marked significant growth in the industry, where car manufacturing saw a 29% increase in sales in 2018 (Global-Village-Space, 2018).

Quick development of automotive sector at international level has increased the requirement of supply chain process (Anderson & Dekker, 2009; Gan, Sethi, & Yan, 2003). Challenges of cost and quality, worldwide rivalry and extensive use of KMP have created difficulties in maintaining the flow of supply chain practices in an effective way (Michalos, Makris, Papakostas, Mourtzis, & Chryssolouris, 2010). Activities involved in the process of manufacturing of automobiles, massive network of automotive sellers and supply chain processes have enhanced these difficulties (Imran & Khan, 2015). To meet the increased requirements of business and to implement right deliberate plans, the manufacturing sector

requires to be more versatile and sensitive. (Wiengarten, Humphreys, Cao, Fynes, & McKittrick, 2010).

Some Pakistani automotive companies have been successful in working according to the international standards while some by leaving others in trouble , are trying to adopt these standards (Elmarakbi, 2013). Therefore, the current situation signifies the need to explore the subject of the study in the automobile sector of Pakistan (Mustafa, Begum, Nisar, & Osama, 2018).

1.3 Research Gap

Most of the research that has been conducted within the domain of SCMP has investigated the interdisciplinary origination and perspectives of SCMP, the conceptual confusion, and the evolutionary nature of the SCM concept encompassing the impact of SCMP on the sustainability of organizations (Heckmann, Comes, & Nickel, 2015; Rajeev, Pati, & Padhi, 2019; Touboulic & Walker, 2015). Besides that, sustainable SCM and dynamic abilities are younger research fields that analyze dynamically changing company environments and industries (Beske, Land, & Seuring, 2014).

The relationship between buyers and suppliers of businesses is a significant area of interest for researchers as well as business administrators. Much of the research that has been carried out yet in this area has concentrated on studying the effect of the relationship between buyer and supplier on improved market position and competitive advantage. However, not much research has been conducted that considers the contribution of an enhanced buyer–supplier relationship improving the quality of the procurement process by taking into account approaches to knowledge management (Touboulic & Walker, 2015).

Liu and Wang (2000) conducted a research study that encompassed the effect of collaborative and improved buyer–supplier relationships on the financial performance of organizations where the study discussed only one aspect of SCP, which was procurement

function. The study directed future researchers' attention towards expanding the research horizon by taking into account multiple perspectives of SCMP in order to determine their impact on SCP and overall organizational performance (Akyuz & Erkan, 2010; Handfield & Cousins, 2015; Roy & Schoenherr, 2018; Tseng et al., 2018).

Subjects which include supplier choice, their involvement in business operations, and the influence of supplier alliances on the company are well researched (Graca, Barry, & Doney, 2015; Rajesh & Ravi, 2015; Rezaei, Nispeling, Sarkis, & Tavasszy, 2016; Wolf, 2014). Likewise, the relationships between dealer control practices, Client-centered activities and organizational effectiveness have been investigated (Rodrigues, Stank, & Lynch, 2004). Frohlich and Westbrook (2001) client-centered activities and organizational effectiveness have been investigated taken together, these studies are efforts that deal with numerous but interesting aspects of supply chain practices. Similarly, the value of internal and external supply chain operations was validated by the researchers; however, considers the effect of ISCM practices on the overall process of SCP have not been conducted so far leaving a gap for future researchers.

The present-day literature is entirely focused on comprehending the difficulties and challenges related to humans and information systems and they consider the extent to which employees are motivated and other human resources and stakeholders are willing to share identities to depict the sustainability level of an organization (Azevedo et al., 2017). The literature is entirely concentrated on how buyers can develop worthwhile excellence competences of tier 1 and 2 suppliers through full cost sharing and full control approach. Research also considered how a. customers' demand for better quality of products and supply chain margin affect their development decisions and suppliers' 'excellence in quality' decisions. To improve the excellence and quality of supply chain performance, businesses are working on tier 2 and above dealers or suppliers (Karaer, Kraft, & Yalçın, 2020).

A supply chain can be improved through mastery and expertise-oriented aspects that trigger innovation into the entire supply chain process (Gammelgaard, 2007). Both research and studies performed in the context of knowledge include a general view of the effect of knowledge management techniques on the success of the company or SCP (Handfield, Cousins, Lawson, & Petersen, 2015; Sangari, Hosnavi, & Zahedi, 2015). Besides that, the components of KMP have been studied individually. Koufteros, Cheng, and Lai (2007) analyzed the aspect of a shared approach to knowledge management encompassing interorganizational relationships as a pathway leading towards an improved strategic competitiveness. Likewise, the essential role of information development in supply chain partnerships has been well studied (He, Ghobadian, & Gallear, 2013).

Furthermore, knowledge sharing and implementation in downstream supply chain practices has been discussed extensively (Shih, Hsu, Zhu, & Balasubramanian, 2012). Dayan, Heisig, and Matos (2017) explored the domain of knowledge management as a contributory factor in order to envision and design an organizational strategy. Woolliscroft, Caganova, Cambal, Holecek, and Pucikova (2013) conducted research related to the implications of knowledge sharing process, to improve the automotive company's supply chain process in Kenya, through considering the value being created by adopting knowledge-based approaches into the supply chain. Furthermore, the researchers considered a just-in-time approach combined with knowledge management in order to address the supply side strategic development of the organization. However, the research lacked empirical findings regarding the advantages of knowledge management-based supply networks; hence, suggesting that future researchers consult with multiple automobile companies to acquire a detailed awareness of the process of knowledge management in the supply chain. In addition, the researchers also suggested that SCP-related components be included in subsequent research to assess the

function of KMP and SCP steps in overall supply chain process improvement in the automobile industry.

According to Khan, Chaabane, and Dweiri (2020), Current adoption of internet and new technologies in order to increase supply chain prominence has made the supply chain management process more stimulating because increasing competition, use of new technology are increasing with every passing day that is making the supply chain process more challenging. To compete with the situation and to remain market, businesses are considering supply chain processes more deeply and importance of SCP measurement system has increased for the firms. Growing technology trends help to measure the current and future SCP measurement system. In order to find the compatibility between current SCP measurement system and growing technology, the author has embraced qualitative methodology. The outcomes of the existing analysis suggest that existing SCP measurement systems find it difficult to satisfactorily deal with the new technological advancements in SCM measurement system. Many studies have observed the supplier development and many researchers analyzed how a purchaser may use outsourcing strategies to increase product quality (Corbett & DeCroix, 2001; Kim & Netessine, 2013; Li & Debo, 2009; Zhu, Sarkis, & Lai, 2007).

This analysis does not take into account supply chain contracts and its excellence is difficult to contract on and SC coordination framework instead, it measures the impact of supply chain levels on the efficiency of the supply chain with KM's mediating role. Multi-tier supply chains are complex issues and in previous literature, this topic is not well studied, this study pays more attention to multi tiers. Researchers have examined that how supplier performance can be examined and how can we pay incentives according to their excellence (Gong, 2016) and tracking approach (Yang & Zhang, 2017).

Marra, Ho, and Lee (2016) explored the interrelationship of internal as well as external knowledge-based approaches linked with the supply chain processes of an organization to

measure the output level of business. The researchers adopted a basic knowledge management model by considering various aspects of knowledge development, storage and sharing. To enrich and improve the intellectual potential of corporate knowledge-based assets to achieve a competitive advantage in the market. The researchers adopted a case study approach where only one Italian rubber manufacturer company was studied. The research revealed a positive link between the external knowledge-based approaches and organizational performance where buyers, competitors, suppliers and subcontractors were found to be vital contributors towards the improved operational performance of the business. However, the research lacked the dynamic capabilities of knowledge-based approaches and knowledge flows leaving a research gap to be filled by future researchers. The research also recommended study of the moderating impact of KMP on the SCP of an organization through considering multiple companies followed by strong and reliable empirical evidence.

Combining all above-mentioned aspects, many past studies have validated the vitality of knowledge management specifically considering the context of SCM or organizational performance in terms of the strategic aspects. Despite the increased attention being paid to SCM and its various aspects, the current literature could not offer much about the relationship between the numerous levels or relative stages of a supply chain and its relevant performance through considering the mediating and moderating role of KMP. Hence, it leaves a vacuum for a researcher to extend and enrich the research base in this domain by studying the impact of various stages of a supply chain on SCP where KMP are considered as a moderating variable.

1.4 Rationale of the Study

Due to the immense competition in industry, many firms have started giving extra attention to strengthening their supply chains and utilizing them as weapons for their sustainability and long-term standing in the industry through enhanced performance. Researchers have stated that in the current decade, competition among firms has transitioned from company Vs Company

and SC Vs SC (Craighead, Hult, & Ketchen Jr, 2009a) and hence all business ventures have been trying to win in the supply chain battleground (Slone, 2004). Swink and Schoenherr (2015) has validated this notion by identifying a strong, well-structured, strategized and optimized supply chain practices management system as the primary factor to outperform industry rivals.

The integration of SCMP as well as knowledge management perspectives is an emerging concept in Pakistan. Lots of multinational companies have already adopted this strategy and have SCM departments in their organizations. With the passage of time, this field will gain strength and more and more businesses will adopt the model with an intention to obtain cut-throat edge in a fast-growing consumer market like Pakistan.

This research bridges the gap which has been identified in the existing literature pertaining to SCM, SCP measures and the knowledge management domain in order to develop better understanding of the effect of an entire range of supply chain-related activities on the performance level of the subject domain in the sense of the moderating function of KMP, an analytical approach is pursued.

1.5 Research Aim

The aim of this research is to study the moderating role of KMP in SCP by examining the different phases of the supply chain process in Pakistan's automotive sector. To be more specific, this study has undertaken an investigation of SRM, CRM, internal supply chain drivers, and knowledge management strategies along with SCP, all of which have been considered the major variables of the research. Furthermore, this research aims to validate that KMP has a great effect on all supply chain practices, which eventually yields an improved SCP while being focused on gaining competitive advantage as well as ensuring long-term sustainability and stability in an ever-growing market.

1.6 Research Objectives

The research objectives are presented as follows:

- Investigating the impact of SCM tiers, which include supplier, customer relationship and ISCM, on SCP.
- Measuring the moderating impact of KMP on the relationship between SRM and SCP.
- Measuring the moderating impact of KMP on the relationship between ISCM and SCP.
- Measuring the moderating impact of KMP on the relationship between CRM and SCP.

1.7 Research Questions

The study undertakes the following research questions which serve the purpose of this study.

- What is the impact of SRM on SCP?
- What is the impact of ISCM on SCP?
- What is the impact of CRM on SCP?
- Does KMP moderate the relationship between SRM and SCP?
- Does KMP moderate the relationship between ISCM and SCP?
- Does KMP moderate the relationship between CRM and SCP?

1.8 Significance of the Present Study

Understanding the effects of probable contingency factors that have a positive or negative impact (in terms of strengthening or hindering) on the interrelationships among SCMP, performance of organizational supply chain and the knowledge-oriented aspects has proved to be vital while considering their relationship to the theoretical aspects found by researchers in relation to the decisions that managers make.

Integration of the SC serves as a key factor for supply chain management and improved efficiency. So, through this factor companies have tried to manage the difficulty in performance measurement system (Wiengarten, Humphreys, Gimenez, & McIvor, 2016). In rapidly

changing economies, knowledge assets are the only source for businesses to compete the challenges of time, cost and technology. Businesses are facing the challenges like high cost of manufacturing and to cope up with new technology so this is the need of time to apply new technologies like knowledge management, knowledge assets, to get competitive advantages and to get better befits than competitors. Companies also need to focus on managing knowledge creation and sharing process to get better performance and advantages (Lee, 2016).

The present study is a significant contribution for the policy makers of the automobile sector of Pakistan as they will get to know varied aspects of SCM, SCP and knowledge management perspectives in a well-defined and integrated manner backed by empirical evidence. The study will provide policy makers with a summary of the potential needs of merging information management methods into the automotive supply chain in order to improve current processes and keep pace with the globally recognized trends in intellectual capacity building for performance improvement. Furthermore, the study provides a structured framework and a guideline to the policy makers in order to develop such governing strategies which will guide the automobile companies of Pakistan about the knowledge management domain and hence will influence their SCP through integrated SCMP.

From practical perspectives, this study signifies the need to explore the importance of information processing and knowledge capitalization in organizations where the knowledge managers have become the vision of the organizations that are primarily involved in preserving their competitive edge in the present business world Knowledge management enables businesses to have the right information about and insight into their internal reviews and external sources. Furthermore, knowledge management activities, together with knowledge management acquisition and knowledge management storage, creation, sharing and implementation, can help corporations attain essential capabilities, which include problem fixing, dynamic studying, strategic planning, decision making and enhancing their SCP as a

whole in all their approaches, which include planning process, strategizing about the sourcing aspects, considering the making or production operations and finally looking into the delivery and logistical aspects. Unlike previous research, this study has incorporated multiple aspects of SCMP, which include supplier relationship, customer relationship and ISCM practices, in order to understand their impact on SCP level; the SCP level is considered a primary determinant of organizational performance where information management has been examined as a moderating factor that reinforces the basic and theoretical basis of the present research for practical business administrators. The study will further help business managers to have a broader insight through looking into the combined prism of knowledge management, SCM and SCP which will help them devise strategic and proactive measures for the sustainability of their businesses.

From the theoretical perspective, the present research encompasses all the specific knowledge-based aspects of SCM and SCP perspectives, which result in efficient, well-structured, optimized and controlled knowledge-oriented organizational flows in all the respective supply chain processes and operational activities, and it investigates the relationships of various stages of SCM with the overall SCP. When knowledge has been considered key to every success and if the knowledge required coincides with the time, mistakes would be minimized throughout the process. Therefore, SCP would significantly increase. As mentioned above in the research gap section (Section 1.3), no research has been conducted that takes into account the moderating role of KMP envisioned to unleash the interdependence or interrelationship between two considerable aspects that are categorized as SCP-based and SCM-based practices. In brief, this research will surely add to literature in the targeted domains in an extended, practical and well-guided manner and carve a pathway for future researchers to explore more about the domain subject through investigating the moderating impact of knowledge management on SCP.

In short, in a supply chain, the main focus of managers and researchers has always been on formulating ways and structures that will boost performance levels (KETCHEN & Hult, 2011). Since performance has been connected to the knowledge management ability of a firm, so it gives rise to the assumption that there is a strong connection among SCM, SCK and SCP will shift the focus of researchers and theorist towards devoting their attention to explore the role of SCK as the main and emerging contributor in their studies. In contrast to this is the notion that a moderate relationship will be assumed reflecting the need for managers and researchers to leverage SCK as a comparatively less preeminent, indispensable and imperative aspect whilst studying SCK as the moderator which clearly portrays the subject being considered in the present study.

1.9 Conceptual Framework

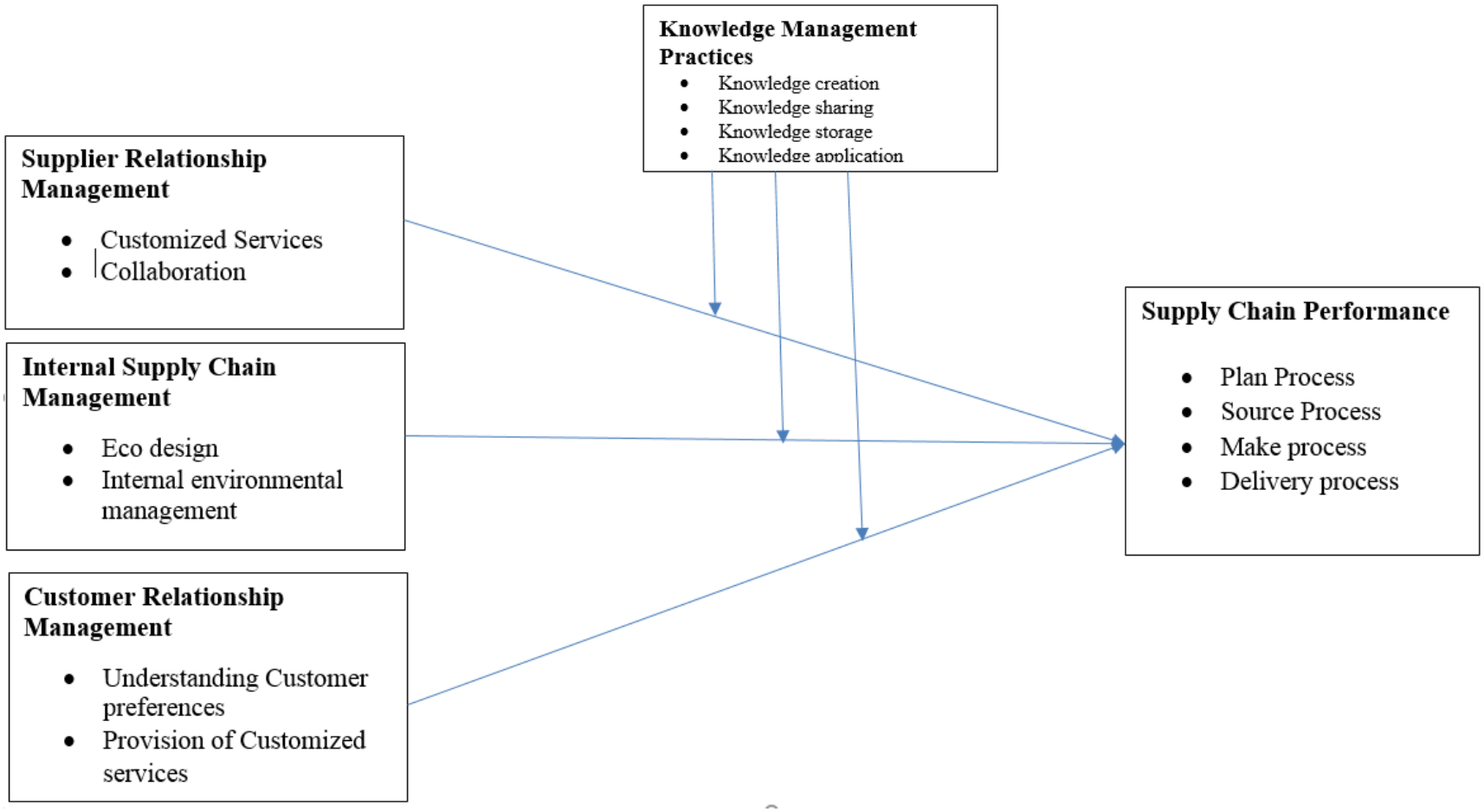

Figure 1: Conceptual Framework

1.10 Development of Hypotheses

Considering the proposed conceptual framework (see Figure 1), the following hypotheses have been formulated:

Hypothesis 1: There is a relationship between customized services (CS) in supplier relationship management (SRM) and plan process (PP) in supply chain performance (SCP).

Hypothesis 2: There is a relationship between collaboration (Col) in supplier relationship management (SRM) and plan process (PP) in supply chain performance (SCP).

Hypothesis 3: There is a relationship between eco design (ED) in internal supply chain management (ISCM) and plan process (PP) in supply chain performance (SCP).

Hypothesis 4: There is a relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and plan process (PP) in supply chain performance (SCP).

Hypothesis 5: There is a relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and plan process (PP) in supply chain performance (SCP).

Hypothesis 6: There is a relationship between provision of customized services (PCS) in customer relationship management (CRM) and plan process (PP) in supply chain performance (SCP).

Hypothesis 7: There is a relationship between customized services (CS) in supplier relationship management (SRM) and source process (SP) in supply chain performance (SCP).

Hypothesis 8: There is a relationship between collaboration (Col) in supplier relationship management (SRM) and source process (SP) in supply chain performance (SCP).

Hypothesis 9: There is a relationship between eco design (ED) in internal supply chain management (ISCM) and source process (SP) in supply chain performance (SCP).

Hypothesis 10: There is a relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and source process (SP) in supply chain performance (SCP).

Hypothesis 11: There is a relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and source process (SP) in supply chain performance (SCP).

Hypothesis 12: There is a relationship between provision of customized services (PCS) in customer relationship management (CRM) and source process (SP) in supply chain performance (SCP).

Hypothesis 13: There is a relationship between customized services (CS) in supplier relationship management (SRM) and make process (MP) in supply chain performance (SCP).

Hypothesis 14: There is a relationship between collaboration (Col) in supplier relationship management (SRM) and make process (MP) in supply chain performance (SCP).

Hypothesis 15: There is a relationship between eco design (ED) in internal supply chain management (ISCM) and make process (MP) in supply chain performance (SCP).

Hypothesis 16: There is a relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and make process (MP) in supply chain performance (SCP).

Hypothesis 17: There is a relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and make process (MP) in supply chain performance (SCP).

Hypothesis 18: There is a relationship between provision of customized services (PCS) in customer relationship management (CRM) and make process (MP) in supply chain performance (SCP).

Hypothesis 19: There is a relationship between customized services (CS) in supplier relationship management (SRM) and delivery process (DP) in supply chain performance (SCP).

Hypothesis 20: There is a relationship between collaboration (Col) in supplier relationship management (SRM) and delivery process (DP) in supply chain performance (SCP).

Hypothesis 21: There is a relationship between eco design (ED) in internal supply chain management (ISCM) and delivery process (DP) in supply chain performance (SCP).

Hypothesis 22: There is a relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and delivery process (DP) in supply chain performance (SCP).

Hypothesis 23: There is a relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and delivery process (DP) in supply chain performance (SCP).

Hypothesis 24: There is a relationship between provision of customized services (PCS) in customer relationship management (CRM) and delivery process (DP) in supply chain performance (SCP).

Hypothesis 25: Knowledge management practices moderate the relationship between customized services (CS) in supplier relationship management (SRM) and plan process (PP) in supply chain performance (SCP).

Hypothesis 26: Knowledge management practices moderate the relationship between collaboration (Col) in supplier relationship management (SRM) and plan process (PP) in supply chain performance (SCP).

Hypothesis 27: Knowledge management practices moderate the relationship between eco design (ED) in internal supply chain management (ISCM) and plan process (PP) in supply chain performance (SCP).

Hypothesis 28: Knowledge management practices moderate the relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and plan process (PP) in supply chain performance (SCP).

Hypothesis 29: Knowledge management practices moderate the relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and plan process (PP) in supply chain performance (SCP).

Hypothesis 30: Knowledge management practices moderate the relationship between provision of customized services (PCS) in customer relationship management (CRM) and plan process (PP) in supply chain performance (SCP).

Hypothesis 31: Knowledge management practices moderate the relationship between customized services (CS) in supplier relationship management (SRM) and source process (SP) in supply chain performance (SCP).

Hypothesis 32: Knowledge management practices moderate the relationship between collaboration (Col) in supplier relationship management (SRM) and source process (SP) in supply chain performance (SCP).

Hypothesis 33: Knowledge management practices moderate the relationship between eco design (ED) in internal supply chain management (ISCM) and source process (SP) in supply chain performance (SCP).

Hypothesis 34: Knowledge management practices moderate the relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and source process (SP) in supply chain performance (SCP).

Hypothesis 35: Knowledge management practices moderate the relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and source process (SP) in supply chain performance (SCP).

Hypothesis 36: Knowledge management practices moderate the relationship between provision of customized services (PCS) in customer relationship management (CRM) and source process (SP) in supply chain performance (SCP).

Hypothesis 37: Knowledge management practices moderate the relationship between customized services (CS) in supplier relationship management (SRM) and make process (MP) in supply chain performance (SCP).

Hypothesis 38: Knowledge management practices moderate the relationship between collaboration (Col) in supplier relationship management (SRM) and make process (MP) in supply chain performance (SCP).

Hypothesis 39: Knowledge management practices moderate the relationship between eco design (ED) in internal supply chain management (ISCM) and make process (MP) in supply chain performance (SCP).

Hypothesis 40: Knowledge management practices moderate the relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and make process (MP) in supply chain performance (SCP).

Hypothesis 41: Knowledge management practices moderate the relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and make process (MP) in supply chain performance (SCP).

Hypothesis 42: Knowledge management practices moderate the relationship between provision of customized services (PCS) in customer relationship management (CRM) and make process (MP) in supply chain performance (SCP).

Hypothesis 43: Knowledge management practices moderate the relationship between customized services (CS) in supplier relationship management (SRM) and delivery process (DP) in supply chain performance (SCP).

Hypothesis 44: Knowledge management practices moderate the relationship between collaboration (Col) in supplier relationship management (SRM) and delivery process (DP) in supply chain performance (SCP).

Hypothesis 45: Knowledge management practices moderate the relationship between eco design (ED) in internal supply chain management (ISCM) and delivery process (DP) in supply chain performance (SCP).

Hypothesis 46: Knowledge management practices moderate the relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and delivery process (DP) in supply chain performance (SCP).

Hypothesis 47: Knowledge management practices moderate the relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and delivery process (DP) in supply chain performance (SCP).

Hypothesis 48: Knowledge management practices play a moderating role between the relationship of provision of customized services (PCS) in customer relationship management (CRM) and delivery process (DP) in supply chain performance (SCP).

1.11 Definitions of Variables

This section intends to define all the variables and their components which have been considered while conducting this study with the aim to fulfill the research objectives and ensure a clear understanding of the concepts and variables which have been encountered in the study.

1.11.1 SRM

Consistent with Wachira (2013), the term "supplier relationship management (SRM)" refers to the exercise and method for interacting with suppliers. Most domain experts see SRM as a coordinated method of identifying what a supplier wants and requires and coordinating and managing the business-to-agency (or procurement-to-sales) while hyperlinking to meet those needs. . Research from educational and consulting companies suggests that the organized processes of supply chain are a process that has been designed to deliver while ensuring that suppliers produce high-quality sourcing results (Chan et al., 2017).

SRM acts as a focus between the employer and the very end clients or consumers. Companies which have issues with their supply chain networks or channels can undertake supply relationship control exercises to enhance their supply chain efficiency. Hughes and Wareham (2010) stated that “inefficient deliver chains have been the foremost motive of negative organizational performance”; they insisted that businesses with incorporated deliver chains

recorded higher earnings than those who paid little attention to deliver chains (Rogers, 2001). SRM allows for the improvement and protection of those strategic relationships with key providers and related companies to undertake a unique and innovative way of thinking about the deliver chain and deliver chain transparency.

The process of maintaining relationships with the suppliers of an organization refers to the interactive mediums which the company adopts in order to communicate about the operations, processes or any relevant proceedings to its suppliers (Altay, Gunasekaran, Dubey, & Childe, 2018). According to Croxton, Garcia-Dastugue, Lambert, and Rogers (2001), the quality and strength of a company's interaction with users depend on the degree to which the company makes substantial efforts to form and sustain partnerships with its suppliers reliable with the concept submitted by Burt, Sparks, and Teller (2010) that is, devising careful measures and expert controlling techniques in order to initiate and foster the process of building and strengthening a company, supplier relationships are very important since the level of output of suppliers has a significant effect on the level of client satisfaction. Therefore, maintaining supplier relationships is a challenging yet vital move for business ventures (Forkmann, Henneberg, Naude, & Mitrega, 2016).

Methods, processes and sub-categories pertaining to strategic operational views related to adopting a controlled approach encompassing supplier relations include: overview of productivity along with the preferred sourcing tricks and techniques; perceived standards for categorizing providers; the offering of tips, tricks and guided frameworks to increase the extent of customization inside the product/carrier alignment (Kumar & Rahman, 2015), increasing framework of metrics; and expanding guidelines and tips for sharing technique improvement benefits with providers. Besides that, the operational sub-methods consist of differentiating providers, putting together the

supplier/phase control group (Wagner & Bode, 2014), internally evaluating the dealer/dealer segment, discovering opportunities with providers, increasing the planned production and interaction agreement, enforcing production-oriented or service-oriented affiliation, and overall performance measurement while looking into the provider's profitability reviews in the form of reports.

1.11.1.1 Collaboration

Collaboration in the context of SCMP emerged in the mid-1990s and it forecast an increase in the extent of a cooperative and collaborative approach within a company (Alvin & Shi, 2018). Coordination and cooperation of the supply chain is a crucial measurement that characterizes successful management of the supply chain. In the process of decision making and conversation, collaboration is an approach among actors who carry out tasks to acquire similar envisioned goals (Malone, Yates, & Benjamin, 1987).

In the domain of searching for the finest and briefest time period advantage in every transaction, suppliers and their customer companies try to find ways that will promote an environment of collaboration for a long time period while focusing on mutual gain (Khanjari, Iravani, & Shin, 2014). These relationships require an entirely new degree of consideration and commitment that were either lacking or completely absent in the past. The trust and dedication referred to above, motivate suppliers to divide and share their manufacturing, engineering and shipping-based understanding with the business venture (Wu & Chiu, 2018).

The literature clearly validates the fact that if business hindrances, modern approaches, emerging industry trends as well as increased competition are considered from a broader perspective, it can clearly be observed that the underlying key to the success of supply chains and the businesses themselves is the adoption and implementation of collaborative approaches

(Michalski, Montes-Botella, & Narasimhan, 2018). Collaboration efforts should always be expanded in order to partner with the suppliers instead of trying to pound them. The development of impactful and collaborative relationships with the company's suppliers is very significant because the relationships aid in creating and handling the demand data in a better manner (Ramanathan, He, Subramanian, & Gunasekaran, 2018).

1.11.1.2 **Customized *Service*s**

"Customized services" for suppliers is a vital business idea that various brands are currently adopting. Moreover, the idea is additionally used within the development of promoting methods for product and service lines and in the method of recognizing the target market of a brand or Business (Bozarth, Warsing, Flynn, & Flynn, 2009). Manufacturers ask purchasers to assist them acknowledge what they have and to acknowledge factors that may fulfill customers' desires, and to make customized products following those tips. This approach is primarily meant for businesses with highly customization-centric people (Liu, Deng, & Chan, 2018). Moreover, this approach seeks to assist shoppers who struggle to identify precisely what they require and are confused by an enormous range of choices. Through decreasing choices for an individual consumer, a cooperative customizer helps to grasp the wants of the shoppers and strives to make it clear to them.

With the increasing emergence of industry trends, mass customization at the business level can also be witnessed, where different and individualized solutions and services are demanded as well as offered. ChemStation, which specializes in the detergent production business, is a well-recognized and stable brand in Ohio, America with around $25 million turnover. The company had been facing a downside in its supply management process. As a result of extended market research by specialized teams, its supply management process was upgraded and, hence, an

innovative system of production and distribution was introduced to the company. Shifting of the business model while adhering to industry trends proved to be profitable for the company; currently, about 41 digitized production and distribution centers are operating in America following a customized cleaning product approach (Liu & Yao, 2018). Considering the above-mentioned example, the definitive and applicatory notion of the customized services approach becomes very clear; it indicates the necessity for businesses to institutionalize such customized methods to obtain a competitive position in the market (Wang, Kang, Childerhouse, & Huo, 2018).

1.11.2 ISCM

Interior network of supply chain alludes to the chain of exercises, activities, processes or capacities inside an association that leads to the giving of an item or demanded product to the customer (Turkulainen, Roh, Whipple, & Swink, 2017). Coordination of those capacities includes the all-encompassing execution of operational functionalities across the division's limits. A very much coordinated internal supply chain approach should end in great customer administration and execution of a friendly environment (Basnet, 2013).

A compelling interior delivery-oriented chain coordinates the internal capacities, for example, from elevating the internal supply arrangement. Chen, Yang, and Li (2007) mentioned that coordinated, joint efforts and associations eventually result in a significant contribution to help shape more extensive and highly subjective processes being outlined inside the firm, in order to proceed further in the market. Interdepartmental cooperation will bring offices closer along with their transformation into a durable association of supply chain. A firm's approach towards managing internalized SCM and execution efforts depends on such joint approaches (Chen et al., 2007). Firms should achieve inward coordination before executing external supply chain administration that may, in the end, grasp elective production network accomplices.

Similarly, as inward match shows consistency among auxiliary qualities inside an organization (Drazin, 1985; Milgrom & Roberts, 1995). Interior incorporation recognizes unique and deliberate zones inside a firm that should work following the coordinated technique. Interior incorporation incites participation with an aim to accomplish the requirements of buyers, rather than the old departmentalization and specialization, and can lead to optimized execution. In spite of the fact that producers may keep up a deliberate associative structure, customer orders stream crosswise over capacities (Braunscheidel & Suresh, 2018). This approach to customers' orders incorporates a customer satisfaction strategy into the internal supply chain network. Information sharing, joint outlining, cross-useful gatherings and coordinated management approaches are crucial segments of this technique (Hugos, 2018).

1.11.3 CRM

The customer relationship control process presents the structure for growing and maintaining purchaser relationships (Croxton, Garcia-Dastugue, Lambert, & Rogers, 2001; Kumar & Reinartz, 2018). According to Krajewski (2010) the aim of the consumer relationship method, which helps CRM packages, is to become aware of, entice and construct pertinent relationships with customers of business with an aim to guarantee and monitor order facilities. Croxton et al. (2001) introduced sub-techniques in addition to the manner interfaces for customer dating management. The strategic sub-techniques for customer courting management include the following:

- Assessment of corporate and advertising approach (Hargreaves, Roth, Karim, Nayebi, & Ruhe, 2018).
- Become aware of standards for categorizing the clients.
- Offer tips in order to ensure differentiated products as per the agreement.

- Expanded metrics structure.
- Expand pointers pertaining to the development of dissemination method with customers.

The operational sub-methods include the following:

- Customers' differentiation perspectives.
- Looking into the account or process-controlling aspects.
- Internal debt tracking and reviews.
- Discover possibilities to recover the debts.
- Increase the extent of carrier settlement.
- Enforce the provider settlement.
- Adoption of a well-structured performance measurement approach in order to generate effective profitability reporting (Rahimi & Kozak, 2017).

1.11.3.1 Understanding Preferences of Customers

How to manipulate client relationships effectively has grown to be a crucial subject which matters a lot to both academicians and practitioners in recent years (Cooper, 2017). Companies understand that clients have different economic values to the employer, and they are adapting their consumer services and communications approach as a consequence. For this reason, corporations are, in essence, moving from product-centric or brand-centric advertising towards a client-centric approach (Sinha & Dey, 2017).

Very rarely does a company ever have simply fixed its supplying. With choice, and therefore strength, lying with the clients, most firms try to adapt by providing a number of products or services; under attack from competition in a single segment. Additionally, they assault lower in

others. The expectancies of today's clients range not simply in terms of what they acquire, but how, in which and whilst.

1.11.3.2 Provision of Customized Services

Customization can be considered the "holy grail" of manufacturing in which products made are perfectly attuned to customers' wants and needs (Huang et al., 2014). Without considering the traditional mass strategies, process of producing custom made products is known as mass customization. This process ensures customer satisfaction and improve efficiency and creates new threats and challenges for branded products. Valuable customization of products and services needs accomplishment in two areas, as McKinsey describes that businesses need to find those prospects of customization that produce worth for customers and accomplishing an attainable cost structure and level for the manufacturer (Kaiser, Schreier, & Janiszewski, 2017).

1.11.4 KMP

Knowledge management is characterized as a process using which an organization devises and develops strategies in order to effectively and efficiently manage the acquired knowledge in terms of collecting, sharing and utilizing it for the good of employees and management (Hislop et al., 2018). Knowledge management is an assortment of systematic approaches to assist data and information flow to and at the proper moment between the correct audience (in the correct format at the correct cost) so that they will act efficiently and effectively to make value for the organization (Dayan et al., 2017).

Knowledge management is termed as a constructive approach encompassing the steps from collection of data to its implementation in an efficient way; given that knowledge here is not confined to developing documents only, but also includes the operational procedures of a company, all types of resources and, most importantly, employees' competencies and skills

(Birasnav, 2014). Knowledge management incorporates an expeditious approach to process the data in a vital manner. Furthermore, it enables knowledge managers to identify and build a team of knowledge-oriented professionals who can collaborate and strengthen the knowledge base of the organization and instill knowledge-based skills in the employees, assist knowledge manager in all the knowledge management steps along with outlining a map to smooth the knowledge in the organization (Tang, 2017). All such knowledge-based activities and knowledge management dimensionalities are directed towards achieving the envisioned goals being set to develop and maintain the competitive position of an organization in the industry (Gold, Malhotra, & Segars, 2001).

1.11.4.1 Knowledge Creation

Knowledge management is the first step in the development and interpretation of knowledge, taking into account internal and external sources, , mediums and strategies; out-of-door assets like suppliers, vendors, customers, marketplace, competition and other such sources have a crucial role in strengthening an organization's knowledge base (Afolayan et al., 2016). According to a few concepts, knowledge acquisition can be termed as the combination of expert opinions and viewpoints (Samuel, Goury, Gunasekaran, & Spalanzani, 2011). It is also considered to be connected with expertise-based linkages as well as knowledge-centered facilities (Marra, Jonassen, Palmer, & Luft, 2014).

1.11.4.2 Knowledge Sharing

Knowledge sharing is named knowledge sharing because the technique is about moving and distributing expertise from one character to any other individual, from man or woman to groups, or from corporations to other companies or maybe the entire organization (North & Kumta, 2018a). Moreover, the characteristics of an alternate channel impact information dissemination

specifically among the accomplices who are connected with the organizational supply chain process (Tsai, 2002). Scarcity of knowledge, know-how of the basic concepts, innovative abilities and understanding of the processes, and time-bounded phenomena are considered as hinderers that barricade the pathway of sharing and disseminating knowledge among the general organization and, within the context of study, supply chain stakeholders of an organization (Gold et al., 2001). To smooth things and maintain a flow of knowledge-sharing activities requires development and affiliation of different correspondence modes (Maier & Hädrich, 2006).

1.11.4.3 Knowledge Storage

Knowledge storage is the data memorizing aspect of the organization which is concerned with the continuous enrichment of organizational knowledge base, electronic and otherwise, in a professionally structured manner (Alavi & Tiwana, 2003). The process holds certain complex and challenging activities, the management of which is crucial for organizational development, sustainability and success. Such activities include maintaining the knowledge storage record with continuous updates, arranging the collected data, segmenting the data into different relevant categories and placing the information in such a way that it can be utilized proactively in order to enhance the organizational performance levels (Hislop et al., 2018; Maier & Hädrich, 2006; Vishwakarma, Tripathy, & Kothari, 2018). Knowledge storage is the cemented approach amongst all the other activities of knowledge management which affiliates, sorts and preserves the gathered information and combines the scattered knowledge in order to get meaningful insights about numerous business aspects (Lee & Lee, 2007).

1.11.4.4 Knowledge Application

Knowledge utility refers to the manner of usage and enforcing expertise that is oriented to the real use of the information obtained from inner and external sources, characters, groups or

companies (Ermine, 2018). The knowledge application process of knowledge management approach is the last step which refers to adopting a combined approach towards extracting the knowledge gathered and assimilated at all the levels for implementation to solve real-time business concerns. Hierarchical interventions are of no value in cases where knowledge management is lacking (Moradi, Brunel, & Vallespir, 2008). Understanding the knowledge management concept from the perspective of its applicability, widens the conceptual horizon and hence promotes the exchanging practice of gained knowledge in order to ponder upon more dimensions, perspectives and alternatives (North & Kumta, 2018b). Currently, authoritative practices are being followed in the industry where a coordinated approach to knowledge management is considered to be a boon (Alavi & Tiwana, 2003).

1.11.5 SCP

Supply chain efficiency refers to various metrics reflecting advanced stages of performance and development through which the company measures the potential of the supply chain in order to meet the short-term and long-term goals set by an employer. An essential component of a SCP management system is performance measures, which are a structured and quantified version of performing actions where the effectiveness of each action is measured (Neely, Gregory, & Platts, 2005).The tool that mostly supports the process of performance assessment is recognized as the entire supply chain performance dimension. . An overall supply chain efficiency dimension retains various metrics (overall performance measures) that can be used for distinct purposes, such as helping decision making and control, managing, comparing effects, motivating people, stimulating mastering, and enhancing coordination and verbal exchange (Neely et al., 2005).

An overall performance degree is statistics that have been brought to management's attention, which characterize and evaluate the efficiency and the effectiveness of a manner, aid or

final results. As Tilstone, Ericksen, Neely, Davies, and Downie (2013) suggested that businesses are well aware of their limited standing in terms of market achievement. All types of organizations, appreciate the importance of SCP for the survival of their business in the industry. It has increased the reliability of businesses, to a greater extent, in terms of businesses' suppliers and their relationship with buyers (Mani, Gunasekaran, & Delgado, 2018). Small and medium enterprises nowadays provide support to large multinationals by facilitating them through improved supply chains with more reliability as well as responsiveness. Beamon (1999) strongly implied that supply chain upgrades will no longer improve overall performance, however, they will create benefits that will ripple through the suppliers and customers partnerships. The concept of value savings, however, reduced the significant inventory tiers while expediting success as well as freight fee, allows businesses to look for more ways to develop favorable and reasonable pricing structures in order to adhere to the market's ever-changing demand shifts. Furthermore, a well-guided planning and execution guideline or framework needs to be adopted (Thanki & Thakkar, 2018).

1.11.5.1 Plan Process

Making plans entails an extensive variety of activities and processes. In order to make an effective plan for enhanced SCP, one of the most significant required steps is to determine and rebuild the operational approach of the company in any discipline, either manufacturing, purchasing or assembling the products, and hence it is characterized as one of the major decisions (Hugos, 2018). It is possible to make an operational approach to inventory, request, configure to reserve, and designer to fund, each of which requires certain qualities and attributes which act as the building blocks of the planning process (McCormack & Johnson, 2002).

The planning process requires sheer mapping of the facilities, manufacturing sources and storage warehouse whilst considering the transportation aspects. Planning also involves defining

areas for organizational change as well as formulating certain management strategies that can analyze the prevailing issues , the entire supply chain phase more subjectively and sort out the concerns (McCormack & Johnson, 2002). Another critical component of the entire supply chain phase is supply chain control, in which performance assessments are planned on the analysis of previous and current evidence , which results in the alignment of all the strategic actions which are required to be taken with an aim to achieve better place in the market (Hugos, 2018).

Many researchers have provided meaningful insights related to the planning phase of professional development with a goal to enhance the efficiency in order to increase the effectiveness of SCM and performance. The planning process is the ultimate layout of a business's supply chain's potential actions which acquires configured and competitive market advantage (Childerhouse & Towill, 2000; Korpela, Lehmusvaara, & Tuominen, 2001).

1.11.5.2 Source Process

Supply chain sourcing has planning as a prerequisite which refers to an organized approach to combining the sourcing facilities related to raw material and other components. After initiating the second step, agencies become responsible for negotiating contracts and developing an agenda for deliveries as well as supply, which refer to the schedules too (Korpela, Hallikas, & Dahlberg, 2017). Supplier overall performance should be assessed and bills to the suppliers made when suitable. In a few cases, organizations can operate with a community of suppliers. This can contain running with this community, managing inventory and organization property, and making sure that export and import necessities are met (Abro, Memon, Shah, & Naqvi, 2017).

1.11.5.3 Make Process

This phase is concerned with manufacturing and production of the goods by following the controlled aspects of trying, packing and releasing for delivery (Vargas, Mantilla, & de Sousa

Jabbour, 2018). It is the responsibility of organizations to look for SCP controls that can boost the level of performance, and ensure the storage of data, packing details and the compliances in order to keep the data up-to-date (Acquaye et al., 2018; Maestrini, Luzzini, Maccarrone, & Caniato, 2017).

1.11.5.4 Delivery Process

The final step of the process of performance measures contributes to the distribution of goods ; it encompasses varying aspects and steps from the initial phases to the last step including customer queries (Dweekat, Hwang, & Park, 2017), distribution tactics, transportation aspects and many more (Maestrini et al., 2017). Sometimes, this step is outsourced while giving a chance to the specialized companies and paying them for the rendered services; However, to maintain the effective execution and execution of the plan, control will still be needed (Tarafdar & Qrunfleh, 2017).

1.12 Thesis Structure

This section presents a summary of the essential topics which have been covered in the forthcoming chapters of this study in order to give a summarized outline to the reader for better tracking. The following chapters of the work are organized as follows:

Chapter 2 involves the literature review, it considers the theories, research and concepts related to knowledge management, supply chain practices and SCP which formulate a conceptual grounding of the subject.

Chapter 3 details the research methodology which has been adopted for conducting this research. Furthermore, the methods and instruments which have been used in the present study have been discussed comprehensively in order to effectively examine the presented hypotheses and answer the proposed research questions.

One of the most critical parts is Chapter 4, which consists of the review of all data and presents the conclusions obtained from the data collected.

By linking them back to the literature, Chapter 5 presents the conclusions of the report. Furthermore, this section also sheds light on the inconsistencies along with all the discrepancies which have been observed supported by theoretical arguments.

Chapter 6 is the last section which discusses the practical implications of the presented study in detail, summarizes the contributions of this research and highlights the respective limitations in order to carve the pathway for future researchers to further examine the topic and explore the domain to a maximum level.

Chapter 2: Literature Review

Early research focused on developing tools that could be used to measure SCMP (Kumar & Reinartz, 2018; Maestrini, 2017; Schaltegger & Burritt, 2014); however, in the last decade, the relationship between SCM and organizational performance has been extensively deliberated (Mumtaz & Ali, 2018; Paulraj, 2017). Organizational success depends on the effectiveness and vivacity of SCP as a component of SCM (Li & Ragu-Nathan, 2006). SCP is recognized as the performance driver for an organization which plays a dynamic role in getting a competitive advantage in the market and hence is considered as identical to the viability of supply chain (Barney, 2012). The effectiveness of SCP refers to doing the right action at the right time while ensuring the least cost and maximum productivity, where performance management tools are the central controlling factors of the whole supply chain process (Taticchi, Tonelli, & Cagnazzo, 2010).

Some Pakistani automotive companies have adopted current global standards and some are trying to follow these standards (Ahmad, Pirzada, & Khan, 2013). Wooliscroft (2013) conducted a study related to the implication of knowledge sharing process in order to enhance the supply chain process of an automobile company in Kenya. The researchers considered a just-in-time approach combined with knowledge management. However, the research lacked experiential findings regarding the advantages of knowledge management-based supply networks; hence, suggesting that future researchers consult with multiple automobile companies to obtain a detailed understanding of the role of knowledge management in a value chain. In addition, the researchers also proposed that SCP-related components be included in subsequent study to assess the role of KMP and SCP initiatives in the overall improvement of the supply chain process in the automotive industry. Hence, it leaves a space for the researcher to extend and improve the research base in

this domain by studying the effect of various stages of a supply chain on SCP where KMP is considered a moderating variable.

Therefore, the current situation signifies the need to explore the subject of the study in the automobile sector of Pakistan (Mustafa, Begum, Nisar, & Osama, 2018).

2.1 Introduction

During 1990, SCM was a new phenomenon and In order to enhance its functions according to this new SCM phenomenon, many producers needed to collaborate with their suppliers that focuses majorly on buying and industrial buyers but at other places it has been categorized from purchasing and supplying point of view (Tan, Kannan, & Handfield, 1998; Tan, Kannan, Handfield, & Ghosh, 1999). In the same way, wholesalers and retailers have likewise incorporated their deliveries and logistic capacities into the transportation and logistics perception of SCM to improve their margins. Throughout the most recent 10 years, these two supporting elements of corporate system developed accordingly and ultimately converged into deliberate approach to deal with resources and logistics management functions that are normally stated as SCM (Ballou, 2007). Hewlett-Packard consistently gives trainings its immediate suppliers to improve their sustainability. In order to satisfy the ongoing corporate sustainability standards of industry, Hewlett-Packard had to train its tier two suppliers (Grimm, Hofstetter, & Sarkis, 2016). In clothing business, harmful chemicals are being released into rivers and streams that contaminates the clean water. Puma is monitoring the chemical use and working with its tier 3 suppliers, Additionally, in clothing supply chains, leather production also affects the environment, it damages the ozone layer by discharging greenhouse gases. Bottega Veneta's extravagance brand has teamed up with its three-tier suppliers to build new bleaching techniques to minimize their energy use.

While discussing the beneficial assets for competitive gain for businesses, knowledge is one of the important assets that benefits the industry. It comprises of planning, guidelines and proper information to benefit the business. Knowledge management is the mechanism for collecting and using information in an organization to enhance organizational efficiency and capacity.

2.2 SCM Defined

In the modern world, the term SCM is not new. However, it is juvenile as compared to the other terminologies in the field of business administration. The history can be traced back to the late 1950s when Forrester (1958) described the primary issues related to the management of business activity and elaborated the dynamics of these factors which became the basis of the term SCM. In the early days of its evolution, activities in business were fragmented and a holistic perspective was missing, which hindered businesses from attaining an optimum level of performance. During the period from 1960 to 2000, these fragmented activities were merged into the broader domain of purchasing and material management and the physical distribution of the material and products. However, the activities related to sales and marketing were dealt with differently (Ballou, 2007).

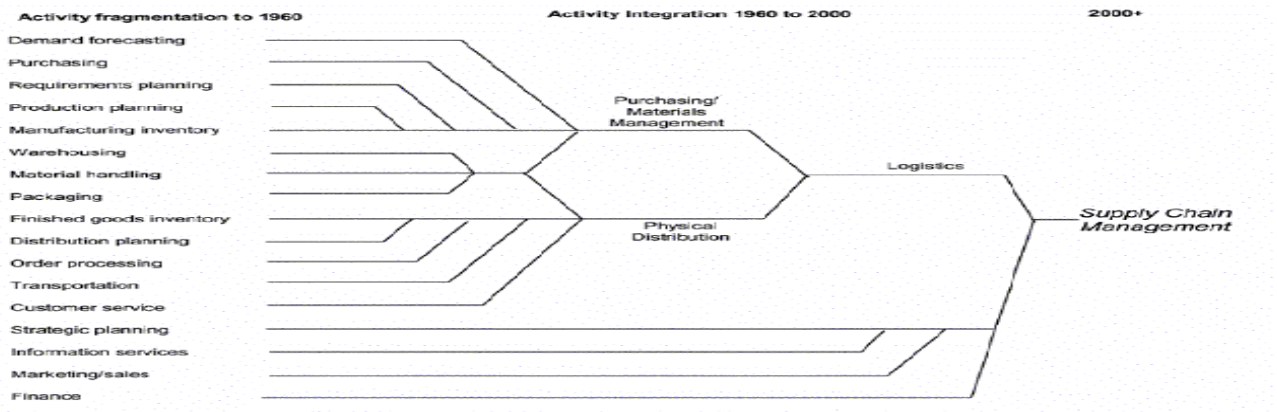

Figure 2: Evolution of Supply Chain Management

Source: Ronald H. Ballou (2007)

Figure 2 shows that all these domains took many forms during this era and multiple terms emerged to address the related issues, for example, Integration of suppliers, integrated procurement strategy, collaborations between vendors, integrated logistics, strategic supplier alliances, supply base management and coordination of the supply chain (La-Londe & Masters, 1994; New, 1997; Tan, Handfield, & Krause, 1998). The activities of purchasing and materials management and physical distribution were then merged into logistics during this era and, after the year 2000, logistics was also merged with marketing activities that formed the term SCM (Ballou, 2007).

While each of the above-mentioned terminologies, As seen in Figure 1, Supply Chain Management defines the suppliers of a company and is the most generally utilized term to portray this way of thinking but sadly previous studies do not properly explain SCM or its practices (New, 1997). Harland (1996) defined SCM as an internal operation of a business that manages business activities and relationships with all kind of suppliers and buyers according to the SCMP. (Scott & Westbrook, 1991) and (New & Payne, 1995a); New and Payne (1995b) defined SCM as the chain that joins all the elements from manufacturing process to supply of product to end user passing through all the business functions. This concept takes into account the entire supply chain process, from raw resources to product manufacturing and their distribution to end users (Baatz, 1995) additionally, extended SCM to comprise reusing. SCM focuses on its suppliers, emphases on their suppliers' procedures, expertise, and aptitude to improve modest gain (Farley, 1997), moreover, the coordination of assembling the materials work within an organization (Lee & Billington, 1992). Performance can be improved if all the businesses in this chain coordinate and act as a single entity (Chopra & Meindl, 2013). Chopra and Meindl (2013) stated that SCM is characterized as the

management of a chain that links all parties intentionally or unintentionally involved in satisfying the request of the customer. Christopher and Gattorna (2005) described SCM as the implementation of onshore and offshore supplier and consumer associations to communicate better customer satisfaction at a lower cost. (Aitken, 1998) defined this term as an organization of related and in order to monitor, achieve and advance the movement of supplies and data from traders to end users, interdependent organizations collaborate generally and agreeable. Sople (2011) defined the term SCM as a key coordination to enhance the long term supply chain performance. Lambert (2008) stated that the management of partnerships in the supply chain is SCM. The SCM was described by the American Production and Inventory Control Society as a method to produce and boost net value, create a modest substructure, optimize global logistics and estimate output worldwide through proper design, preparation, execution, control and monitoring of supply chain operations.

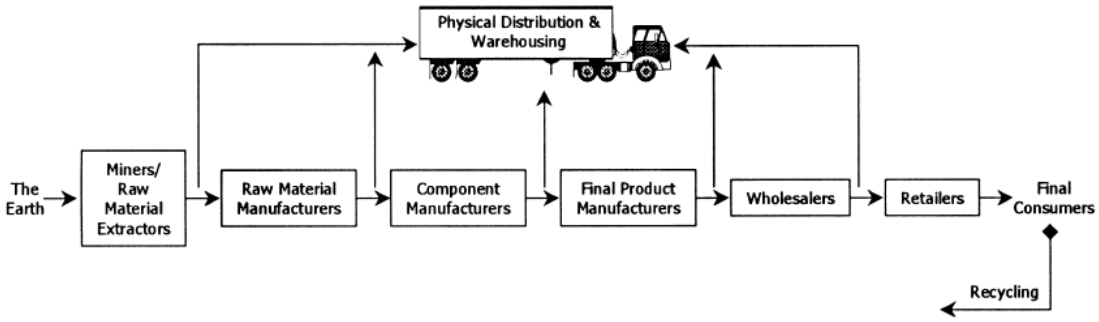

Figure 3: Activities and Firms in a Supply Chain

Source: New and Payne (1995)

Figure 3 shows that the behaviors and companies involved in a supply chain. It begins with manufacturers, distributors, retailers and consumers and considers the mining from the earth of raw material or resources New and Payne (1995b). In addition, SCM requires the disposal or re-use of goods or materials. SCM tends to regard all associations within the value chain as connected

together and as a virtual multinational firm, according to its clarification, Configuration, planning and growth, procurement, processing, production, collection, transportation, logistics, propagation and post-conveyance guidance, for instance. Customers or end consumers get the stock across the value chain in a very interconnected store network, rather than the retailer selling the stuff to the end customers (Tan, 2001). While this concept of SCM describes the procurement process in the product lifecycle at a fundamental level, a fair way to deal with SCM is to identify the important vendors in the value chain (Tan, Kannan, & Handfield, 1998; Tan, Handfield, & Krause, 1998). In reality, in order to obtain the incentives provided by SCM, the value chain seems to be too complicated to even consider achieving a complete integration of all business elements within it. This illustrates the second sense of SCM: the integration of the various useful areas of an organization to enhance the progression of products from manufacturers to the final consumer across the assembly and distribution chain (Houlihan, 1985, 1988). It also shows that by and large spotlights on improving the proficiency by manipulating the supplier's capacity and innovation, especially during the product configuration stage through suppliers' contribution. .

Another meaning of SCM arises out of the transportation and coordination based previous business and consumer industry reports underline the value of distribution and strategic implementation. There is no doubt that distribution is an essential business capacity and is becoming a critical SCM (New & Payne, 1995b). Certainly, the actual conversion of the products is not a central part of this SCM definition. This is possibly where the word SCM was first used (Lamming & Hampson, 1996). Its main focus is the efficient actual dispersion of manufactured products from manufacturers to end customers attempting to substitute inventories with data.

Supply Chain Performance

The concept of SCP is an extension to SCM activities. Primarily, it refers to fulfilling a customer's demands by ensuring well-calculated acquisition of raw material, on time product availability and efficient supply and inventory management capabilities of a business (Bottani & Montanari, 2011). The modern concept of supply chain is very dynamic and undertakes all the aspects and sub-activities of material sourcing, assembly, finishing, multi-channel distribution and delivery to the customers who are scattered worldwide (Bottani & Montanari, 2011). This increasing complexity of supply chain activities has signified the need to design a system with an aim to measure and monitor the output of all the echelons of the supply chain. This system is termed SCP management. The fundamental goal of observing output of SC performance is to gain useful insights about all the processes which enable firms to meet clients' demands and achieve the envisioned aims and purposes of the business (Chan & Qi, 2003). In addition to that, another key cause for the rising attention of businesses in SCP is the increasingly competitive business environment which challenges the existence of all small, medium and large enterprises in the market. Business managers, nowadays, are focused on increasing the output of their supply chain network through adopting cost-efficient approaches, integration of supply chain partners and immediate customer accessibility in order to maintain competitive advantage in the industry. . Therefore, effective management of supply chain requires companies to adopt a well-framed and structurally implemented performance system aiding the business managers to integrate all the components, activities and sub-groups of the supply chain process.

2.2.1 SCP Metrics

SCP is a vast field and has gained attention from many researchers and theorists. Successful measurement of SCP depends on metrics that have the capacity to evaluate the entire process,

control performance of resources, and highlight internal needs as well as stakeholders' requirements. Furthermore, these metrics enable businesses to improve their performance continuously. However, there are certain conditions which businesses need to follow before implementing an SCP system. First, mutual consensus of all the stakeholders about performance metrics and evaluation model or criteria is mandatory (Simatupang & Sridharan, 2002). Second, the method of performance assessment should be transparent and include all classes and sub-groups, covering all extended value chain components (Simatupang & Sridharan, 2002). The main reason for the second condition to SCP measurement systems was research of Lambert and Pohlen (2001), which identified that SCP metrics were, previously, focused on internal performance measures. The researchers identified that performance measures included internalized operational functions, inbound and outbound transportation and consumer distribution while the performance measurement of external supply chain processes was ignored. Following this, Coyle, Bardi, and Langley (2003) emphasized performance evaluation of the external supply chain aspects which included effective monitoring of the flow of products, services, knowledge as well as financial aspects taking place between suppliers and customers.

The literature in the domain of SCP has detailed various measurements and perspectives of SCP which date back to 1990s. Beamon (1999) presented a model explaining that SCP of a business is influenced by certain factors which include a company's resources, its output capacity, operational flexibility and integration of supply chain activities. Beamon (1999) further explained that resources determine the minimum inventory level, personnel, equipment, cost and energy utilization which is required for efficient performance. Likewise, customer responsiveness and quantity of the produced units in coherence with their quality help businesses to measure output

whereas flexibility relates to the degree to which an organization has the capacity to respond to inconsistencies.

Among all the performance metrics, cost factor is recognized as an essential element of measuring performance in terms of determining efficiency of the processes. Keeping in view the cost perspective, a few researchers, in the past, considered tangible and intangible factors including cost and capacity utilization of business as key aspects impacting the SC network performance network (Choon Tan, Lyman, & Wisner, 2002). Besides that, Koide et al. (2009) conducted considered measuring the SCP of a business through inventory, cycle time and finance. The researchers further explained that, "Efficiency, service, delivery of goods, suppliers' performance and cost are the factors that help in estimating supply chain performance by inventory investment" (Koide et al., 2009). In addition to that Estampe, Lamouri, Paris, and Brahim-Djelloul (2013) identified customer satisfaction and the ability of a business to generate value through adopting cost-efficient approaches as being direct related with performance of supply chain processes.

In the current era, considering technological advancement and the digitization of processes, Hsin Hsin Chang, Yao-Chuan Tsai, and Che-Hao Hsu (2013) studied the connectivity between E-procurement and SCP. The researchers adopted a practical approach and interviewed supply chain managers of different businesses in addition to completing an empirical analysis on data practical insight into the idea of SCP in Taiwan. The results of their study revealed that E-procurement enhances overall efficiency of the SCP network of businesses. The researchers further revealed that internet-supported procurement activities foster partner relationships. Besides that, it improves information dissemination which ultimately integrates the entire supply chain network and contributes to increased SCP (Chang, Tsai, & Hsu, 2013).

Bigliardi and Bottani (2014) conducted research on Italian manufacturing companies in order to understand their SCP measurement. The study was divided into two parts: literary review and pilot study of manufacturing firms. Literary analysis revealed 39 indicators of performance measurement of supply chain which were categorized into broader domains: customer service and supplier performance, investment and advertising, invention and knowledge, internal business, conveyance and logistics. The researchers further used the identified six domains in order find out the effect of these performance metrics on Italian manufacturing firms. The results of their survey of businesses revealed that businesses prefer to adopt all SCP measurement metrics; however, customer service management was the highest priority for them. The findings of this study were coherent with those of Gunasekaran, Patel, and McGaughey (2004) who suggested customer satisfaction and cost as the key SCP measurement metrics.

Hsin Hsin Chang, Kit Hong Wong, and Wei Sheng Chiu (2019) investigated the impact of business systems leveraging (BSL) on SCP whereas moderating variables are process innovation and uncertainty. The results of their study identified that businesses integrate their processes and operational systems with their partners due to varied reasons. These reasons include technological orientation, pressures exerted by supply chain partners and intention to maintain strengthened relationships with business affiliates. The results further revealed that SCP activities are least impacted by BSL in cases where product demand is high and supply is uncertain. However, process innovation is the moderating variable between BSL and SCP (Chang, Wong, & Chiu, 2019). The researchers concluded that BSL interventions help businesses to advance and uphold better and strong associations with supply chain partners

where focused innovation and integration lead to well organized and well managed performance of the entire SC network.

2.2.2 SCP Models

In the 1980s and 1990s, performance review models within the supply chain attracted the interest of researchers. Researchers struggled to develop models that would align SCP dimensions to the corporate strategy of the business. There are a range of models that help the organisation assess the efficiency of the supply chain network. Literary analysis has evidenced that SCP models are divided on the basis of monetary and non-monetary measures. Monetary performance estimations are used by the top management and decision-making authorities of a business in order to make business strategies and envision its future direction. however operational or non-monetary measures are adopted by all other employees of the business. Besides that, the models are based on either a process-based or perspective-based approach. Process-based SCP evaluation models are those which consider a supply chain as a whole process by considering sub-processes including manufacturing, logistics, delivery management. La Londe (1997) and Ross (1998) are the pioneers who recognized SCP as a process which undertakes the performance of all the sub-aspects and processes with an aim to measure the overall performance of the SC network of a business.

2.2.2.1 Activity Based Costing

Kaplan and Norton (2001) presented Activity Based Costing model of performance evaluation which emphasized financial aspects of supply chain processes. The researchers further identified that controlled cost aspects enhance the operational effectiveness of complete SC process. Following the model, the performance of each sub-process is evaluated by taking into account the costs allocated to complete the activities rather than adopting conventional accounting practices. All the overhead cost is also distributed among cost drivers which highlights efficient and

inefficient processes. The model is ideally suited for evaluating supply chain output in terms of efficiency and costs incurred in each supply chain segment.

Balanced Scorecard

Kaplan, Norton, and Horváth (1997) presented Balanced Scorecard (BSC) as a tool to measure performance for SCP. Since then, the tool has been widely adopted in the fields of research and commerce. The model takes into account operational as well as financial aspects of measuring performance and is based on four principles: financial performance, customer feedback, innovation and internal business processes. The only challenging aspect of the model is that it follows a top-bottom tactic and does not encourage participation which, ultimately, decreases collaboration among stakeholders and affects integration among supply chain processes. Lohman, Fortuin, and Wouters (2004) defined BSC as a static method which limits the capacity of business managers to analyze their SCP fully, and design and implement a policy. The researchers, despite the model being widely adopted, stipulated that it was a theoretical model.

Considering the need of the market and aiming to enhance the competitive position of organizations in the industry, Brewer (2000) introduced a revised version of BSC model where they highlighted four major areas of SCM which required immediate consideration. The researchers examined whether conventional BSC metrics could be used to structure a new framework with an aim to assess the SCP Following the adaptable metric selection approach, the identified areas of the revised model included SCM objectives, customer-oriented benefits, financial benefits and SCM improvements as key determinants of performance evaluation. In addition to that Andrews et al. (2003) conducted their research where they extracted financial, internal process and customer orientation from BSC framework, but considered innovativeness as the fourth performance determinant. Andrews et al. (2003) also authenticated that despite defining

certain metrics, businesses tend to alter these performance metrics based on the nature of their business and hence define their own personalized sets of BSC. To understand the effect of BSC metrics Callado and Jack (2015) checked the functional aspects of the company scorecard model..

2.2.2.2 Supply Chain Operations Reference (SCOR) Model

The Supply Chain Operations Reference (SCOR) model is considered a vital instrument that best explains the underlying concept of the whole supply chain process (Becker, 2005). The model is also termed as supply chain reference model; it was established and introduced by Supply Chain Council, which is a nonprofit association, after a lot of struggle, research and brainstorming. The conceptual grounding, which forms the basis of this model, is that it was designed to define standardization in terms of performance levels considering the process of the whole supply chain network while internal and external factors were also considered vital to the whole process (Weber, 2002). In the present era, the Supply Chain Council incorporates more than 1000 members who have engaged with the consistent change of the model while looking for ways and tricks that can be adopted to further optimize the process (Bolstorff, Rosenbaum, & Poluha, 2007). Each new form incorporates new authoritative procedures, figures for execution estimation and the best practical illustrations. The prime goal of the model is to depict, investigate and assess the whole operational functionalities of the supply chain process.

Considering the mentioned characterization of the whole SCP measurement process and considering the formulating aspects of SCOR model, the notion is certainly conceivable that effective institutionalization of all the documents in a totally unique organization helps in better assessing the performance using the SCOR model (Ntabe, LeBel, Munson, & Santa-Eulalia, 2015). The underlying objective of stating the institutionalization of the documents in a company is to permit organizations to convey and collaborate effectively, if the division of procedures is

insufficient. To accomplish its goal, the SCOR-demonstration incorporates order levels which empower the client to break down particular procedures or the entire network of supply chain activities and operational functions.

2.2.2.2.1 Framework

As mentioned previously, the SCOR model covers the entire supply chain process by considering supplier-to-supplier and customer-to-customer relationships. The underlying notion necessitates defining a standardized criterion in order to avoid biasedness and ensure correct performance measurement. The criteria which have been set include types of processes, SCOR processes and, most importantly, the hierarchical levels of a company (Lima-Junior & Carpinetti, 2016).

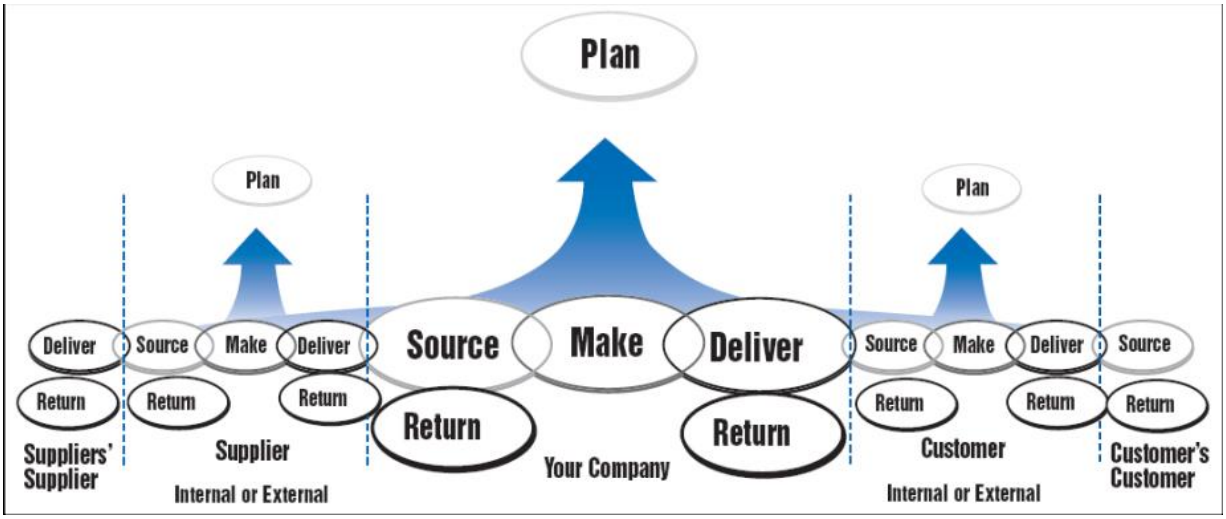

Figure 4: Supply Chain Operations Reference Model

Figure 4 shows the criteria which refer to the types of processes that include planning execution and enabling operational processes; the purpose is to ensure the co-integration of the process types with SCOR processes. Doing so, ensures transparency in the documentation considering all aspects which include physical, environmental, financial as well as informational flows (Bolstorff & Rosenbaum, 2007).

Planning is the first step. When implemented, the SCOR model incorporates all types of planning, which includes strategic thoughts, operational dimensions, and planning of manufacturing and supply chain networks, to ensure that all the operational functions at this level are tackled and summarized. The model also shifts its focus towards the production aspects where quality assurance is the most considerable aspect including Kanban methodology. Such integration of all the processes, activities and operations from strategic to retail level in the SCOR model make it a very diversified, multidisciplinary and challenging framework. Furthermore, the planning of damaged or returned products is also taken care of by the SCOR model (Sellitto, Pereira, Borchardt, da Silva, & Viegas, 2015).

In the second phase, which is termed as sourcing or making process, all the operational activities related to purchasing are considered in a summarized manner. Delivering is the third phase which, as quite obvious from its name, refers to the supply chain networking activities at all levels for all the products while ensuring the smooth flow of the products delivery chain. Return is the last factor of the SCOR model, which takes into account damaged, broken or returned products; it analyzes the reasons for the damaged, broken or returned products and utilizes this gained information in order to ensure strict quality checkups in the future along with devising strategic measures to take proactive actions in order to avoid any such situations (Sellitto et al., 2015).

The above-mentioned SCOR model explanation clearly depicts that the sole purpose of this model is to ensure standardization in terms of the documentation considering entirely different companies, where the main purpose is to integrate different companies whilst ensuring collaboration and communication inflows. The model also depicts that separating the process is not as effective as it seems to be when combined with the hierarchical levels of the company. It

improves the users' ability to conduct an accurate review of the processes to ensure the completion of entire supply chain (SC) phase (Sellitto et al., 2015).

The SCOR-display is additionally termed as "Process of referencing demonstration", the reason behind suggesting this term to define the SCOR model is that it consolidates the referred to activities with ideas, which include business process reengineering, setting a standard referring to benchmarking and, most importantly, the best-rehearsed approaches. The first component, termed as business process reengineering, means archiving the original procedures and setting new goal-oriented targets for the procedures (Sellitto et al., 2015). The benchmarking idea really incorporates the noteworthy execution estimation arrangement of the model as defined above. The procedures produce figures which empower correlation with different organizations. The SCOR-execution estimation framework in this manner covers the initial three order levels. The main level contains figures for the whole inventory network concentrated on clients or inside qualities. The client-centered figures assess unwavering quality, responsiveness and readiness, while the inside figures concern expenses and resources.

An awesome preferred standpoint of the SCOR-display is that the model adopts a benchmarking approach by utilizing the information in more than 1000 distinct organizations. Furthermore, the model also permits utilizing the most appropriate approach, which gives the companies an opportunity to contrast the techniques and types of the processes in order to get the best out of them in terms of productivity and high-performance levels. The SCOR framework reports, breaks down and assesses the whole production network. In particular, the execution estimation framework as an imperative component permits estimating the execution of a standardized supply chain network and tackles issues of correspondence or many-sided quality (Sellitto et al., 2015).

2.3 SCM Practices

Research that considers the supply chain from a management perspective dates back to the 1960s when the concept of mass production transformed into lean manufacturing system due to the industrial revolution and development (Huang & Keskar, 2007). A variety of factors, for example, a focus on the commercial aspects of manufactured items and assortment of clients' requests, requirement for quick conveyance of an item to market and advancement of data innovation brought about the development of organizations towards adopting SCM approaches and practices (Boonjing, Chanvarasuth, & Lertwongsatien, 2015). Furthermore, organizations imagined the supply chain practices as an activity that can be outsourced and, hence, they outsourced their hierarchical exercises to authenticated suppliers in order to provide support to increase the business sector's net revenue (Chin, Tummala, Leung, & Tang, 2004).

Indeed, SCM enables organizations to utilize their capacities in a successful way. Innovative and unique ideas encompassing supply chain activities which were characterized as "Coordination among the important activities that progress crude material to semi-finished item to conclusive item and delivering these resulting products to clients" were displayed around 20 years ago (Heizer, Render, & Ros, 2001). SCM is also characterized as: "All connections for exchanging materials, items, cash and data from suppliers to maker and the other way around" (Goffin, Szwejczewski, & New, 1997). Relationship management between the supplier and the customer is among the key parts of supply-related network management. Effective SCMP deems to play a vital yet most challenging and complex aspect of getting a competitive standing in a diversified market where efficacy of the entire process is considered the cornerstone of excellence. Within the context of SCM, academicians, researchers and theorists have been very active and have put forth valuable research contributions (Croom, Romano, & Giannakis, 2000; Kaushik, 2018; Koshkaki,

Gammelgaard, & Stock, 2017; Tan, 2002; Tarafdar & Qrunfleh, 2017; Wong & Wong, 2007) with an aim to find complete knowledge about the contextual perspective of the subject. SCM refers to all the practices, activities, processes and sub-processes which are included in the process of effectively managing the supply chain of a business organization (Li, Rao, Ragu-Nathan, & Ragu-Nathan, 2005).

In the recent decade, the utilization and implementation of SCMP has been witnessed at all levels, including strategic decision making, product developmental aspects, managing good relationships with customers, vendor management and in the field of logistics (Christopher, 2016). Such practices have validated that the underlying principle of SCM has been quite diversely directed towards network configurations on organizational level ensuring the integration of all the processes and activities, while considering the operational upgrading capabilities at both upstream and downstream capacities from the pre-production stages to consumption (Mentzer et al., 2001).

A wide-ranging supply chain that incorporates the management and functional viewpoint is the topic of , comprehensive and multidimensional field (Jacobs, Chase, & Lummus, 2014); it encompasses all the internal and external perspectives impacting overall organizational performance and affecting the performance of the supply chain process itself (Hugos, 2018) because its integrated conceptual and practical grounding involving suppliers, manufacturers, distributors and customers (Chopra, Meindl, & Kalra, 2018). In the 1990s the concept was being presented within the context of partnership, outsourcing perspectives, quality management, continuation of process flow, customer management, compressed cycle time, and purchasing and information sharing in various studies (Donlon, 1996; Tan, Kannan, & Handfield, 1998). Walton (1996) studied SCMP from a different perspective by taking into account planning partnerships, shared approach towards dividing benefits and burdens, and effectiveness and vitality of the

process of exchanging the operational information, validating the need to extend the supply chain focal points. Similarly, the era of 2000s witnessed a lot more publications and studies which included Zhou and Benton-Jr (2007) who, after sheer analysis and evaluation, categorized supply chain practices into three major headings which are termed as production capacity preparation, just-in-time output and, finally, the distribution practices, assuming that all the activities concerning supply chain come under one of the three headings. Chen and Paulraj (2004) confined their focus to the supplier side of supply chain practices in terms of exploring the concept of reducing supplier base along with its level of involvement in supply chain practices considering several functional and relationship aspects. In addition, the latest period has seen the introduction of knowledge management into the distribution chain sector. and logistics management as a vital yet challenging contributor and it became one of the most focused areas of study (Hong, Zhang, & Ding, 2018; Kaliyan & Kothandaraman, 2018; Lim, Tseng, Tan, & Bui, 2017). Furthermore, the extent to which KMP impacts multiple supply chain practices has also been studied widely, which clearly indicates the need for extended research to visualize its impact on a firm and its supply chain process from a broader perspective. In short, all the above-mentioned researches and studies clearly depict the importance and vitality of SCMP by categorizing it as an organizational and SCP driver.

Business operations have become complex, uncertain and very competitive. Considering the competitiveness and relevancy aspects due to the industry revolution and changing market trends, To manage conflicts, most businesses have established strategies. The supply chain, in such a case, is considered an integral component for attaining high-order success level, particularly when new systems, for example, are used for integration. However, without managing good relationships with customers, this cannot be done (Mangan & Lalwani, 2016). Integration with suppliers helps

in assessing the performance of product development (Koufteros et al., 2007). Supplier integration requires an inflected focus on critical suppliers considering the competencies and coordinator aspects (Bowersox, Closs, & Stank, 1999), whereas to set up, operate and optimize a responsive supply chain requires specialized knowledge (Bozarth et al., 2009).

2.3.1 SRM

As of late, SRM entailed a pattern that transited from customary alliances (1960s) to a calculated, agreed and mutually beneficial relationship (1980s) of the suppliers with the organization (Da-Villa & Panizzolo, 1996). However, there are wide investigations identified with supplier's division and supplier relationship administration in light of portfolio models. The structured portfolio models generally break down impacts of two factors on the ideas and attributes of purchaser–supplier connections. For instance, out of the blue, Kraljic (1983) investigated purchaser–supplier relationship in light of two components – profit impact and supply risk – each of which had been categorized into two states: low and high levels. Aligned with the concept of portfolio model, the relationship between supplier and business organization was divided into four classes. Classes 1 and 4 represent the relationship between supplier and supplier in a symmetrical manner whereas Classes 2 and 3 represent non-symmetric behaviors where the interrelationship is concerned. Figure 5 presents the above-described model.

			Supply Risk		
			Low		*High*
Profit	*Low*	***1***	Non-Critical	***2***	Bottleneck
Impact	*High*	***3***	Leverage	***4***	Strategic

Figure 5: Kraljic Portfolio Model (Kraljic, 1983)

Figure 5 shows Kraljic's primary portfolio demonstrating purchaser to supplier relationship division and grouping; some research (Bensaou, 1999; Kaufman, Wood, & Theyel, 2000; Olsen & Ellram, 1997) concentrated on these comparable models.

As of late, administration and management of key connections between purchaser and suppliers has gained expanding interest. SRM is synonymous with supplier relationship administration in simpler words, as considered by Akamp and Müller (2013), It is the act of planning, conducting, establishing and confirming the relationship and partnerships of a company with current and prospective suppliers. Important accounting exercises in supplier administration are supplier option and evaluation, supplier observing, supplier advancement and supplier joining. The option of supplier is seen as the basis for achieving a high standard of supply management to sustain and strengthen the concentrated edge (Abdollahi, Arvan, & Razmi, 2015). Articles on supplier determination show quality after conveyance, value, capacity to manufacture, benefit, administration, creative work as the most well-known factor, backing and support, adaptability, notoriety, relationship, hazard management and supplier's wellbeing management (Thakur & Anbanandam, 2015).

Moeller, Fassnacht, and Klose (2006) described the advantages of the SRM base have been portrayed as: 1) stronger supplier base, 2) easily cope with notable problems, 3) behave better in a planned and more efficient way, and 4) boost consumer value development. In this way, SRM would be a far approach that enhances the involvement (business relationship level), collaboration (process level) and interaction (data structures level) between the company and its suppliers in order to continuously create joint effort efficiency and viability and at the same time increase competitiveness, protection and progress (Mettler & Rohner, 2009).

Wieteska (2016) showed how organisations should develop supplier partnerships and alliances while encountering high market complexity and focusing on SRM adaptability and flexibility. Supply chain resilience results in a persuasive response to supply, demand and item changes.

With regard to acclimatising to huge natural changes, flexibility is developed. Via flexible buying and supplier versatility, adaptability in relationships can be achieved.

The focal topic covered by Oghazi, Rad, Zaefarian, Beheshti, and Mortazavi (2016) is to recognise the possible impediments to the SRM mix and he sought to make plans for arrangements to beat these barriers. In this way, studies, analysis and consequential inquiries in the domain concerned have shown that the combination of SRM procedures can take place by mixing its various sub-forms into essential and functional values. The meaning and structure of the entire procedure are represented by essential sub-forms, while administrative sub-forms relate to the official time of the procedure. In this particular case, the key possible obstacles to the SRM combination are the absence of objective coincidence with obligation and confidence between the manufacturer and its supplier.

As specified by Soh, Jayaraman, Yen, and Kiumarsi (2016), confidence, contribution, market understanding, communication, transparency, data sharing and knowledge are the seven metrics usually used to indicate buyer-supplier relations. In BSR, confidence is the most significant and fundamental aspect. Components that affect trust include obligations, feasibility of communication, cooperation and directness. Investigations have shown that supplier performance and supplier involvement have coordinates that have noteworthy ties to performance measurement. In addition to this, Soh et al. (2016) claimed that no mediating effects of BSR on the ties to supplier performance across supplier interaction and supplier network were identified. Ji, Ma, and Li (2015)

stated the change in the inclination for collaboration among multi-partners was examined (purchasers and suppliers).

Evolutionary Game Theory

By breaking down green spending and its benefits for organisations, Evolutionary Theory explains cycles of further evaluation. Results indicated that capacity reuse is an important factor for long-term propensity for participation among multi-partners. Settlements between suppliers and producers in a two-level distribution network would be impacted by the acquisition of green ties between multi-partners. A linked study by Kähkönen, Lintukangas, and Hallikas (2015) explored the interactions between real worth exercises and the dependency of the consumer observationally and examined what kind of supplier relationship administration exercises can reduce or increase dependence.. The outcome of the research showed that the real worth exercises between the learning of the business and the early inclusion of suppliers in buyer-supplier links increased the buyer's dependency on its suppliers, whereas the implementation of a supplier does not. It could be proposed from this investigation that organizations should measure the pros and cons (creation of worth) (reliance)in view of them, and establish administration procedures and relationship methodologies. Distinguishing evidence of four key classifications in both buyer and supplier appeal assumes a crucial role in the article of Tanskanen and Aminoff (2015). These are: 1) financial-based, 2) behavior-based, 3) asset-based, and 4) quality of interaction based on relations. In both dyads, they discovered financial-based and behavior-based appeal, while investment and spanning-based interaction quality was emphasised when the main goal was more exploratory elements and when the goal was to use the dyadic partnership to build organisations outside of the dyad.

Ivens, de-Vijver, and Vos (2013) discussed key supply chain: in what manner will it be useful to consult it out, what are the (hierarchical) consequences, and what benefits can it be worked out? The investigation of how to analyze, schedule, supervise, and monitor relationships with these major customers is handled by key cost control.

Akamp and Müller (2013) investigated the percentages of supplier management could drive the execution of suppliers and the fulfilment of buyers. They suggested a simple display of state which was analysed using partial least squares (PLS). Although supplier execution and purchaser fulfilment were dependent variables, the calculated model took supplier choice and evaluation, supplier observation, supplier enhancement, and supplier mix as free factors. The results showed that, for the most part, compatible exercises, such as supplier enhancement and product mix, are effective, although supplier observation does not appear to affect the implementation of suppliers.

Bemelmans, Voordijk, and Vos (2012) shed light on expanding the viability of manufacturing firms in overseeing purchaser–supplier connections. Their attention was on evaluating the development level of purchaser–supplier relationship administration by development firms. Important viewpoints in deciding the adequacy of purchaser–supplier relationship administration for a purchasing organization incorporate enhancing supply base as far as both the number and the nature of its suppliers, consideration towards dealing with a purchasing organization's arrangement of suppliers, choosing to what degree suppliers must be coordinated into their own procedures, and regard for creating suppliers, based on a progressing observing of their execution. The obstructing variables can certainly be abridged as the absence of formalization, documentation and correspondence (both internal and with suppliers)

interconnected with different strategies, plans and procedures that formulate some portion related to the management of the internalized relationship.

2.3.1.1 Supplier Relationship Approaches

Business and scholarly diaries incorporate various other supplier relationship models, extending from exceptionally straightforward two-dimensional portrayals, (e.g., the Exit/Voice Model examined by Gunther) to exceptionally advanced models that utilize various factors and complex connections, (e.g., Cox's model that contends connections among purchasers and suppliers ought to be assessed and overseen in view of the intensity of the purchaser with respect to the supplier). What contemplations and dangers – as far as individuals, process and innovation – should firms consider a feature of their general supplier relationship administration procedure is the really challenging situation.

The accompanying models related to SRM approaches clearly illustrate that there are alternatives from which organizations have to choose the most appropriate one to begin forming alliances. In this regard, there are certain concepts pertaining to suppliers' relationship which are mentioned as follows.

2.3.1.2 Partnership

Koshkaki et al. (2017) recognized four sorts of supplier connections: running from a safe distance through organizations, joint endeavors and vertical combination (take note of the closeness to the past relationship range). While most connections are at a safe distance, with suppliers that offer standardization or manage a variety of clients using the same approach, in the business world there are certain situations that require companies to build special associations with their suppliers on an individual basis, based on the strength of relationship and mutual alliance between them. Lambert (2008) characterizes an organization as "a custom-

made approach which incorporates multiple factors including the extent to which they have mutual trust, receptiveness, shared benefits and losses and in simpler words, the extent to which they develop long term alliances which are not affected or broken due to temporary accidents or circumstances.

Companies have the option to select between Type I, II or III in so far as the supplier relationship is regarded, depending on the type of alliances a company is looking to build with the suppliers. In Type I, mutual acknowledgement is the distinguishing factor where the firms and suppliers recognize the value of each other and organize the activities which are limited to a specific function. Type II alliances are far broader than the first one as there are sets of activities which are shared among the partners. Type III has the widest horizon with noteworthy and significant mix of activities which are shared to form a strong alliance.

The development of alliances between firms and suppliers is not a simple process. It requires time and monetary investment from both sides. By assessing all drivers Lambert and Enz (2017) proposed a model that takes into account the concerns associated between companies and suppliers. facilitators and other contributors which add up to formulate a sustainable alliance between two organizations. The researcher further described the drivers, such as factors which signify that a relationship or alliance between the suppliers and the business will be based of significant cost efficiency, improved mutual benefits and the establishment of a favourable and competitive market position. On the other hand, relationship steadiness was described by the facilitators, incorporating reasoned administration and management practices and procedures to ensure a symmetry.

Administrators then, utilize the third aspect, which is termed as segments (e.g., arranging, joint working controls and hazard/compensate sharing), to organize and collaborate

with the organization. Results measure how well an organization is meeting the desires delineated towards the start and give basic input to overseeing and improving the organization. For example, Dell (the computer company) gives an extraordinary case of an organization utilizing organizations with its suppliers. More than 90% of Dell's suppliers are hard-wired into the organization through its site, valuechain.dell.com. This cozy relationship is one reason Dell was the main organization in its focused class to pick up pieces of the overall industry a year ago.

2.3.1.3 Operational Complexity and Market Sophistication

Mould and Starr (2000) analyzed association connections with respect to operational multifaceted nature and marketplace refinement. Operational unpredictability relates to the complex and nuanced layout of supply chain sections while advertising refinement refers to factors that impact how parts are purchased and sold. They contended that firms and suppliers can effectively team up under specific conditions; however, endeavoring to do so without these conditions is wrong and perhaps counterproductive (McDonald & Wilson, 2016).

There are four unique kinds of purchaser–supplier connections in view of the level of operational multifaceted nature and market refinement. In transactional connections, cost is the essential driver while choosing a supplier, and there are numerous suppliers that are each on a par with the next. One type of connection is something like relational unions of comfort: they might be essential, yet they are not profound (Sellitto et al., 2015).

As mentioned in the above example of Dell Computers, the creators utilized an instance of alliances development of PC producers with Microsoft – any type of association or registered alliancing or membership subscription is required for them to get Windows programming from Microsoft, which is an exceptionally complex relationship. Operational connections are proper

when purchasers are extremely touchy about any intrusions to supply, yet the end clients are moderately aloof about the brand of the segments utilized by the purchaser. Finally, integrated connections are described by almost without limitation, shared dangers, costs, benefits and data" in terms of the fact that the buyer and supplier work in a profoundly advanced market and the item requests the two associations convey often (Gunasekaran, Subramanian, & Rahman, 2015).

Once the purchaser decides the most suitable relationship to seek with a supplier, the firm at that point needs to explicitly characterize the structure of the association regarding four principle classifications: business targets and techniques, innovation foundation, process and association. Proper arrangement of business destinations and methodologies requires purchaser and suppliers to concur on the most proficient method to quantify advancement and how much data to share.

The two firms must address how that data will be shared: what innovative arrangement is generally proper. Process coordination should plainly recognize which forms are shared between the two firms and which stay partitioned. Lastly, any type of cooperation places demands on hierarchical models, jobs and obligations.

The last inquiry is whether the two firms are prepared for joint effort: Do they have the capacity, duty and trust to be fruitful? Without the capacity to convey on guarantees, administration pledge to devote essential assets, and trust to cement bonds between the two organizations, the association will fall flat or accomplish unremarkable outcomes in the best-case scenario. A driving paper items maker's procedure change venture is an extraordinary case of the responsibility and trust required by senior initiative to actualize change in their supplier connections and all through the company's store network.

2.3.1.4 Supplier Relationship Strategies

In view of their hypothesis of ideal supplier determination with regard to Indian account management Thakur and Anbanandam (2015) suggested a Multi-Attribute Decision Making demonstration. This excellent conviction delivers the better supplier a considerable measure to "streamlining advanced saving money" gains under insecurity. Five essential sections are included in the implied hypothesis: estimate; social evaluation; choice; planning.

In their report, in view of the two meetings of "lean" and "light-footed" suppliers, Abdollahi et al. (2015) illustrated a hypothetical method for supplier determination, and a guideline for supplier relationship administration or managerial perspective (SRM) for these suppliers was suggested. A basic preliminary leadership and evaluation research facility is linked to the problem in order to determine the specific linkages between the proposed criteria. Furthermore, the implementation of the analytical method process discovers the heaviness of each sub-standard. Finally, in each paradigm, a data envelopment analysis methodology is used to rate the suppliers in relation to their score.

In their investigation, Yeniyurt, Henke-Jr, and Cavusgil (2013) found that if a procurement association seeks to achieve unique vendor working relationships, it should be integrated with a competent worldwide and surrounding acquisition faculty over its regional areas, which speaks adequately with the suppliers of the company, whereas operating on the whole in a designed way to achieve an all-around adaptive supply chain. Wu and Shen (2006) stated that system-based arrangement protocol was developed to guide the confirmation of customer prerequisites. It focuses on the organizing problems; that is, the SRM area's unstructured problems. In forming an alliance between both parties, an examination of the purchaser-supplier relationship was undertaken. Three steps are included in the administration

framework: characterising purchasing strategies, distinguishing conditions for supplier commitment, and determining framework prerequisites. Olsen and Ellram (1997) showed that four conditions (Bottleneck, Strategic, Noncritical and Leverage to be specific) have more power to decode scientific findings. So, this analysis was agreed upon. In a general sense, this new approach overcomes the effects of unstructured SRM-related issues on e-SRM assurance of customer needs.

According to Choy, Lee, and Lo (2003) there is an urgent need for the development of an endeavor application integration system for subcontracted compose manufacturers with the objective of determining suitable suppliers via a typical web-based phase. "Thus, "the need of consumers can be specifically established with the capability of suppliers. The research centers on the incorporation of the CRM and SRM. By building up an intelligent SRM system utilizing case-based reasoning (CBR), the researcher developed a framework for potential supplier determination, and it was tried in Honeywell Consumer Products Limited. CBR is a strategy for tackling problems utilizing past comparable circumstances from the case database. 4 "Re's" are used in its process: Reuse, Recover, Revise and Retain. Its implementations can be organised into two types: tasks for classification and tasks for synthesis. In the planning, design, diagnostic testing and client benefit sections, CBR was related. In an intelligent SRM system, two CBR modules are available: supplier determination and help desks.

2.3.1.5 SRM Obstacles

The research of Oghazi et al. (2016) expressed ten hindrances that can keep the mix of SRM from happening. These are the absence of trust, absence of correspondence and shared objectives, absence of standard apparatuses, absence of responsibility, absence of eagerness, specificities of the IT framework, level of custom, security boundaries, rigidity and cost of

mix. The investigator found the accompanying bearings for potential analysts in consideration of the specific audit:

- Supplier improvement programs enhanced the adaptability of suppliers' creation frameworks (Wieteska, 2016).
- Use of dark hypothesis for different supplier determination in the assembling segment where one cannot simply depend on a solitary supplier (Thakur & Anbanandam, 2015).
- Kähkönen et al. (2015) proposed: Examination of the impacts of early supplier contribution, between firm's learning and a supplier's introduction to supply execution and friends' creativity. Recognizable proof of other value-making segments in business connections, and control the firm-particular impacts, for example, the span of the relationship and the lopsided sizes of colleagues. A top-to-bottom examination concerning the relationship among reliance and relationship hazard.

Imperatives were identified with building up and keeping up contractual worker supplier connections inside the development business (Frödell, 2011). Assurance of ideal arrangement of relationship among temporary workers and suppliers in the development of business (Bemelmans et al., 2012). Looking at whether the individual components of procedural equity vary in significance over the span of the relationship advancement process (Griffith, Harvey, Lusch, Scales, & Items, 2008). Building a more exact conceptualization of key supplier connections, and honing and developing the connection among key supplier connections and different surges of writing, particularly for key administration (Ivens et al., 2013). Impact of partners (like neighborhood, government, etc.) in green purchasing (Ji et al., 2015).

2.3.2 ISCM

Internal supply chain alludes to the chain of exercises or capacities inside an organization that finish with giving an item to the client. Incorporation of these capacities includes comprehensive execution of activities and processes crosswise over departmental limits. A well-integrated supply chain network should result in incredible client administration and successful internalized process execution (Carola, 2018).

While there is no debate about the advantages of a very much coordinated inner supply management network, there is little agreement on what establishes joining hands and how to gauge this mixed approach. A few researchers have imagined reconciliation as coordination of useful practices, others see mix as correspondence. Instruments that scientists have utilized to quantify joining reflect their own definitions (Carola, 2018; Jaharuddin, Mohamed, & Sambasivan, 2014).

2.3.2.1 Eco Design

Green SCM (GSCM) incorporates ecological worries into supply chain administration. The supply chain design network involves exercises relating to the transition and flow of goods from the origins from which the raw material is obtained, till the end user which includes all exercises being interiorized as well as outside the firm (Bowersox & Closs, 1996). GSCM can also be seen at different stages like outside and interior GSCM viewpoints. Studies viewed environmental administration builds that include exchanges with the external supply network activities of suppliers and customers; other activities and practises without supplier or consumer

participation cooperation, such as eco-outline, natural management and wealth arrangements within the immediate control of a manufacturer, are called inner strategies (Zhu et al., 2007).

Numerous investigations demonstrated that GSCM practices can enhance ecological execution yet the linkage relies upon hierarchical limit (Judge & Elenkov, 2005). Connections have been considered between GSCM (and other corporate ecological practices) and monetary implementation; however, findings collide (Sarkis & Cordeiro, 2001; Wagner, 2001). Restricted work has inspected the connection among GSCM and operational execution (Vachon & Klassen, 2006). This absence of a reasonable connection between GSCM appropriation and enhanced execution, regardless of whether it is ecological, monetary, or operational, has turned into an obstruction for assembling ventures that try to legitimize GSCM execution.

Past investigations demonstrated that the immediate impacts among GSCM and execution change are noteworthy; however, execution upgrades are not constantly self-evident (Zhu et al., 2007). These investigations have additionally discovered that inside GSCM practices, for example, interior natural administration and eco-plan have been received and actualized on a more prominent scale than those outside GSCM measures for example, collaboration between sellers and clients. The disparity between appropriation of inner and outside GSCM measures can clarify why enhancements in functioning, ecological and financial execution do not continuously happen. All these difficulties and vulnerabilities must be all the more precisely researched (Zhu et al., 2007).

2.3.2.2 Coordination Theory and GSCM

The theoretical replacements for our research are focused on the coordination-theoretical viewpoint of the organization of the supply chain network. When investigating the supply chain

and between hierarchical execution, study has separately investigated inner and outer attributes (Wong & Wong, 2007). In an overview of 100 haphazardly chosen supply chain network administration-related articles, it was discovered that between authoritative development examinations were written about, but intra-hierarchical built connections and store network administration were the frameworks of few researches (Burgess, 1998; Shao & Yu, 2004). Just a single contribution was discovered that explored both between- and intra-hierarchical builds (McAdam & Brown, 2001).

Malone et al. (1987) said the theory of collaboration claims that efforts should include activities within their supply chain. The cooperation hypothesis notes that efforts should include activities along their supply chain. The hypothesis of coordination notes that conditions exist between exercises and should be properly supervised. For example, GSCM is constructed of authoritative practises via the communication and link networks that exist between centralized on-screen entities, and the performance of such structures determines prevailing execution. Coordination of supply chain item information (Shah, 2006). In the 1990s, the administration of key production networks emerged from the recognition that increased reliance on intensified relations, concerted efforts, and consumer behavior and marketing with accomplices of production networks was required with the expectance to work as agreeable esteem chains (Gunasekaran & Kobu, 2007) as opposed to autonomous associations looking for individualized financial objectives (Koufteros et al., 2007). Both inside and outside authoritative changes were required for effective store network administration (Koufteros et al., 2007). More noteworthy collaboration and coordination over the store network, both intra- and between authoritative, through the long haul, and vital connections prompted enhanced monetary and authoritative execution (daSilveira & Arkader, 2007; Koufteros et al., 2007).

Researches have offered experiences of inner and outside links based on supply chain for enhancing ecological execution (Beske et al., 2014; Geffen & Rothenberg, 2000; Vachon, 2007). A positive correlation between the implementation of the store network and sustainable operation is gradually being demonstrated in study. Past reviews have shown that outside of GSCM activities, for example, joint effort between supplier and consumer, would promote the appropriation of internal GSCM rehearsals, with the unambiguous incentive to enhance environmental practice in the manufacturing web setting (Vachon, 2007; Vachon & Klassen, 2006). In addition, it is suitable for the receipt and enhancement of interior creative ecological technologies to create community associations with suppliers (Geffen & Rothenberg, 2000).

In light of coordination hypothesis from the past segment and observational confirmation introduced by Geffen and Rothenberg (2000), the researchers within the subject's domain contended that an absence of inner GSCM improvement and coordination with outer practices will debilitate natural execution changes among assembling ventures.

Similarly, externally engaged GSCM rehearsals, for example, require internal planning resources to outline the procedure with retailers to restrict squandering and customer cooperation for eco-outline of products (e.g., particular staff preparing on natural administration issues and cross-utilitarian collaboration) to course the undertaking prerequisites through the authoritative order for these outer practices to be successfully done.

2.3.3 CRM

Customer relationship management is usually termed as CRM which refers to a business approach which is entirely focused towards the customers of a business regardless of its size, type or the industry the business has been operating in (Shah, 2006). CRM is all about

developing, maintaining and retaining alliances with the customers, listening to their concerns, taking appropriate action to resolve them and adopting a compensatory approach while dealing with them (Chen & Popovich, 2003). Customers are the individuals, groups or other organizations which bring business to a company and contribute a significant part into the profit ratio of an organization. Furthermore, loyal and hardcore customers are an asset for the business venture as they guarantee the long-run standing and quality of firm in a highly competitive market (Bose, 2002). CRM is not confined to development and maintenance of relationship with the existing customers of a business, it also takes into account potential customers as they can be the future customers of the business, hence, a proactive and strategic approach is adopted while dealing with them (Richards & Jones, 2008).

Basic cause of CRM is to adopt a customer-centric approach which amplifies the extent to which value is being created in the customer's life or experience with the company (Zablah, Bellenger, & Johnston, 2004). According to Zablah et al. (2004), the process of CRM comprises three dimensions (customer, management and relationship), which clearly depict the interrelationship of their dimensionalities which integrate to form a trio of CRM, where all the three aspects are interdependent contributors and the absence of any of the components may break the CRM cycle as mentioned in the following Figure 6.

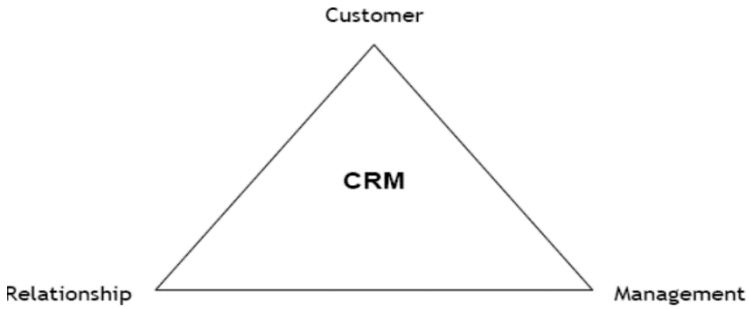

Figure 6: Customer Relationship Management Model

Figure 6 clearly depicts that CRM is a pathway that enhances an organization's learning and knowledge about its existing and potential customers, their likes, dislikes, demands, concerns and issues, as much as it can extract from the enriched organizational knowledge hub. What an organization can do is either fulfil the needs of its customers or surpass their expectations by giving them something extra with no cost (Nickels, McHugh, & McHugh, 2008). From the strategic perspective, the CRM approach can be seen as a long-term approach which is focused on devising ways and measures that would foster innovativeness in the organization's dealing framework with the customers. To achieve a customer value, while ensuring the fabrication of enduring relationship of clients with the business (Schermerhorn, 2008).

CRM is a procedure which utilizes data by considering the needs, demands as well as expectations of the customers in order to set up affinity and hence develop a committed and strong relationship with the clients of the company, either individual customers or a group, on a long-term basis (Dickie, 1998). Shao and Yu (2004) stated that CRM is tied in with comprehension of the customers' needs and utilizing this learning to build deals and enhance benefit. CRM obscures the limits among deals and benefits, and binds together an organization's exercises around the client. The general objective is to expand client offers and client maintenance through consumer loyalty. In brief, CRM is a strategic concept which undertakes three major perspectives: proficiency, continuous improvement and maintaining good relationships with the client (Shao & Yu, 2004).

The history of CRM dates back to 1980s when a client-focused organizational approach was being introduced, endeavoring to collect the required data about an organization's clients' needs and expected products, where the firms had been trying to get an insight about the demands in the market and hence take steps to fulfil the needs by giving some extra value in order to create

alliances with customers on a long-term basis. The term relationship management was introduced in 1985 when Barbara and Jackson performed their research about the interrelationship between client and businesses. In the mid-1990s, the terms customers' expectations and customer relationship were transformed into a broader perspective, which was termed as customer management, where both the previous aspects of expectations and relationships were amalgamated. In late 1990s the concept was further broadened with a philosophical underpinning and hence the term was transformed into an individual specialized field catering to all the related aspects of customer management (Zhang, Lam, & Chow, 2009). In the current era, three major aspects form the basis of CRM which include "pull of demand", "technological push" and "updated concept of management and its relative perspectives".

2.3.3.1 Demand Pull

As of late, numerous endeavors have given careful consideration to information collection to accomplish great financial advantages; however, during the time spent on execution, the greater part of the undertakings needs to confront a typical issue which is the level and type of information in deals, promoting and benefit can't adjust to the prerequisites of business improvement. In this way, an ever-increasing number of undertakings begin to understand the required notion of progression and upgrade through computerization and adoption of scientific approaches into daily lives (Zhang et al., 2009).

2.3.3.2 Technological Push

Technological advancement has revolutionized all industries worldwide. The emergence of telecommunications technology boosted the CRM network to a great extent. Improved technological aspects concerning information management modes have influenced the utilization of data in order to end up with conceivable results (Shao & Yu, 2004).

Technological push in CRM refers to the utilization of phone, fax and electronic media in order to get in contact with customers and maintain alliances with them through any of the specialized means. All customer relationship representatives are responsible for managing clients and building strong relationships with them, through processing their requests and sorting out their concerns and issues concerning the business activities of which they are a part. CRM data can give information related to expected cost, benefit, profitability, hazard and other helpful components of the undertakings, and make multidimensional investigations of clients, items, capacities, geographic territory and different angles. The parts of data application have an overall emphasis on clients. Furthermore, client data is the reason for CRM.

2.3.4 Updating the Concept of Management

In the current era, where progression and advancement in all industries, at all levels, are at their peak, an individual, group or organization which stands one step ahead is considered to be the leader in the marketplace. The same concept stands for the concept of management and administrative activities. A different and unique administration idea could assist a venture to make a triumphant advance. During the time spent building up the administration and management-oriented idea, with the advancement of the advertising condition and consideration, the idea experiences five phases: item-arranged period, deals-situated period, benefit-arranged period, promoting-focused period and client-situated period.

With the entry of the client arranged period, an ever-increasing number of undertakings center around building up a typical triumphant association with clients, keeping in mind the end goal is to accomplish a win-win circumstance instead of attempting to increase all conceivable benefit from clients (Zhang et al., 2009).

Confronting the refresh of the administration idea, endeavors require another precise administration process which may center on clients; the new administration additionally needs ventures to synchronize their own business activity with the clients' requests, and make and actualize the diverse methods of tasks for various clients, to accomplish and meet the genuine needs of each client. In like manner, CRM develops as the interest (Zhang et al., 2009). CRM is prescribed for building up exceptional associations with clients and for creating more incentive for products and enterprises than what is conceivable through conventional exchange showcasing. Conventional promoting was engaged in winning clients. According to Payne and Frow (2005), the new CRM worldview mirrors an adjustment to the customary showcasing, depicted as "client administration".

2.3.5 Literary Analysis

In his research, Kohlborn, Mueller, Poeppelbuss, and Roeglinger (2014) stated the CRM process was a powerful tool for an organization, in order to maintain it, companies need to adopt proactive methods to make sure that clients are satisfied and all of their concerns are met. Dubey and Sangle (2019) extended the research in this field by analyzing the main components of the process of CRM and identified it as a tool which strengthens a company's position in the market against its rival companies while ensuring achievement of a competitive advantage in the marketplace. The researchers analyzed the role of the CRM process on a global scale and, hence, made the assumption that companies need to look for offers for their customers to strengthen the company's customer base worldwide considering the fact that such customer-oriented offers will aid the company's expansion plans.

Peppers and Rogers (2011) adopted a broader horizon when they integrated a value-based model into CRM domain as a beneficial move for the future of companies. The reason behind this

integration was the notion that a company's focus towards creating value in the lives of their customers through offering products which meet their demands and exceed their expectations level enhances customers' satisfaction with the company. Furthermore, a company's offer of an on-time and efficient distribution or exchange process to ease clients, transforms the customers into hardcore clients as well as strengthening the foundational base of the company in the market. Companies need to be proactive and should continuously be struggling to keep long-term relationships with their customers with quality connections in order to achieve their defined business goals, objectives and their expansion plans worldwide. Peppers and Rogers (2011) further researched and stated that companies which adopt a declining attitude towards growing and development in retaining its position in the competitive industry would face a decline in the retail sector and, hence, put their developmental plans and progression prospects at risk.

Besides all that, Brink (2009) book, *Relationship Marketing and Customer Relationship Management*, a masterpiece which best illustrates the conceptual aspects while formulating the theoretical grounding of the topic related to in particular, CRM discusses the intention of shedding significance of managing the firm's ties with its clients. It states that technological innovation, which brings about the data about a company's customers, can certainly prove to be useful for the organization to have an insight about their customers' preferences, choices and expectations; hence, the business, through such data visualizations, can learn a lot about their customers' needs and strategize accordingly to fulfil them. This approach also encourages vitality in developing and maintaining customer relationships for the sustainability of organizations.

Mathur and Samma (2010), in his research, considered the practices which are being followed by multinational companies to maintain their customer alliances to a high level. The author presents strategic interventions as a guideline for small and medium companies which have

been striving to progress for many years. The research further highlights the system which has been introduced in multinationals in order to keep a track of their CRM approaches, administrative activities along with illustrating the rules and regulations, which have been developed by them after certain experimentation, declines, downfalls and many challenging situations, to survive in the marketplace.

Reinartz and Venkatesan (2008) looked into CRM from a different perspective and hence identified the drawbacks which companies usually oversee while going through the process of implementing CRM models into their companies. Burt et al. (2010) highlights the significance of CRM practices for the companies which are involved in the retail business and, hence, further details about CRM practices that are related to creating word of mouth about the company by the customers in the market, which indirectly helps the marketing and advertising teams to promote the company's products, policies and competitive edges as compared to its rival companies in the immensely dense market. The author further related companies' customer alliances management policies with the sustainability of companies in the market in the long term.

Richards and Jones (2008) investigated and detailed a research design in order to let companies compare their CRM approaches to those of multinational companies, which have been successfully operating worldwide with a huge customer base, by considering their practices as a benchmark for the other companies who are striving to attain a sustainable position in the market and face their competitors strategically. The detailed comparative standards enable organizations to evaluate their companies and analyze their practices to identify areas of improvement and, hence, utilize the benchmarking information to develop their CRM strategy in a better manner with the aim of continuously upgrading their systems, operations and practices whilst enabling the company to face the industry challenges and competition proactively.

A lot of CRM models have been introduced as a result of the research conducted in this domain so far, which support the dynamic capabilities of an organization to take such measures which can aid the company in the process of maintaining good, strong, mutually beneficial and, most importantly, long-term and reliable alliances with their customers. The details of a few models have been discussed in the aforementioned sections.

2.3.6 Identify, Differentiate, Interact, Customize (IDIC) Model

Peppers and Rogers (2011) proposed the IDIC model which focuses on the responsibilities of the organizations to take such measures and look for such ways that can help them build, keep and maintain long-haul relationships with their customers. Four different perspectives have been identified in this model – identification, differentiation, interaction and customization – as shown in Figure 7.

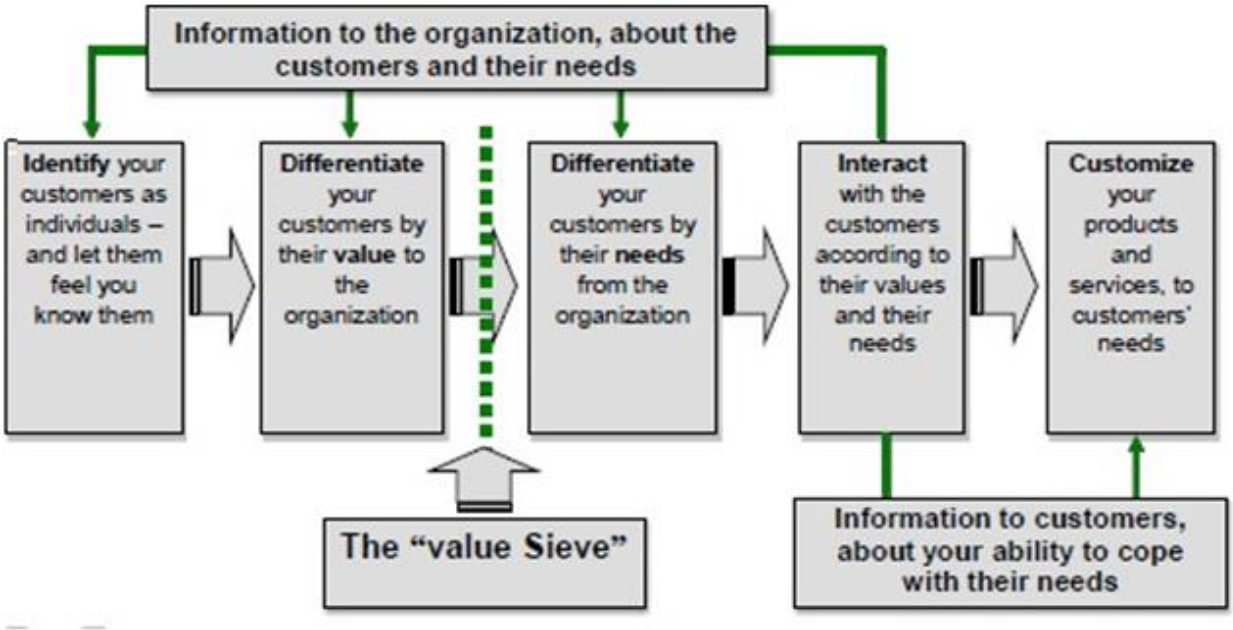

Figure 7: Identify, Differentiate, Interact, Customize Model

The IDIC model shown in Figure 7 is self-explanatory and easy to understand. It proves to be easily adaptable by companies which are looking for ways to develop customer alliances. The model begins with the identification of customer's phase, which details the responsibility of a

company to pay attention and invest in researching their original clients who will be interested in their products and hence build a good relationship with the company. Having profound and updated information about the actual clients of the company is the most necessary and significant, yet challenging, step which helps the company to achieve the envisioned goals and objectives, and reach the positions which it desires to be at. Successful and comprehended customer identification leads the company to the second phase of differentiation which requires the organization to categorize their clients into different segments on the basis of their needs and expectations (Peppers & Rogers, 2011). For example, customers who are just looking for the products which can fulfil their need or customers who are looking for the value being offered by the company. Differentiating the customers is another important and complex activity which forms the basis of strategies which a company might adopt to deal with each segment of the customers. After categorizing the customers on the basis of value orientation and need fulfillment, the next step is interaction with the customers. This is one of the most challenging interfaces for organizations where the collaboration and interaction strategies being adopted by a firm to interact with their clients, based on their requirements of value or need, straightforwardly declare the future of the organization in the marketplace. Customization is the last step where organizations are required to tweak the products as per customer needs and expectations. Customization is a widely accepted approach, which is the most recognized method to ensure customer satisfaction level. In short, the model presents quite basic approaches to approach the customers and develop good alliances with them based on their needs, values and customization, which can certainly prove to be helpful and vital for the companies which adopt the mentioned strategies and implement the model into their companies to get the best out of it (Peppers & Rogers, 2011).

2.3.7 Quality Competitive Index (QCI) Model

The QCI model is quite opposite to the IDIC model. The main focus of IDIC model is on relationship management whereas QCI model demonstrates the notion of getting a hold of the clients of a business and strategizing to hold them hence, the model has overlooked the relationship development factor in the process. So, this model represents the administrative side of client management. The model presents the contribution of individual activities which are deemed necessary to get a hold of the customers; it highlights the notion of taking innovative measures in order to aid efforts towards proactive client management as shown in Figure 8.

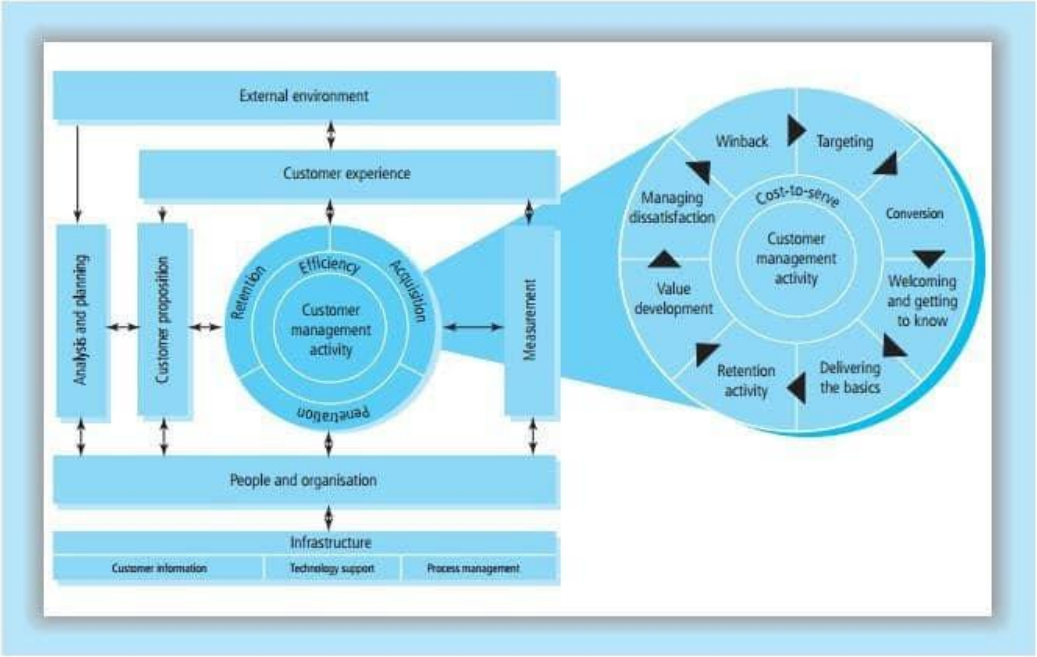

Figure 8: Quality Competitive Index Model

The QCI model shown in Figure 8 portrays a clear picture of all the management and client administration activities and processes or exercises that an individual, group or organization should do to keep its clients satisfied with the business. Innovative approaches, efficient production and supply chain process, well-equipped infrastructures and taking unique measures which help the organization in customer management, prove to be vital for the life of the organization in the

market. Another aspect which the model highlights is that customers are the communicators who pitch their needs to the organization and, hence, give them an opportunity to encounter and influence the client's expectations (Buttle & Maklan, 2019).

Customer recommendation is another approach being represented by the model which comes with a cost. The model considers the process of customer management as a set of activities which has been put forth in order to capture the attention of the potential customers and get a hold of them through discussions, offerings and unique measures to win the clients. In simpler words, the QCI model is about influencing the client through adopting innovative ways to retain them by overlooking the relationship-building context (Buttle & Maklan, 2019).

2.4 Knowledge – Conception, Management and Dimensional Analysis

Knowledge is an internalized, inborn and instinctive quality which can be related to an individual's intuition because It corresponds to the unlearned or inherited capacity of a person to recognize develop, evaluate, interpret as well as focus on internalizing the gained knowledge (Myers, 1996). Knowledge has a broad spectrum that entails experiences, individual's values and framework pertaining to contextual information and, most importantly, useful insights from experts which help an individual to further evaluate, interpret and incorporate the gained knowledge in order to witness new experiences and explore new areas of information (Hasanali, 2015). Knowledge is concerned with the innate and natural mental abilities where the origination point can only be an individual's mind. From an organizational point of view, embedding an individual's knowledge has been implemented not only in developing the knowledge repositories or institutional hubs, but also it has been incorporated into the routine processes, operational functionalities and cultural norms as well as organizational practices and corporate implications (Davenport & Prusak, 1998).

Information forms the basis of knowledge repositories which is continuously updated in order gain useful insight from it and, from an organization's perspective, this updated information is used for business visualization and helps in decision making. Information refers to the collected facts and figures or processed form of data which have been well structured and properly organized in order to describe a situational or conditional context in the best manner. Usually, knowledge and information are considered synonymous, however, knowledge is comparatively a broader and more complex concept which is distinguished on the basis of beliefs systems, conceptual perspectives, expectations, and extent of having know-how about the methodologies and judgments (Wiig, 1997). The transformation of knowledge into useful information is possible considering the symbolic codification into the form of visual graphics, text or imagery (Alavi, Kayworth, & Leidner, 2005). This section details conceptual grounding, contexts, perspectives, types and varied frameworks of knowledge and knowledge management in order to formulate the conceptual grounding of the subject on the basis of performing literary analysis where numerous articles, published journals, books and content from authorized websites has been analyzed and interpreted.

2.4.1 Organizational Knowledge – Conceptual Perspective

The business world is emerging globally; this transformation gets amplified through its conversion from the era of natural resources to a modern time giving more importance to knowledge at individual and institutional level (Khan, 2014). This transitional period has given rise to the trend of businesses adopting knowledge-based interventions in order to reinforce their market place (Chen, Fuller, Friedman, & Hersh, 2005). The concept of organizational knowledge is defined as the inculcation of knowledge-oriented perspectives in the organization based upon improved trend of research and development, with a focus on instilling the skills and developing

the competency level of human resources while enabling them to utilize the gained knowledge in an effective and efficient manner for the ultimate good of the business (Gulbranson & Audretsch, 2008). From an organization's perspective, the revolutionary trends do not consider natural resources and capitalization capacity of a business venture as the economic resource, but vital and active knowledge hubs are considered the primary factor to gain competitive standing in the business world worldwide (Jelenic, 2011). Many researchers (Gunjal, 2019; Hegazy & Ghorab, 2014; Khan, 2014) have clearly identified knowledge-based aspects and interventions as the vital and the highest valued asset of an organization (Schultze & Leidner, 2002), stating that the main source of success for the businesses is the extent to which they it is focused towards incorporating the knowledge into their operational activities. Furthermore, organizational knowledge capability is considered to be a major contributor of global economic position and hence has been considered as the heart of businesses' sustainability in the highly competitive and swiftly developing markets (Kakabadse, Kakabadse, & Kouzmin, 2003). At a global level, organizational knowledge has been categorized as vital and main sources of the organization's financial progress through utilizing the knowledge capacity into yielding innovative and unique strategic and operational interventions (Carneiro, 2000).

As mentioned above, knowledge is concerned with the intuition or instinctive qualities of an individual (Marwick, 2001); from the organizational context, knowledge refers to the updated information which is up to date and can be used to make proactive and contingent plans (Chang & Lin, 2015), make strategic decisions, devise reactive measures in case of any unforeseen consequence and formulate a well-designed action plan as a guideline for managers and employees (Alavi et al., 2005). In their research in the area of organisational knowledge-based strategy, in their research, Anand and Walsh (2016) described organizational knowledge as a business's

capacity to contain information and the ability to enhance the skill level of employees and further utilize their capabilities and expertise with an aim to get envisioned organizational aims and goals. Knowledge sharing in an organization is termed as visualization of knowledge for employees and management representatives to encourage and motivate them towards focusing on adopting such knowledge-oriented behaviors (Ansari & Kant, 2017), which will foster the process of developing, maintaining and updating the knowledge infrastructure within the organization (Merlo, 2016). Organizational knowledge is not about the creation of a knowledge hub but it is related to proper and effective management of the knowledge base in order to ensure an appropriate utilization (Karimi & Javanmard, 2014). In short, there is a dire need for business organizations to devise and implement such measures and processes that will improve the process of managing, updating and effectively utilizing knowledge for the well-being of businesses (Ouyang & Hu, 2014).

Organizational knowledge undergoes several transformational phases and analyzed abstraction levels in order to portray a clear picture for management (Kogut & Zander, 1992). One such transitional aspect includes distinguishing the informational context from the respective patterns of combinational skills which differentiate conventional management techniques and practices from the modern era approaches (Birkett, 1995). Organizational knowledge follows a dynamic management approach which creates a distinctive line between the technical knowledge, skills and operational routine which is being followed in an organization (Tordoir, 1995). Furthermore, tacit and articulated knowledge perspectives are other distinguished aspects (Nonaka & Takeuchi, 1995) which encourage the knowledge transfer approaches as useful and vital tools to optimize managerial level processes. Similarly, professional and company-specific knowledge aspects are presented by many researchers. Tordoir (1995) which had highlighted the concept of creating or buying knowledge. Likewise, knowledge has been distinguished scientifically,

philosophically and commercially in order to obtain the knowledge creation goals embodying numerous varied conventions related to knowledge and performance (Demarest, 1997; Wang, Wang, & Liang, 2014).

2.4.2 Knowledge Management

The 1990s was the revolutionary era in which the conception of knowledge management emerged as a significant scientific discipline, which has been widely adopted by most of the industries, along with gaining massive support from real-time industry practitioners, researchers and theorists worldwide. It happened in the same era as the hiring of Leif Edvinsson by Skandia in the role of chief knowledge officer, who had been accredited as the world's first knowledge tycoon (Wang et al., 2014). Knowledge management was explored and studied considering various aspects in which the utilization of knowledge management tools in order to maximize the organizational intangible assets was first considered by Hubert Saint-Onge in 1990s. With the passage of time, more chief knowledge officers were appointed worldwide and hence they became highly interested in exploring the theoretical and practical aspects of knowledge management and, hence, gave a boost to a new and emerging research field. Furthermore, the domain gained significant attention from various renowned academicians and researchers including Nonanka from Hitotsubashu University, Takeuchi, Thomas Davenport from Babson along with Baruch Lev rendering his services in New York (Zahid & Alam, 2015).

There have been a variety of definitions of knowledge management presented by researchers and experts that consider different aspects and perspectives. According to Gold et al. (2001), the capability of collecting both internal as well as external knowledge related to a particular business organization followed by the conversion and dissemination of the gathered knowledge into an innovative idea, strategy or practice whilst considering the knowledge storage

and protection aspects is termed as knowledge management. Similarly, knowledge management follows an explicit and systematic structure where efficient and proper knowledge implication into different organizational practices enhances the overall organizational effectiveness based on institutional knowledge and, hence, maximizes the returns against knowledge assets (Lytras, Pouloudi, & Poulymenakou, 2002). Development of organizational capability, encouragement, innovation along with the enhanced performance have been considered the after effects of adopting knowledge-based approaches, which eventually improve the customer's value in an organization (Chang & Lin, 2015). Considering multiple aspects, knowledge management encompasses four primary functions – creation, storage, sharing and implementation of gathered knowledge – to capitalize and improve the competency of a particular activity, process, operational function, organizational discipline or the whole business venture (Leidner, Dietrich, Beetz, & Albu-Schäffer, 2016). A more recent definition of knowledge management encompassed tacit and explicit knowledge domains as primary contributors to the process of collecting, storing, disseminating and utilizing the knowledge for the employees in an organization (Massey & Montoya-Weiss, 2006) in order to attain the aims and goals set to achieve a significant competitive place in the ever-emerging industry, the aim is to attain determined objects (Alavi et al., 2005).

The editor of *Fortune* magazine, named Stewart (2002), considered knowledge-based interventions in an organization to be the intellectual capital which has been further explored and validated, he looked into the concept from a far broader perspective while working at *Harvard Business Review*. This concept is reaching an inflected level of maturity specifically in the academic field where there is now a trend for cooperative research as compared to single author publications where practitioner roles have been immensely modified and, hence, the percentage of academic contributions has significantly been reduced from 30% to 10% within the time period of

2002 to 2009 (Omar, Dahalan, & Yusoff, 2016). In contrast, there is a significant advancement published journals related to knowledge management where the number of outlets has grown to 27 in a decade (Asiedu, 2015). Furthermore, numerous aspects and disciplines pertaining to knowledge management have been developed which vary as per the interest of the author and the nature of schools the authors have been associated; hence, this has been enriched enough to be termed as a multidisciplinary approach. Since the academic content is reaching its maturity level, this has given a boost to the debates encompassing several theoretical and practical implications of knowledge management; one of such aspects includes the integration of knowledge management and technology giving birth to a techno-centric organizational knowledge management perspective specifically in the knowledge creation and sharing phases (Goswami & Agrawal, 2018). Furthermore, this multidisciplinary approach has undertaken an ecological perspective pertaining to the identity, people interaction and numerous environmental factors being amalgamated into a complex and challenging system akin to an ecosystem and, hence, classified as a compound web of adaptive systems. Regardless of all the conceptual understanding and directions of knowledge management, knowledge management is mainly considered to be concerned with people and their respective culture in general; from an organizational perspective, it undertakes operational processes and routinized structures and the technology inculcation of modern industry practice while adhering to the globally changing trends (Bolisani, Scarso, & Padova, 2018).

As discussed in the previous section, KM is linked with intellectual capacity of the management and hence is considered a practical buzzword for them in the past and the present decade (Shoesmith, 1996), which got immense popularity in the year 1997, specifically amongst human resource managers (Browne, Curley, & Benson, 1997). Numerous researchers of the

present revolutionary era have identified its importance and integration in all aspects, specifically within SCM and performance perspectives (Tubigi & Alshawi, 2015); hence, the motivation level of organizations has been boosted in terms of actively adopting knowledge management approaches, tools, techniques and interventions in all the operations, activities, processes and decisions (Cho & Korte, 2014).

Research declared that knowledge management approaches gained familiarity in a very short period of time, where every managerial and executive level employee was found to be involved in characterizing and leveraging the knowledge perspective of an organization (Ruggles, 1998). The primary reasons for the swift adaptation of the concept into industry is due to the strong theoretical foundation as a result of numerous and diversified academic and professional research and studies. There had been some confusion about the distinguishing characteristics of information and knowledge initially, due to the swift development of the concept in its origination years (Hugos, 2018). As a result, many information technology and information systems concepts were classified as knowledge management (Wilson, 2008). However, the researchers of the present era presented their studies by clearly distinguishing information technology aspects from knowledge perspective (Bergmann, Kolodner, & Plaza, 2005) by considering knowledge management as experience management or an approach following expertise-sharing aspects (Ackerman, Swenson, Cotterill, & DeMaagd, 2003).

In brief, knowledge management is an emerging, most vital and multidisciplinary approach (Hugos, 2018), which has certainly reached a level of maturity in terms of academic performance, whereas business organizations are striving hard to gather, organize, manage and leverage the sources of knowledge (Martina, Böhmann, & Krcmar, 2007) followed by knowledge management initiatives along with its amalgamation with technological aspects (Kankanhalli, Tan, & Wei,

2005). The above-mentioned contexts clearly identify that knowledge management is the main source which ensures that business organizations can effectively and efficiently utilize their knowledge (Alavi et al., 2005). Scientific structuring of knowledge management within business organizations is still at initial stages and requires further systematic developmental and researching approaches (Pirkkalainen & Pawlowski, 2013). In order to understand the knowledge management process to its maximum capacity, it is necessary to get complete knowledge about the dimensions of knowledge management, the systematic process it follows, and frameworks and models which have been presented in order to best describe the concept. The following section sheds light on the above-mentioned aspects in detail.

2.4.3 Knowledge Management Dimensions

2.4.3.1 Knowledge Management Process – Literary Analysis

The role of knowledge control is succinctly defined through Guo (cited in Dumke) in Figure 9 as presented below, which represents knowledge management as a process consisting of four sub-stages which include collecting and storing the information as the initial processes, followed by the higher level which includes applying the knowledge through dissemination and expert communication. The lowest level, which is termed as information collection phase, refers to the acquisition of knowledge sources which then moves to generating the knowledge capacity, accumulating and storing it at the third level and, finally, adopting the cooperation, communication, sharing and innovation techniques to ensure its proper application. Business organizations who have formulated their systems based on enhancing their knowledge capacity follow the same procedure as presented in the Figure 9.

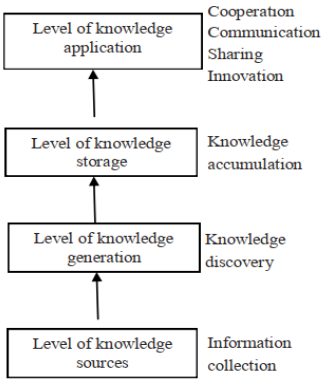

Figure 9: Knowledge Management Hierarchy

Figure 9 shows that there are four primary components and procedures in information administration which is termed as knowledge management (Kayworth & Leidner, 2004; Turner, Zimmerman, & Allen, 2012). The first step refers to knowledge acquiring process which includes an innovative executional context of the knowledge along with supplanting the implied learning through enriching the knowledge base. According to Chen and Edgington (2005), knowledge acquiring process encourages organizations to look for new perspectives and aspects of gaining knowledge considering both internal and external circumstances, sources and affiliates. Carrian et al. conducted their research on knowledge management process in 2012 and backed the finding of Chen and Edgington (2005) by pointing out the internal and external knowledge sources which a business organization might utilize to transform itself into a knowledge-based venture. Furthermore, Bhatt (2000) conducted their research considering the basic process of knowledge management and related such a transitional approach with organizational achievement, ceaseless advancement and learning enrichment for the benefit of all the business's stakeholders as well as the organizational sustainability as for longer time span. The studies also found that the process of learning comprehension can be encouraged and boosted to an inflected point if connected with impersonation, replication and setting a benchmark. Outsourcing can be another way of acquiring

expertise and thereby concentrating on achieving effectiveness in all operations and activities of the supply chain to be successful in the large and ever-changing market (Abou-Zeid, 2002). In brief, the literary analysis clearly depicts that knowledge is a learned behavior which can be constructed, developed, enhanced, improved, shared and grown through opting different individuals or in the case of an organization, company-based cooperative procedures, tools and techniques being devised by the knowledge-oriented association (Bolisani et al., 2018).

Storing knowledge is the upper level of knowledge acquisition as mentioned above. The literature clearly shows that unequivocal and implicit information, which people acquire inside associations and business ventures, regardless of the size of the organization, ought to be stored. The associations ought to mastermind and deal with the learning and knowledge aspects along the mentioned subject lines considering its tendency to less demanding (Ling, Sandhu Manjit, & Kishore Jain, 2009; Massey & Montoya-Weiss, 2006). At a point when the learning is coordinated, it lessens the repetition along the subject domain lines and hence improves proficiency (Alavi et al., 2005). Another renowned researcher, Nemati, Steiger, Iyer, and Herschel (2002), who studied the knowledge management process, stated that learning stockpiling is not fundamental for adequacy of utilization but it is important to use the same information again to make considerable business results (Heisig, 2009).

Knowledge dissemination is the third level which refers to the knowledge or learning trade (Eskerod & Skriver, 2007) which, in simple words, can be termed as the transfer of knowledge within individual, systemic or organizational levels (Afolayan et al., 2016). According to most of the research conducted in this domain so far, it has been comprehended that the major purpose of knowledge trade is to ensure that transferred or shared knowledge, information or what has been learned (Ko, Kirsch, & King, 2005), upon transmission, converts from implied learning or

knowledge to equivocal knowledge (Koskinen & Pihlanto, 2008) in order to prevent the loss of what has been unsaid during the transferring phase (Pirkkalainen & Pawlowski, 2013). Furthermore the fourth and last step has been considered the most vital aspect; it covers the knowledge application phase where the procedural aspect includes learning utilizing perspectives (Markus, Majchrzak, & Gasser, 2002) with the goal of keeping track of the organizational challenges and problems on choice, enhancing the productivity and, most importantly, cutting cost (Orlikowski, 2002). A person or organization utilizing the gained knowledge might differ from the one being involved in the process of knowledge creation (Hegazy & Ghorab, 2014). However, if organizations underwrite and adopt the knowledge administration aspect to be handled internally, Ipe (2003) recommended that they have a complete knowledge of the process of how the information was created, spread and utilized while ensuring a viable hierarchal information and knowledge administration (Hegazy & Ghorab, 2014).

2.1.1.1 Tacit and Explicit View of Knowledge

Learning comprises encounters, data, values and orderly demeanors that give an appropriate structure to assessment of new data and experiences. A person gains new knowledge through adopting the shared knowledge approach in which knowledge and learning experiences are transmitted unconsciously from the experienced to novice either implied or express (Hooff & de Ridder Jan, 2004). Both tacit and explicit knowledge improve the executional ability and sharing capacity of organizations (Argote, 2012; Eze, Goh, Goh, & Tan, 2013). Individualized learning and knowledge creation or processing systems limit the horizons and freeze an entity's or administration's capability to improve its knowledge capacity (Verbeke, Belschak, Bagozzi, & Wuyts, 2011). Considering the dimensionality aspects, knowledge can be categorized as tacit and explicit representing implied and expressive knowledge-based approaches. In spite of the fact that

learning can be named individual or gathering, inner or outer, hard or on the other hand delicate, reasonable or hypothetical, in all cases implied and expressive notions are widely recognized (Pathirage, Amaratunga, & Haigh, 2007).

Within the horizon of knowledge management and information administration, tacit and explicit views are the most discussed aspects (Joia & Lemos, 2010). As indicated by Mooradian, Renzl, and Matzler (2006) and Grant (2016), implicit informational idea is categorized as the focal point of knowledge-based administration. Implicit information is something an individual has, a capacity, aptitude to accomplish something, which is halfway in light of individuals possesses involvement. This sort of information is less natural, for the most part whimsical and less cognizant (Alwis & Hartmann, 2008). Implicit information is unique in relation to express learning as it is normally articulated.

What's more, partook in illustrations or composing. Contrasted with unequivocal information, it typically is found in books, diaries, archives, data hubs and so forth (Nonaka & Von Krogh, 2009). Entailing the hierarchical view, unsaid information and knowledge found in authoritative cultural environments along with aggregated comprehensions like publications and many more. Whereas unequivocal information is based on strong conceptual grounding, well searched and stored in databases, it possesses the quality of being transferable. This knowledge is far more applicable due to the inculcation of expertise, abilities, enriched experiences, reflective aspects and it cannot be overseen (Kankanhalli et al., 2005).

Implied learning comprises qualities, convictions, observations and suppositions, is just a put away in people while unequivocal learning can be a barricade towards innovation (Borges, 2013; Smith, 2005). Express learning is arranged into deliberate, structured and organized frames that are accomplished, gathered, changed, shared, spoken easily and available to individuals. This

sort of learning is ordinarily more pervasive in associations and business ventures (Huang, 2011; Joia & Lemos, 2010).

2.1.1.2 Nonaka Model

Being focused towards spiral communication, Ikujiro Nonaka proposed a model abbreviated as SECI referring to Socialization, Externalization, Combination and Internalization, between unequivocal learning and unsaid knowledge. According to this model, information and knowledge are based on a cycle in which understood learning is "separated" to end up expressive modes of knowledge and learning where unequivocal information is "re-disguised" into verifiable information (Nonaka, Kodama, Hirose, & Kohlbacher, 2014).

The Nonaka and Takeuchi formulated model is one of the learning administration perspectives that can be utilized in the information or knowledge creation and change processes. Learning administration models itself in a way to deal with overseen information from individuals and procedures of an association or business venture. Every company normally catches, systematizes, or renders unmistakable and impalpable learning in the shape that we know as unsaid or unequivocal information. Unsaid learning is the sort of information which is not composed and utilized just by verbalizing the information (Nonaka & Toyama, 2015). This can prompt challenges of acknowledgment for other individuals in light of the fact that there is no composed data that can be utilized or perused, only the individual who thinks about the information can keep it, yet it will stay in the brain (Nonaka et al., 2014). At the end of the day, unequivocal information is the switch clarification of unsaid learning. Unequivocal learning is the composed sort of information that can be utilized by other individuals; however, not all learning is put into writing. In this way, the Nonaka and Takeuchi model is a structured framework that can speak to the change of information, regardless of whether it is inferred or unambiguous, as shown in Figure 10.

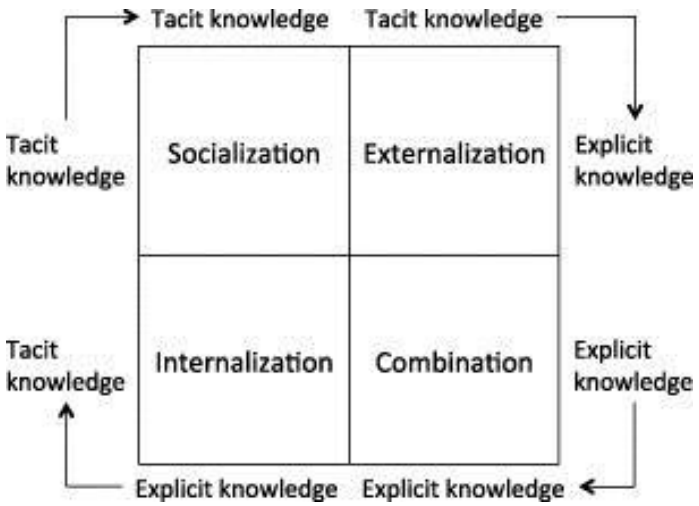

Figure 10: Nonaka Knowledge Management Model

As it is obvious from Figure 10, there are four kinds of transformation of implied and expressive information being termed as implicit and explicit knowledge. The following is a clarification of every sort alongside examples.

2.1.1.3 Socialization

Socialization is the procedure of transformation from implied to implicit learning. We are probably well aware that inferred information is the unwritten sort of information or hypothesized knowledge. In preparing or sharing, the learning change is more characteristic since it is one of average social cooperation (Gronau, Ullrich, Tsui, Research, & Practice, 2020). From not adopting the knowledge learning, sharing or preparing approach, the information will stay in the member's mind, as opposed to noted somewhere else. This composition is more the way towards gaining maximum knowledge by encountering the knowledge and information transmission or dissemination (Nonaka, Nishihara, & Kawada, 2018).

2.1.1.4 Externalization

This component of the model is extracted from inferred to unequivocal learning. From the unwritten information, it is chatted to a composed learning. The illustration is from somebody who

has information and is beginning to compose a book to share his learning experiences and gained knowledge with numerous other individuals, so the information can be substantial and changeless (Nonaka et al., 2018).

2.1.1.5 Mix

The following kind is chatting from unequivocal to other express information. This can be linked to the procedures of consolidating expressive information processing and knowledge management frame. The normal illustration is the point at which we are making a report or investigation (Nonaka et al., 2018). The inquiry or accumulation of unequivocal data about the exchanges is exemplified, as to make a finance-related report.

2.1.1.6 Disguise

Disguise is the change from unequivocal to implied learning. For this component and perspective, the knowledge and learning experiences are eventually molded in a composed form. Initially based on the practical implications, it has been stated that, as compared to the initiation or origination points, since time passes by, the information or gained knowledge is assumed to be spread and turned into an inferred or hypothetical knowledge or learning experience which helps the individual or overall organization to develop, to identify future opportunities and threats, and to recognize their strengths and weaknesses, in order to envision in the right direction and propose strategically structured solutions to the individualized or organizational issues and concerns (Nonaka et al., 2014). A case for this is exemplified in an assumed organization which dependably has composed standards for the whole company and operational dimensions; however, over time, the tenets are spread by the workers themselves to the next representative and the guidelines become implicit learning since they, as of now, have been assumed to employ all the principles and strategic practices (Nonaka et al., 2018).

2.1.1.7 Miscellaneous Knowledge-Based Perspectives

Besides the above-mentioned concepts, terms, models, frameworks and research, there are numerous other aspects in which knowledge management has widely been considered from distinct, yet significant and highly important, perspectives. Mostly, knowledge and knowledge management are considered similar concepts, however, according to the viewpoint of Hayes and Walsham (2003), both are quite distinct in terms of definition, scope, perspectives and overall horizons. Knowledge is termed as a part of learning process which is focused towards grasping as much as one can from the experiences, practical failures, successes and the knowledge hubs one is exposed to. In contrast, knowledge management is a broader phenomenon where getting or grasping knowledge is one aspect or constituent of the whole process which entails the administrative process of creating, storing, sharing and implementing the learned experiences and knowledge (Park & Kim, 2015). According to their research, knowledge is codified hence this attribute makes it easy to store the knowledge if it is considered merely content. However, considering knowledge as a relational attribute of the gained knowledge incorporates administrative circumstances which make the whole knowledge management process very complex and challenging.

In addition, a great deal of research has been carried out in the field of knowledge acquisition, stating that the transfer of implicit to visual information is a mechanism involving a knowledge-sharing approach. This view further elaborates the right of the knowledgeable individual or organization to internalize the knowledge and extract meaningful insights from it in order to identify opportunities and tap into the niche (Park, Vertinsky, & Becerra, 2015).

Similarly, within the context of tacit and explicit knowledge, researchers state that these dimensions have been oversimplified and the underlying meaning of explicit knowledge, when

compared to practical implementation, is entirely different and, hence, the implementation context contradicts the theoretical notion. Research states that although knowledge dissemination is a vital concept, in order for the knowledge to turn into tacit knowledge, it needs to be codified and transformed into informational context (Park et al., 2015). Many researchers including Georg, Sven and Nonaka have patterned in order to extend their research in order to move the debate forward and extract a useful perspective considering the contributory aspects within the existing literature.

Besides that, another distinct approach recognizes the process of embedding knowledge into the technological systems, which means extracting the knowledge out of humans and feeding it into the machines and systems for processing and eventually representing the learned visualizations that will aid in making the important decisions, designing strategic interventions, taking proactive actions, constructing contingent plans and utilizing the visualized aspects to forecast potential dimensions, which, from an organizational context, are considered to be a lifeline leading to sustainability and un-matched competitive edge in the immensely diversified market. However, there is still a need to develop the knowledge in this dimension (Schoenherr, Griffith, & Chandra, 2014).

Considering the above two, a third perspective emerged based on identifying the distinguishing characteristics and features between exploring the new knowledge either individually or in a group, organization or community as compared to the already gained knowledge along with its dissemination and exploitation. This perspective of knowledge management considers the social aspects and computing tools to be major contributory factors which can aid in creating and transferring the knowledge.

2.1.2 Rationale Underlying Knowledge Management

All the work that has been performed in the study of economics so far, strategic perspectives, supply chain and many other domains has necessitated the fact that knowledge management is quite important for an organization to survive in the industry. Consequently, a continuous outflow of theoretical perspectives can be seen within different fields where the whole process has been divided into distinctive theoretical perspectives.

2.1.3 Knowledge Economy

The knowledge economy is a theoretical concept based on economy and financial matters that directly impact businesses in any country. This concept is focused on transforming the economy into knowledge-oriented systems and structures where knowledge is inhibited in all the aspects. The concept of knowledge economy can be categorized as an extended approach which has been taken towards information economics. The concept refers to the product lifecycle of knowledge whilst considering its implication in the internal as well as external market. From an organizational context, the management of knowledge economy is quite vital for a business venture especially when knowledge is considered a valuable commodity.

The underlying principle of the knowledge economy is the provision of support to business organizations within the context of environment-based communication, strategizing ways in order to reduce complex situations and avoid risk and uncertainties (Jansen, 2017). Furthermore, the concept supports adopting a collaborative approach while working together to achieve the same goals, specifically during the routinized operations, which will promote the culture of standardization and perceived improvement in the operational functionalities (Emanoil, Alexandra, & Liliana, 2014).

Professional knowledge-gaining experience seems to be necessary considering the heuristics concepts describing the four elements which combine to form a universal concept based on scientific knowledge, skills inculcation along with the routine skills set. The mentioned aspects incorporate experience gained from the professional world, optimistic approach towards business judgments and assurance of utilizing expert knowledge in order to establish a decomposed capacity which focuses on breaking the challenging and complex components into smaller, routine and simple tasks (Tordoir, 1995).

The main concept of knowledge economy theory is the notion that it considers knowledge a commodity and, hence, considers the conception and division of information its core aspect with an aim to keep the concept aligned with the value chain of the business venture (Jacobs et al., 2014). The theory also emphasizes taking knowledge-based perspectives into account in order to build enriched and diversified knowledge hubs, which can be marketed as an informational product for the outer stakeholders of the company. For example, knowledge economy can be easily managed through adopting generic knowledge management lifecycle mechanisms in practice, which include four interactive processes. The first intervention of the knowledge management lifecycle is concerned with knowledge creation as well as structuring which in real research practice can be considered synonymous with methodology. The second perspective includes embedding the knowledge-based interventions into writing, such as creating documentation, which is followed by the third step of knowledge dissemination or sharing. The fourth way of knowledge management lifecycle is incorporated into knowledge economy; it includes the utilization of all gathered knowledge in order to attain the commercial value targeted towards a business's customers (Maggetti, 2015).

2.1.4 Knowledge Spillover

Knowledge systems and groups lead scholars to perceive that the learning and knowledge-based economy is a semi-open horizon. Quick, far-reaching dissemination of information is propelled in the public arena. Learning "overflows", the assimilation of information by individuals, other than the originators, happens on the grounds that validating that knowledge is an endless domain, the dissemination of which is hard to control (Foray, 2004). While there might be divided and limited information and knowledge-oriented systems, in such a case, knowledge overflows making an imaginative geology of differing learning creations and exchange costs. As the general expenses of such generation and exchange rise and fall over this topography, monetary points of interest, alongside attendant social preferences, are divided (Ferreira, Faria, Azevedo, & Marques, 2017).

2.1.5 Knowledge Alliances

Knowledge alliances are termed as information-containing unions referring to a significant expansion in techniques and hypothesis adjusting the set up the core standards of key partnerships. Partnerships are made on the basis of knowledge development, dissemination and utilization or, in any case, the emphasis is on information and the extent to which knowledge is gained as opposed to assets (Hottenrott & Lopes-Bento, 2015). These coalitions spur administration to go into key unions with different firms so as to adjust lack of learning, acquire essential abilities or develop new knowledge. Learning and knowledge-centered coalition hypothesis, similar to ability-based rivalry, develops from asset-based speculations of the firm (Conner & Prahalad, 1996). Such firms are dynamic frameworks of procedures including distinctive sorts of learning (Inkpen & Tsang, 2005). A key choice to remedy lack of learning along with prevailing concern of knowledge

insufficiencies through collusions is a more inconspicuous choice than simply settling on versus-purchase information decision.

Learning insufficiency and lacking knowledge incorporates the absence of hierarchical information and learning handling of assorted variety. This need corresponds with the nearness of an "overwhelming rationale" in the hierarchical knowledge-based administration, an idea which has been drawn from procedural examination and evaluation to identify the gaps in order take strategic action to bridge them (Almeida, Grant, & Phene, 2017). The nearness of a predominant rationale results in a routinized or standard administration rationale that hinders administration and managerial level adjustment, while being focused towards advancement (Bettis & Prahalad, 1995). Information collusion hypothesis, similar to scholarly capital hypothesis, likewise involves an estimation issue. It is important to recognize information inadequacies and the need to build and enrich knowledge-based reserves inside the firm to improve the knowledge capacity and learning qualities of potential accomplices and contenders.

2.1.6 Learning Strategy

Learning strategy is another significant area of knowledge management in which the learning aspect of knowledge utilization is discussed in detail. Being a part of knowledge groups or the learning-oriented unions, which are more focused on utilizing the gained knowledge in order to get meaningful insights from it, new ideas are concentrated in multinational companies and hence they were found to more frequently engage their employees to opt for knowledge-based dimensions to be followed in all the operational activities, defined functions (Almeida, Song, & Grant, 2002) and information systems (Inkpen & Tsang, 2005). An asset-based hypothesis of a firm was created as an underestimated key hypothesis in regards to learning, and to balance it with an information handling and knowledge management technique as an end goal (Conner &

Prahalad, 1996). This learning procedure is then situated as an information-based hypothesis of the firm (Eisenhardt & Santos, 2002; Grant, 2002). Since an information system looks to decrease limits, it expands on other key thoughts by also learning financial matters, for example, learning bunches and learning or knowledge-focused overflow.

In short, the literary analysis, mentioned frameworks, concepts and dimensions, which are focused towards knowledge management, highly signify the role of knowledge-based activities in all the aspects and processes of an organization. With reference to the context of the present study, SCMP and performance evaluation measures are two of the core components leading an organization towards success while ensuring sustainability and long-term standing in the market (Emanoil et al., 2014). Furthermore, the concepts of knowledge economy, knowledge alliances and their implementation perspectives relate closely with the determinants of SCM and performance, respectively.

Hence, this study focuses on looking into the moderating role knowledge management plays in enlightening SCP through the inculcation of this concept into SCMP in the automobile sector of Pakistan. Since the study has found the area of knowledge management as a moderating factor, this analysis will contribute to the field of the topic in order to establish a direction for potential researchers to expand the studies.

2.5 Resource-Based View (RBV)

RBV is among those aspects of KM which considers the resources of an organization and its competencies and abilities, which lead to achieve modest place the emerging marketplace and hence earn a benefit for the company (Barney, 2001). The resources which a company owns are the representatives of its abilities, competencies, market standing, brand recognition and popularity in the market and, hence, are categorized as capitalized, economic, organizational, technological

and financial resources (Grant, 1996). In the current era, knowledge-based resources have been included as the major asset for businesses to earn a valuable and recognized position in the market. Within the context of RBV of knowledge management, the expertise and knowledge capacity of a business are categorized as the most important resources that define the functional abilities of a company; hence, it has been explored through varied means by researchers and theorists to investigate its effectiveness, benefit to the business and vitality-yielding business success (Conner & Prahalad, 1996; Donate & de Pablo, 2015; Kogut & Zander, 1992; Nonaka & Takeuchi, 1995).

Information and knowledge are usually considered synonymous; however, they are not. Information is a set of processed data which is considered the value-added factor in the company's process, operational characteristics and human resources, whereas KM is associated with transformation of the factual aspects into cost-measured perspectives while focusing on management and strategic phenomenon (Hasanali, 2015). Even though, with the introduction of superior statistics generation, companies are capable of combining their upstream and downstream companies up to a specific level, they nonetheless need to maximize using implanted explicit knowledge and show proficiencies to improve competence and efficacy by decreasing repetition, joblessness, and lifetime (Rodrigues et al., 2004). Organizational activity in the incorporation of supply chain practices and information management plays a key role in favoring or deterring the link between understanding the ideals of all or hindering the use of understanding the values of all involved events. The imperative component for business success in this focused field is characterizing how to keep an unmatched advantage over the competitors in the ever changing and highly diversified industry. As per current writings, research, journals and related publications, organizations can get an upper hand in terms of competitive standing in the industry as they strive to construct troublesome and complex alternatives or products beyond their competitor's capacity

after considering what they have and how far they can go to sustain their position in the market alongside competing with rival companies. The term enhancing the organization's competitive capacity is typically exhibited as the capacity to pick up premiums or rates of return determinedly over the normal criteria for the business (Porter & Millar, 1985).

It is reported that businesses have a tendency to have an upper hand or competitive edge when a value-delivering plan is not executed by any ongoing or forthcoming opponents. A company might keep an upper hand if it imagines and executes a value-oriented system and structures a strategy which leads it to an advanced level of competition (Lin & Wu, 2014).

Constant competitive edge uncovers just from the key resources. As indicated by ongoing writings, facing competition and handling it strategically is a part of hierarchical administrational governing abilities, industry examination and evaluation to identify the niche, considering that the organization impacts in the state of asset techniques, strategies and favorable circumstances (Afolayan et al., 2016).

The RBV which, in simpler words, is also termed as asset-based view of a business venture, is favored by key administrative and other management writings; it is additionally furnished with an administrative management information system according to previous research (Priem & Butler, 2001). Fundamentally, it was specified to exhibit the way firms achieve nonstop competitive edges in the market. Promoters of RBV have outlined why associations repudiate and how critical it is.

With regards to RBV, the resource-based hypothesis in organizations is a potential creator of significant worth including capacities; RBV looks at an organization's assets and resources from a knowledge-based point of view (Afolayan et al., 2016). This perspective focuses on the likelihood of organizations getting costly to-duplicate highlights as beginnings of speculation

returns and the way to achieve quality execution, an upper hand, a highly competitive position and long-term standing of the business in the diversified industry.

The assets of an entity have both the internal and external resources owned by a company. It additionally comprises human and nonhuman factors that are controlled or managed by the firm itself. Furthermore, RBV enables a firm to imagine and execute value-centered techniques (Wu & Chiu, 2015). Particular distinguished abilities, organizational resources as well as company assets are clarified under a progression of names, as unmistakable, distinguished and distinct skills; they include imperceptible resources, internal capacities and competencies, centered and core capacities, corporate culture, embedded learning and knowledge-based patterns and exceptional mix of business encounters, expertise and skills (Wu & Chiu, 2015).

Significant abilities and assets that are inadequately imitable, non-substitutable and extraordinary (Barney, 2001) fuse the hierarchical center or one kind of a capability and subsequently demonstrate a dependable advantage in the industry's competition. With regards to assets, impalpable assets are more likely than substantial assets to make compelling market standing in the industry. All things considered, elusive assets, for example, learning and knowledge-based approaches, enable associations to help the approaching components of assembling process. It shows competitive advantage for an organization. This sort of favorable position is achieved after some time and cannot just be replicated. The literary analysis demonstrated that assets are those components of businesses which are controlled by an organization and that allow the organization to make and execute systems in order to build and improve their adequacy and effectiveness. A VRIO system is utilized for estimating what sorts of assets would introduce ceaseless competition of the organization in the industry; hence, it can be

considered a factor of creating worth and value for the customers and respective organization (Kellermanns, Walter, Crook, Kemmerer, & Narayanan, 2016).

Graham and Pizzo (1996) built up a framed structure to help firms' position and control information with an aim to get more benefit in business. The strategy of executing the structure "configuring for knowledge" has four powerful perspectives, which have been discussed in the knowledge management process section, created in a bounded yet looped framework and is brought together in harmony among institutional and organizational domains that will construct operational, vital, adaptability and efficient strategies.

Chapter 3

3.1 Methodology

3.2 Purpose and Approach

The systematic literature review performed in Chapter 2 firmly established the value of SCMP, knowledge management and SCP. The discussion about findings of previous studies has aided the researcher to develop proposals that are followed by the researcher. As stated previously in Chapter 1, the thesis is focused on the following objectives.

3.3 Research Objectives

The aims of the study are presented as follows:

- Investigating the impact of SCM tiers, which include supplier, customer relationship and ISCM, on the SCP.
- Measuring the moderating impact of KMP on the relationship between SRM and SCP.
- Measuring the moderating impact of KMP on the relationship between ISCM and SCP.
- Measuring the moderating impact of KMP on the relationship between CRM and SCP.

This chapter presents the methodological interventions in order to measure the effect of SCMP on the SCP, researchers have adopted the moderating effect of KMP. The chapter highlights the research design along with explaining the research paradigm and approach in Sections 3.3 and 3.4. Furthermore, an explanation of the research population is discussed in Section 3.5.1 followed by descriptions of sampling, data collection measures, response rates, data analysis techniques, reliability, validity and pilot testing. In short, this chapter explains all the analytical process, approaches, methodologies that have been implemented to increase the readership of the guided path.

3.3.1 Research Worldviews

The choice of subject and the associated worldview or model of study is one of the most important part of any research. Paradigm, in simple words, enables researchers to understand a certain phenomenon, situation or circumstances by making advanced assumptions along with considering the approach to perform a scientific method in order to legitimize the problems and find their solutions. Kuhn (1962) is accredited to be the originator of the term paradigm, which is used to explain the concept of generalization of beliefs and values. However, Creswell, Klassen, Plano Clark, and Smith (2011) preferred to use the word "worldview" which does not specify the views of a certain community of scholars. Development of a research design comprises four levels: worldview, theoretical lens, methodological approach and, lastly, the data collection methods (Figure 11).

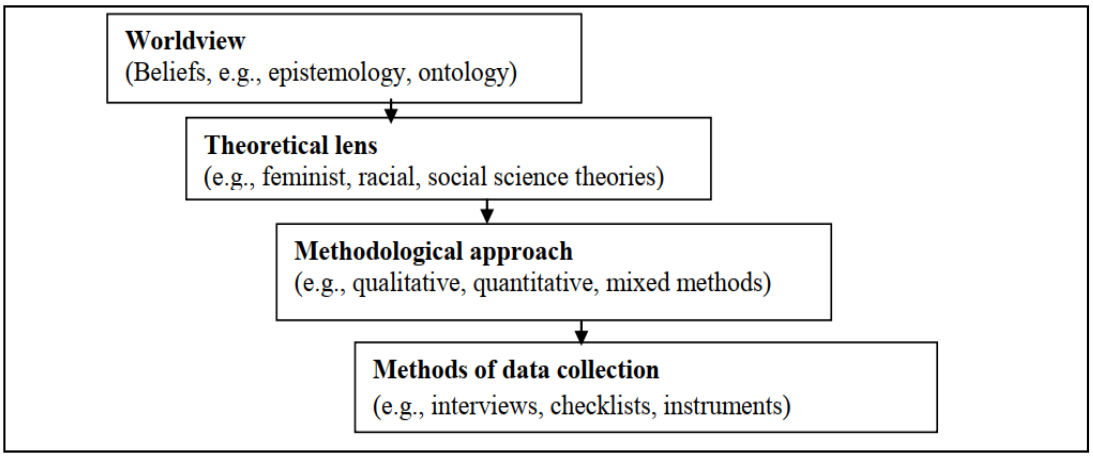

Figure 11: Levels of Developing Research Strategy

*Source: Adopted from (*Creswell & Creswell, 2017*;* Rehman, 2015*)*

As shown in Figure 11, worldview is the first level of developing research design that provides guidance for choosing the theory related to the subject of the study. The researcher moves to the level 3, on the basis of theory, which is methodological approach followed by discussing methods of data collection (Creswell et al., 2011).

3.3.2 Characteristics of Research Worldviews

Researchers, while conducting their study, make claims about certain processes that will be adopted in order to smoothen the research process (Wilson, 2008). Following this notion, certain assumptions are developed in order to inquire about the study. These claims determine the ontological position, epistemology as well as axiology of the study. Along with that, rhetoric and methodological aspects are covered (Wilson, 2008). All these claims or determinants cover the definition of required knowledge (Kivunja & Kuyini, 2017), the method which will be adopted to gain it (Cronin, 2016), value analysis which has the potential to be included in it, writing or reporting procedures (Kothari, 2004), and most importantly the techniques which will be utilized by researchers in order to eradicate the hindrances and ensure a smooth flow in conducting research (Yvonne & Feilzer, 2010). These claims, in simpler words, are considered to be philosophical assumptions (Kivunja & Kuyini, 2017; Rajasekar, Philominathan, & Chinnathambi, 2013) termed as research paradigms. The right selection of paradigm is highly important for the researcher because it provides a guideline about the tools, required interventions, research methodology along with the participants and data collection instruments which need to be used in the research in order to enhance its reliability and effectiveness (Denzin, 2009).

There are three schools of thought which are generally accepted by researchers within the context of research paradigms. These are characterized as positivism, interpretivism and pragmatism. Interpretivism, also termed as constructivism, is a subjective and qualitative approach to research where behavioral factors have a significant role. Researchers who support the interpretivist paradigm (Berger & Luckman, 1967; Crotty, 1998; Neuman, 2014; Schwandt, 1994) hold the concept of subjective meaning with multiple realities; the researchers aim to explore the complex aspects of the research rather than objectifying and limiting it to a few ideas, opinions or

views (Bryman, Becker, & Sempik, 2008; Creswell, 2003). Contrary to constructivism or interpretivism, positivism is an empirical and quantitative science holding the concept of philosophical realism about knowledge (Blaikie, 2007; Bryman et al., 2008). The paradigm adheres to the investigation or empirical testing of the objective reality in order to enrich the knowledge base (Creswell, 2003). Positivism is a hypothetic-deductive approach (Cacioppo, Semin, & Berntson, 2004). The final research paradigm is pragmatism which is a combination of positivism and interpretivism approaches where quantitative and qualitative approaches are combined. It allows researchers to consider both objective and subjective realities with an aim to share the knowledge about problem (Ansari, Panhwar, & Mahesar, 2016). It is considered to be a deconstructive paradigm incorporating multiple methods of conducting research while advocating to think beyond sticking to only one data collection method (Feilzer, 2010).

A comparative analysis of the three paradigms is presented in Table 1.

Table 1: Basic Characteristics of Four Worldviews Used in Research

	Post-positivist Worldview	**Constructivist Worldview**	**Participatory Worldview**	**Pragmatist Worldview**
Ontology (What is the nature of reality?)	Singular reality (e.g., researchers reject or fail to reject hypotheses)	Multiple realities (e.g., researchers provide quotes to illustrate different perspectives)	Political reality (e.g., findings are negotiated with participants)	Singular and multiple realities (e.g., researchers test hypotheses and provide multiple perspectives)
Epistemology (What is the	Distance and impartiality (e.g.,	Closeness (e.g., researchers visit	Collaboration (e.g., researchers	Practicality (e.g., researchers collect

relationship between the researcher and that being researched?)	researchers objectively collect data on instruments)	participants at their sites to collect data)	actively involve participants as collaborators)	data by "what works" to address research question)
Axiology (What is the role of values?)	Unbiased (e.g., researchers use checks to eliminate bias)	Biased (e.g., researchers actively talk about their biases and interpretations)	Negotiated (e.g., researchers negotiate their biases with participants)	Multiple stances (e.g., researchers include both biased and unbiased perspectives)
Methodology (What is the process of research?)	Deductive (e.g., researchers test an a priori theory)	Inductive (e.g., researchers start with participants' views and build "up" to patterns, theories, and generalizations)	Participatory (e.g., researchers involve participants in all stages of the research and engage in cyclical reviews of results)	Combining (e.g., researchers collect both quantitative and qualitative data and mix them)
Rhetoric (What is the language of research?)	Formal style (e.g., researchers use agreed-on definitions of variables)	Informal style (e.g., researchers write in a literary, informal style)	Advocacy and change (e.g., researchers use language that will help bring about change and	Formal or informal (e.g., researchers may employ both formal and

			advocate for participants)	informal style of writing)

Source: Adopted from (Creswell et al., 2011)

3.3.3 The Worldview Adopted for This Study

Selection of the right paradigm is the most crucial element of a study, which is dependent on the type of questions and collected data from participants. This study seeks to test the effect of SCMP on SCP considering the moderating role of KMP in the automobile sector of Pakistan; it intends to obtain generalized as well as comparable results through collecting data from a large sample. Since SCM, knowledge management and SCP are quite well-researched fields where the concepts have already been established, the positivism paradigm is the best fit to achieve the goals of the present study.

3.4 Research Approach

A research approach encompasses procedures and plans on the basis of the research that is intended to be conducted. It also includes the assumptions and the methods utilized for the purpose of collecting and analyzing data, discussion and explanation of outcomes (Cronin, 2016). The process of designing a research approach includes several decisions about the techniques which will be adopted in order to study the topic and determining the procedures which will be utilized for collecting and evaluating data (Kivunja & Kuyini, 2017). These study method assessments are solely focused on the essence of the issue being analyzed in the study, , the personal experiences of the researcher and, most importantly, the target market or audience of the study (Cronin, 2016).

There are three research approaches which are termed as quantitative, qualitative and mixed method approach. Unquestionably, these three approaches do seem to be discrete, however, they are not. Both qualitative and quantitative research approaches are usually considered to be

highly rigid but, in reality, they are not (Cronin, 2016; Flick, 2015). According to Neuman (2014) and Benz, Newman, R, and Ridenour (1998) qualitative and quantitative approaches are two differing ends of the continuum – a study is represented to be entailing more qualitative aspects as compared to quantitative perspectives and vice versa. The middle of the continuum refers to mixed methods where both approaches are incorporated in order to study the research problem.

Since there are multiple approaches which a researcher can adopt while conducting the study, considering what best meets the research objectives, it is important to perform a careful analysis of the research objectives, proposed model and what the researcher intends to study in order to devise the most appropriate methodological framework authenticating the validity of the study. To sum up, the aim of this study is to evaluate the influence of SCMP (dependent variable) on SCP (independent variable), where knowledge management plays a moderating role. Therefore, to undertake this analysis, a quantitative research methodology was adopted. The hypotheses have been built in order to pursue the testing process for their acceptance or rejection of the relationship among SCM, information management and SCP in order to assess the positive relationship.. Although a quantitative research approach entails many methodologies, in considering the purpose of this study, an associational approach has been chosen. The ontological position of the present study is the development of objective causal predictions where the proposed model of SCM and SCP along with the moderating impact of knowledge management has been tested with the help of the theories that have already been established by previous researchers.

Additionally, identification of a strategy which will be used to continue the research inquiry is another important aspect because it provides specific directions for the used procedures (Creswell, 2003). A strategy which can be adopted by researchers applying a positivist approach is the survey mode of data collection, which is attributed to be the second most widely adopted

strategy specifically within the field of social science research. Considering the positive aspects which are associated with adopting a survey method as a data collection tool, the current research has adopted survey method as a data collection strategy because it fits the study's objectives. Questionnaires were designed to be distributed with an aim to collect opinion of participants related to supply chain practices, knowledge management and SCP covering all the aspects. Furthermore, through survey method researchers can gather data from a large population. In a nutshell, since the present study does not intend to propose a new model but to test a relationship through developing hypotheses, positivism is the best epistemological position of the present study followed by quantitative research approach while using self-administered survey method as a data collection technique. Furthermore, no experimental or investigative behaviors or perceptions have been encountered in the present study, it has therefore been classified as a cross-sectional analysis where data targeting Pakistan's automotive sector has been collected at a particular point in time.

Research Population

The notion of study population involves the selection of entities , happenings or events for whom the results of the study might be generalized or the researchers might make speculations about a particular group (Beckhard, 2018).

In the present study of examining the impact of SCMP on SCP by considering the moderating role of KMP, the focused population of the current research is CEOs of all Pakistani automotive firms. There are 106 companies which operate all over Pakistan that are categorized as the target population. Details about the research population were discussed in Table 1 of Appendix 1. The eligibility criteria include the following characteristics which have been considered by the researcher; the specific population characteristics have been defined in order to ensure reliable collection of data from knowledgeable individuals.

- The personnel should be the CEO of an automobile company of Pakistan.
- The individuals must be proficient and aware of current industry trends and have sound knowledge about the domain of knowledge management and supply chain.

3.4.1 Sampling

The process of sampling is another significant phase of defining the research methodology which involves selection of a representative group of the population possessing the same characteristics or attributes for further investigation (Fraenkel & Wallen, 2000). The sample group aids the researcher in generalization of the results of the study and to draw claims about the population. Since the present study has adopted an investigative approach following positivism paradigm, probability sampling has been selected as the most suitable sampling approach. The main reason for selecting probability sampling is that it helps the researcher attain objective, empirical and scientifically defensible research conclusions as compared to non-probability sampling approach. Additionally, the study has targeted CEOs in the automobile companies of Pakistan. So, keeping in view the requirements of the study, simple random sampling has been selected as the sampling approach following probability sampling approach in order to extract the representative unit of the targeted population of the present study to further pursue the process of data collection.

As per official statistics of Pakistan Automotive Manufacturers Association (PAMA), there are 106 motorcycle manufacturing companies operating in Pakistan (see Appendix, Table 1). These companies also make three-wheel vehicles (i.e. rickshaw, small tri-wheel vans etc.). There are 10 public limited companies, which manufacture cars, buses, trucks and jeeps in Pakistan (see Appendix, Table 1). The manufacturing premises for two-wheel, three-wheel and four-wheel vehicles are located in all four provinces of the country; however, most of the companies that

manufacture four-wheel vehicles are located in the two largest industrial cities: Karachi and Lahore. In view of the total population of 116 companies across the country, the author used recommendation of Ruane (2005) as indicated in Table 2. As the population is less than 500, so minimum 50% population is used for the purpose of analysis.

Table 2: Distribution of Proportionate Sample Size

Whole Population	Proportionate Sample Size
500	50%
1,000	30%
10,000	10%
150,000	1%
1,000,000	.025%

Source: Recommendations of (Ruane, 2005)

Research Instrumentation

Quantitative method has been used in present study for collecting data where a questionnaire has been utilized as the research instrument. Questionnaires are considered to be the most effective medium of data collection through conducting surveys about any research topic to attain an objective point of view from the study respondents (Lehto, Landry, & Buck, 2007). Furthermore, questionnaires are considered to be scalable instruments which enable researchers to collect data from a large audience.

The questionnaire for the current study was built based on the findings of several past studies, conducted in the past concerning the relative concepts, variables and aspects which have been attributed to this study. There are 2 parts of questioner. First part explains professional and personal input where questions related to age, gender, income and qualifications were necessary

to know the demographic characteristics of the respondents. Besides that, questions related to company name, size, type and number of employees have been asked. In order to get the information about, the respondent's department, number of employees in department, subordinates and level of international exposure have also been included in the first section. All the questions in the first section are closed ended where the participants have to choose one of the stated options. Using closed-ended method while designing the first section of the study aided the researcher to get specified and straightforward information. Furthermore, adopting closed-ended method of posing questions to the respondents helps in avoiding confusion, misunderstandings and miscommunication.

Section 2 consists of questions and statements related to the defined variables which have been studied in the present research, including SCMP, KMP and SCP. To obtain data about the variables, a five-point Likert scale has been used. A Likert scale is the most widely adopted intervention which is used for scaling purposes while conducting quantitative research. It is also interchangeably used as a rating scale where the respondents are provided with a response scale ranging from 1 to 5 representing the degree of agreement: 1 denotes strongly disagree and 5 is used for strongly agree. Although there are other types of rating model, given the scope of the current study and the ease of using it, the five-point Likert scale was selected while doing the data analysis. The measures which have been included in the section include KMP, SCMP and SCP; a detailed explanation of which has been given below.

3.4.1.1 KMP

Knowledge management has been taken into account as a moderating variable which has further been divided into four subsections in the questionnaire. Knowledge creation, sharing, application and its storage are the titles of its sub-sections. The subsections are titled; the

subsections contain five statements each using a five-point Likert scale approach. Participants' responses will help the researcher to obtain a clear knowledge about variant aspects of KMP of the organization and hence aid in analyzing its moderating role as an integral constituent while assessing the interconnection between SCMP and SCP of an organization. The four dimensions of KMP have been adapted from different literary studies which primarily include Turyasingura (2011) and Donate and de Pablo (2015). Turyasingura (2011) discussed the concept of knowledge creation as the first and most important process of KMP which, within the context of businesses, has been related to adopting variant techniques and interventions which help in acquiring the knowledge and enriching the knowledge database of the business.

The statements related to knowledge creation cover various aspects which can clearly give the researcher an idea about the extent to which it is deemed significant in an organization. The statements have been adapted from the research study of (Turyasingura, 2011). It was concluded that having an organizational culture of open discussions contributes to successful project management because the process generates alternative opinions and views of employees, which expands the thinking horizon and helps in effective decision making. Besides that, the researcher has connected effective knowledge creation process of a business with better project management leading to success and effective rewards management (Turyasingura, 2011). In the current research, all relevant concepts were examined in the sense of investigating the moderating role of information formation between SCMP and SCP. The participants were asked questions in the knowledge creation section of the questionnaire about the culture of open discussion of problems in the organization, inclusion of KMP while assigning projects, rewarding practices, discussion about their work experiences and exploration of various issues through simulation techniques, as stated in the research study of (Turyasingura, 2011).

The next five statements covered the practical implementation of various directions of knowledge sharing. The related aspects of knowledge sharing which have been considered in the present study have been extracted from the study of (Donate & de Pablo, 2015). According to Donate and de Pablo (2015) knowledge sharing deals with the dissemination of information which has been acquired in the process of knowledge creation enabling organizations to smooth the flow of all the information or useful data. While conducting this research, all participants were asked to score their level of agreement with respect to the involvement of groups or strategic information sharing activities , the extent to which the organization allows for smooth information and communication flows, development of internal progress reports for employees, existence of formal mechanisms guaranteeing the inculcation of best practices and the inclusion of employees in different projects to foster a culture of interdisciplinary teamwork for knowledge-sharing purposes.

Likewise, Donate and de Pablo (2015) were the primary source of extracting all the statements which have covered the topic of knowledge storage in the study in order to investigate its moderating role between SCMP and SCP. The researcher referred to the process of knowledge storage as a sub-stage of KMP, which is related to maintaining the database ensuring that it contains useful data which might help businesses visualize the current and future needs, trends, demands and important aspects. Within the context of knowledge storage capacity, the questionnaire covered codification and documentation of information, development and continuous maintenance of databases while giving access to the employees in order to gain knowledge, development of internal computer network for the internal access of saved information, maintenance of customer databases and frequent updating of the knowledge databases of the organization.

The last subsection of knowledge management covers different aspects of knowledge application. According to the research study of Donate and de Pablo (2015), one of the key elements of KMP is the application of information which determines the affectivity of all the previous process of KMP in terms of discussing their applicability. The statements which have been included as questions were extracted from Donate and de Pablo (2015), they are related to: access of employees to required information as key knowledge to be taken into account at work; autonomy being provided to the autonomous team in the organization for the application and integration of knowledge; incorporating suggestions from the employees, customers and suppliers; knowledge structuring for application; and hiring of external experts to fix the complex issues found by using the knowledge databases being maintained by the organization.

3.4.1.2 SRM

The section consisting of SRM in the questionnaire has entailed the domains of customized services and collaboration as further constituents. Both of the dimensions have been extracted from (Tseng et al., 2018) . The concept of customized services has been covered in five statements whereas four statements have been included for collaboration. The questions related to the provision of customized services include relationship building aspect connected to the provision of customized products/services, affectivity of supplier classification, contribution of suppliers in expanding the knowledge base, maintenance of close interactions as key to developing lasting relationships and effective identification and acquiring perspectives of correct suppliers.

Four questions related to collaboration covered major aspects of the sub-variable in connection to building lasting relationships with the suppliers. The statements are concerned about the willingness of the respondents to cooperate with the suppliers for optimization of logistics and

shipment functionalities, production and operation processes, quality improvements and effective inventory management aspects.

3.4.1.3 ISCM

The variable ISCM has further been divided into two dimensions: eco design and internal environmental management. Zhu, Sarkis, and Lai (2013) has been the base research from which the scale of ISCM has been adapted. Zhu et al. (2013) highlighted the concepts of energy consumption, recycling, reusability and waste management as the aspects related to eco design, whereas internal environmental management is concerned with taking such initiatives which speed up the process of addressing environmental concerns, including performance evaluation and cross-functional efficacy for improved productivity and operational efficacy (Zhu et al., 2013).

The sub-variables of ISCM in the present study are eco design and internal environmental management consisting of four and five questionnaire statements, respectively. The questions encompassing the sub-variable of eco design cover the reduction of material energy consumption, recycle and reusability aspects while designing the products, reduced hazardous impacts on the user and waste minimization components.

Five statements related to internal environmental management entail the inclusion of training programs related to environmental concerns, initiation of pollution prevention programs, and consideration of environmental aspects in internal performance evaluation system and existence of cross-functional corporation.

3.4.1.4 CRM

The variable CRM has further been divided into understanding customer preferences and the provision of customized services from CRM perspectives, consisting of three questions each.

All the statements which are included in the questionnaire related to customer relationship were extracted from the research study of (Tseng et al., 2018).

The first attribute is understanding of customer preferences which assesses the inclination of respondents to have knowledge about likeability aspects of certain types of products, and the services and marketing methods which are preferred by the customers. The statements related to the provision of customized services as a vital contributor to CRM was designed to recognize the degree of consensus of the participants regarding their ability to define and acquire the right customers and segment effectively and classify them to design personalized provision plans. Furthermore, the last statement refers to the acknowledgement factor related to learning experiences in terms of increasing the knowledge base of the participants through analyzing the customers and their preferences in detail.

3.4.1.5 SCP

The last section of the questionnaire covers the components of SCP including the statements related to all the processes from creation to distribution. The research study of Sangari et al. (2015) has been considered as the base source while designing investigative statements for all the activities which are attributed to SCP.

In terms of planning, the statements cover the organization's ability to effectively plan the demand and supply-related activities considering the whole supply chain process. Furthermore, it caters to the extent to which research participants find their organization active enough to gather customer requirements and focus on enhancing the planning and resource-balancing capabilities of the business. The statements will aid the researcher to understand the overall efficiency level of the organization while planning their supply chain activities in the automobile sector of Pakistan.

Three statements have been included for source process where the participants were asked to evaluate their organization's results in ordering and receiving, inventory management activities and capital management aspects. Furthermore, the extent to which the organization identifies and selects the supply sources along with managing supply networks and agreements with suppliers was investigated in the last statement. Overall, the section helps the researcher to generalize the level to which the automobile sector of Pakistan is focused on efficient sourcing of goods while ensuring the implementation of optimized processes and activities.

The questions related to making process include production and manufacturing-related aspects. The participants have been asked to rate the capability of their organization in scheduling and managing the production activities while maintaining the performance benchmarks. Besides that, equipment and facilities management has also been investigated.

Finally, the delivery process encompasses three questions related to order management aspects: warehouse management process, including all activities starting from receiving to shipping the products; various aspects of shipments routing; transportation-related activities; and reception as well as verification of the goods on the client's side.

3.4.2 Data Processing and Analysis

A vital part of any experimental analysis is to assess the collected data because it provides assistance in accepting or rejecting the hypotheses. Descriptive and inferential analysis accompanied the data collection in this study, along with validity and reliability analysis using confirmatory factor analysis (CFA), while the testing of hypotheses was performed using SmartPLS through PLS-structural equation modelling (SEM).

The reliability of a testing method refers to the accuracy of the findings every phase the instrument is tested (Burns & Bush, 2000). It is usually considered to be synonymous with validity; however,

it is not, because validity points out the notions which are required to be measured (Bond et al., 2012). In order to verify the results of the research carried out in a fair and reasonable way, reliability measurement is highly important. Therefore, in order to assess the degree to which the research questionnaire is reliable for the conduct of the research, the current analysis has included reliability tests.

There are multiple techniques to check the reliability of a research instrument which include half split technique, alternative form of reliability as well as test-retest techniques. The present study has incorporated Cronbach (1951) with a view to analyze the reliability of the instrument. Cronbach alpha is widely adopted by researchers and theorists; hence, the acceptability level is quite high when it is compared with other methods in terms of ease of application, beneficial aspects and, most importantly, usability. In the present research, interconnection between the items which have been mentioned in the questionnaire has been evaluated to determine the consistency level (Ruane, 2005). Different acceptability levels have been identified by researchers and theorists when defining the reliability aspects of a research instrument. Ruane (2005) has considered 0.70 to be the minimum acceptable value of reliability. Ruane (2005) has also mentioned that values which are less than the minimum acceptable threshold are not eligible to be considered internally consistent. Following the minimum value requirement being posited by (Ruane, 2005), the present study has considered 0.70 as minimum reliability measure to be acceptable to have internal continuity.

Even though Cronbach alpha is considered a commonly accepted method of testing logical reliability and reliability of the research instrument; however, there are certain limitations associated with the technique (Anderson & Gerbing, 1988). For measuring unidimensional of a research instrument, Cronbach alpha must be coupled with validation techniques like factor

analysis or others in order to perform assessments and evaluations in a better way. Fornell and Larcker (1981) have put forth the concept of construct application in research where composite reliability (CR) techniques have been considered to be major baseline with an aim measure the consistency and rationality level of the research instrument. CR here refers to not only one variable but to sets of measures which are further based on model parameters which, ultimately, boost the level of its applicability. In contrast, the extraction of average variance points out towards the set of measures which variance amount shares (Byrne, 2010).

The study aims at predicting and explaining the relationships of independent variables (SCMP) with dependent variable (SCP) considering the moderating role of KMP with the help of relevant theories. PLS-SEM is useful when the purpose of the research is to clarify and forecast the relationship between the constructs used in the system through the use of SEM (Hair et al., 2016). However Byrne (2010) considered PLS-SEM a flexible approach when model development is the main purpose. As the research model of current study, which was defined after a thorough literature review, was complex, so PLS was applicable as it is good to measure the complex relationships in models. It is also viable when the study has a small sample size as it does not look at the normality of the data and does not require many criteria while using it for data analysis (Hair et al., 2016). This is how this study has avoided issues related to data normality.

3.4.2.1 Preliminary Analysis and Descriptive Statistics

Data used in the study was screened before analysis to check for any multivariate outliers or any missing values. Missing values are those which are deliberately or accidently missed by the respondents, which are usually attended to by using the average values. The use of mean value is appropriate when the amount of missing values is small (Hair, Black, Babin, Anderson, & Tatham,

2010). Tabachnick, Fidell, and Ullman (2007) explained that extreme responses of the respondents are outliers that may exaggerate or misrepresent the findings of the study.

In addition to this, descriptive research was carried out on the variables associated with the respondents' profile. For this purpose, frequency tables were made for the categorical variables related to the demographic profile of respondents and basic descriptive were calculated that covered minimum and maximum value, and mean and standard deviation for all the statements that were asked in the questionnaire.

3.4.2.2 Measurement Model Assessment

The study used CFA within the measurement model to measure the rationality of the instrument, In order to test rationality and reliability, convergent and discriminant validity was used in SEM. In addition to this, the model fitness with collected data was checked through CFA (Tanakinjal, Deans, & Gray, 2010) whereas factor loading was used to measure convergent validity, To measure CR, mean variance extracted (AVE), and discriminant validity, the Fornell-Larcker criterion and heterotrait-monotrait ratio (HTMT) were used.

3.4.2.3 Structural Model Assessment

To check the multiple relationships given in a model simultaneously, SEM is helpful as it can measure all relationships at the same time (Hair, Black, et al., 2010). Here, in this study, it was used in PLS-SEM for hypotheses testing and simultaneous moderation analysis with regression analysis. Moreover, moderating effects were checked by using bootstrapping and coefficient of determinants ($R2$), path coefficients, predictive relevance (Q2) and effect size ($f2$) and were also measured in SEM.

3.5 Ethical Considerations

The most significant aspect of any research study is ethics. The study took all important measures to remain ethical throughout the research, where approach to the respondents was the first stage. It was extremely difficult to approach the CEOs of the firms as they had a busy schedule. Before this, This was also a challenge to gather data on companies operating in Pakistan within the selected sector as none of the government's organizations had maintained such data. For this, PAMA was approached and requested to provide a list of the firms through an email. Later, personal contacts were used to approach the CEOs and all the questionnaires were filled personally. It was also very difficult to stay unbiased as many of the CEOs were not familiar with some of the terms used in supply chain as they did not have any formal education in supply chain. They asked the researcher about the terms and the researcher was worried about staying unbiased because the explanation could have led to a specific answer.

The other important issue was the confidentiality of the data, about which all of the CEOs were concerned, which was addressed by defining the objective of research and giving the surety that no data would be used by any person other than the researcher and his supervisor or for any other objective other than the completion of research and the degree.

Chapter 4: Results

4.1 Results and Analysis

This chapter has presented an in-depth analysis of the It was also a challenge to gather the information collected about the companies operating in Pakistan data in order to determine the effect of understanding the influence of SCMP on SCP, taking into account the moderating function of KMP. The chapter has been divided into different sections. It begins with detailing descriptive statistics where the demographic profile of the research participants has been discussed including the explanation of relevant means and standard deviations which were calculated for all the variables. Furthermore, the outcomes of dependence and rationality of variables have been explained. Other sections presented the results of different tests which have been performed on the variables of this research aim to measure the link among SCM, SCP and KMP, which were identified in the conceptual model of the study.

4.2 Descriptive Statistics

4.2.1 Demographic Profile of Respondents

The data for this study was obtained from 53 CEOs of Pakistani automotive companies. . A total of 53 research questionnaires consisting of the selected variables were distributed among the CEOs after getting their consent to participation in the study. The results have revealed that all of them have been returned with 100% response rate. The detailed information about the demographic profile of all the research participants has been represented in Table 3. The table has shown all the information of respondents related to age, gender, income, size of the company as well as type of the company.

Table 3: Demographic Profile of the Respondents

Demographics of the research respondents			
Variable	**Categories**	**Frequency**	**Percentage**
Age	Below 30	Nil	Nil
	31 – 40	Nil	Nil
	41 – 50	34	64
	Above 51	19	36
Gender	Male	53	100
	Female	Nil	Nil
Size of the Company	Small	49	92
	Medium	2	4
	Large	2	4
Type of the Company	Local	50	94
	International	Nil	Nil
	Multinational	3	6
	Global	Nil	Nil

The Table 3, as mentioned above, has been divided into four categories depicting demographical variables, their attributed categories, frequency and percentage of each category against all the variables. Total 53 research contributors have answered the survey which highlights 100% replies. According to George (2011) the response rate is highly influenced by having prior relationships with the research participants, guaranteeing their inclusion in the research. Besides that, 100% rate of response is achievable if the environment is highly controllable, well defined

and specific. After obtaining their consent to take part in the analysis, the data for this research was gathered from the CEOs of the companies. The researcher's personal affiliation with forums, networking and personal relationships aided in achieving such a high level of response. All 53 participants were male, of whom 34 (64%) were between the ages of 41 and 50, and 19 (36%) were older than 51. The age of the participants clearly indicates that the participants were top experts in the automotive industry with technical experience of all the concepts of the current review.

Likewise, the data collected from 53 automobile companies shows that 49 companies (92%) were small manufacturing concerns, 2 (4%) were medium and 2 (4%) were large automobile organizations. The last variable in demographical details was type of the company, which was categorized as local, international, multinational and global. The results of the study have revealed the inclusion of 50 local and 3 multinational companies; the heads of which showed willingness to respond to the research survey.

Besides all that, another significant aspect is the discussion about the suitability and appropriateness of sample size as a true representative of population. A good sample size increases the reliability level of the research authenticating its feasibility and contributory use in professional life or industry. As per official statistics of PAMA, there are 106 motorcycle manufacturing companies operating in Pakistan (see Appendix Table 1). These companies also make three-wheel vehicles (i.e. rickshaw, small tri-wheel vans etc.). There are 10 public limited companies, which manufacture cars, buses, trucks and jeeps in Pakistan (see Appendix Table 1). The manufacturing premises of two-wheel, three-wheel and four-wheel vehicles are located in all four provinces of Pakistan; however, most of the companies that manufacture four-wheel vehicles are located in two of the largest industrial cities (i.e. Karachi and Lahore). In view of total population of 106

companies across the country, the author has used recommendation of Ruane (2005) as indicated in Table 2. As the population is less than 500, a minimum 50% population is used for the purposes of analysis.

As the population of the current study is the CEOs of Pakistan's automotive industry,, the existence of 106 companies operating in the country validated the presence of a total population of 106 CEOs. In such a case, using the recommended guidelines of Ruane (2005), the selection of 53 CEOs certifies the selection of the sample size based on the population size, this population is representing 50% of the whole population. The adherence to the appropriate sample size as based on population size, following Ruane (2005) certainly confirms the representativeness of the sample enhancing the reliability level of the present study.

In addition to that, another important aspect which needs consideration is that the research survey has been confined to getting the viewpoints of men because women were not represented in the study. The reason for this is that the CEOs, who have been the targeted population of the present study, who have been rendering their services in the automobile sector of Pakistan are all men. The prevailing under-representation of women in the automobile sector of Pakistan in the position of CEO of the company supports the collection of data from men in this study. In brief, the above discussion has clearly demonstrated that the selected sample possesses qualities similar to the qualities of the population and hence may be considered a good representative of the target population.

4.1.1 Descriptive Summary

The following Table 4 has detailed descriptive statistics of all the items which have been surveyed in the present study. The value of N=53 represents that the data has been collected from 53 research respondents and there were no missing responses to any of the items (i.e. a 100% rate

of response). Furthermore, the table shows the range of variation through identifying smallest and greatest values, average mean and standard deviation.

The study and questioner have been conducted and designed based on 68 items Of the 68 items, 12 items catered for information related to demographic profile of all the research participants, whereas 56 items covered different aspects related to the selected variables of the study, which include SCMP, SCP as well as knowledge management. The responses to the 56 items, other than demographic information of the respondents, have been recorded using a five-point Likert scale; responses to 6 items varied from 2 to 5, 3 ranged from 3 to 5, whereas the rest of the responses have been recorded to be varying from 1 to 5 on the five-point Likert scale. The mean score of different research items has been recorded to be between 1.89 and 4.23. Likewise, the standard deviation has ranged between 0. 317 and 1.578 (refer to Table 4).

Table 4: Descriptive Statistics

Descriptive Statistics					
Items	***N***	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
"Problems, failures, and doubts are discussed openly in our institution."	53	1	5	3.89	0.824
"Members are assigned to new projects and programs, depending on their know-how and availability."	53	1	5	2.87	1.428
"Members are assessed and rewarded for developing new knowledge and for testing new ideas."	53	1	5	3.09	1.510

“At our learning groups, members can discuss their work experiences and strategies.”	53	2	5	3.40	0.968
“Important issues are explored, using scenarios or simulation techniques.”	53	2	5	3.30	0.868
“There are communities of practices or learning groups to share knowledge and experiences.”	53	1	5	3.17	0.914
“Organizational culture helps to encourage information flows and improve employees' communication.”	53	1	5	3.02	1.201
“There are frequent, well-distributed internal reports that inform employees about the firm's progress.”	53	3	5	4.17	0.785
“There are formal mechanisms that guarantee best practices to be shared in the firm.”	53	1	5	2.94	1.167
“There are projects with interdisciplinary teams to share knowledge.”	53	1	5	3.09	1.213
“Organizational knowledge is codified and documented in manuals or other types of devices.”	53	1	4	3.17	1.051
“There are databases that allow employees to use knowledge and experiences that have previously been loaded into the databases.”	53	1	4	2.42	1.117

“It is possible to access knowledge databases and documents through some kind of internal computer network.”	53	1	5	3.19	1.178
“There are databases with updated information about customers.”	53	1	4	2.51	1.031
“Databases are frequently updated.”	53	1	5	3.23	1.368
“All the employees have access to relevant information and key knowledge within the firm.”	53	1	5	4.23	1.489
“There are interdisciplinary teams with autonomy to apply and integrate knowledge.”	53	1	5	4.04	1.493
“Suggestions from employees, customers or suppliers are frequently incorporated into products, processes or services.”	53	1	4	3.09	1.165
“Knowledge that has been created is structured in independent modules, which allow for its integration or separation to create different applications and new usages.”	53	1	4	2.85	1.150
“It is quite common to use external experts with experience on a specific subject in order to solve particular problems.”	53	1	4	3.13	1.030
“Design of products for reduced consumption of material/energy.”	53	1	4	3.06	1.247

“Design of products for reuse, recycle, recovery of material, component parts.”	53	1	5	2.51	0.891
“Design of products to avoid or reduce use of hazardous products.”	53	1	5	2.51	1.067
“Design of processes for minimization of waste.”	53	3	5	3.81	0.991
“Special training for workers on environmental issues.”	53	1	5	2.47	1.067
“Existence of Pollution Prevention Programs.”	53	1	5	2.42	0.865
“The internal performance evaluation system incorporates environmental factors.”	53	1	5	3.17	0.914
“Generate environmental reports for internal evaluation. ”	53	1	5	3.02	1.201
“Cross-functional cooperation for environmental improvements. ”	53	3	5	4.17	0.785
“Suppliers can provide customized products/services for our company to enhance our relationships. ”	53	1	4	3.10	1.272
“We can effectively classify our suppliers and then demand our target suppliers to provide customized products/services. ”	53	1	4	2.94	1.099

“We can learn valuable knowledge from our existing suppliers. ”	53	1	5	3.09	1.510
“We can maintain close interactions with our suppliers to establish long-term relationships.”	53	3	4	3.25	0.434
“We can effectively identify and acquire the correct suppliers.”	53	1	4	3.21	0.927
“We are willing to cooperate with our suppliers to improve the logistics and shipping processes.”	53	1	4	3.06	1.045
“We are willing to cooperate with our suppliers to improve the production and operation processes.”	53	1	4	3.29	0.893
“We are willing to cooperate with our suppliers to improve the quality of products/services.”	53	1	4	3.02	1.083
“We are willing to cooperate with our suppliers to improve the inventory management.”	53	1	5	2.77	1.515
“We understand what kinds of products customers like.”	53	1	5	2.26	0.984
“We understand what kinds of services customers like.”	53	2	5	3.81	1.481

“We understand our customers’ preference on marketing methods.”	53	2	4	2.75	0.979
“We can effectively identify and acquire the right customers.”	53	1	4	2.69	0.865
“We can effectively segment and classify customers in order to provide customized products and services for our target customers.”	53	1	2	1.89	0.317
“We can learn valuable knowledge from our existing customers.”	53	1	4	3.33	0.991
“My organization performs very well in demand and supply planning and management activities.”	53	1	5	2.77	1.012
“My organization performs very well in planning activities for the entire supply chain including source, make, and delivery.”	53	1	5	2.00	0.679
“My organization performs very well in gathering customer requirements, collecting information on available resources, and balancing requirements and resources to determine planned capabilities and resource gaps.”	53	1	5	3.36	1.058

“My organization performs very well in the ordering and receipt of goods and services from suppliers.”	53	1	5	2.21	0.988
“My organization performs very well in managing inventories, capital assets, and incoming products.”	53	2	5	3.81	1.481
“My organization performs very well in identifying and selecting supply sources as well as managing supplier networks and supplier agreements.”	53	2	4	2.79	0.988
“My organization performs very well in executing production or manufacturing activities.”	53	1	4	2.68	0.894
“My organization performs very well in scheduling production activities and managing production performance as well as in-process products.”	53	1	4	2.00	0.588
“My organization performs very well in managing production equipment and facilities.”	53	1	5	3.40	1.044
“My organization performs very well in customer order management activities.”	53	1	4	2.94	0.989

"My organization performs very well in warehouse management activities from receiving and picking products to loading and shipping products."	53	1	5	3.17	1.578
"My organization performs very well in routing shipments, selecting carriers, product transportation, as well as product reception and verification at the customer site."	53	1	5	4.00	1.144

Table 5 has represented reliability and internal consistency measurement for all the variables which have been studied in the present research. The table has clearly evidenced the variables/constructs followed by the quantity of items and the value of Cronbach alpha. Considering the sample of the present study, the value of Cronbach alpha has been recorded to range between 0.704 and 0.921. The higher values of Cronbach alpha have authenticated the existence of high reliability which each multi-item variable included in the present study possesses.

Table 5: Reliability Analysis

constructs	Number of Items	Cronbach Alpha
Knowledge Creation	5	0.732
Knowledge Sharing	5	0.786
Knowledge Storage	5	0.786
Knowledge Application	5	0.921

Supplier Relationship Management – Customized Services	5	0.822
Supplier Relationship Management – Collaboration	4	0.717
Internal Supply Chain Management – Eco Design	4	0.888
Internal Supply Chain Management – Internal Environmental Management	5	0.875
Customer Relationship Management – Understanding Customer Preferences	3	0.759
Customer Relationship Management – Provision of Customized Services	3	0.728
Supply Chain Performance – Plan Process	3	0.730
Supply Chain Performance – Source Process	3	0.704
Supply Chain Performance – Make Process	3	0.767
Supply Chain Performance – Deliver Process	3	0.788

Table 5 shows that the values of Cronbach alpha are: knowledge creation (0.732), knowledge sharing (0.786), knowledge storage (0.786), knowledge application (0.921), supplier relationship management – customized services (0.822), supplier relationship management – collaboration (0.717), internal supply chain management – eco design (0.888), internal supply chain management – internal environmental management (0.875), customer relationship management – understanding customer preferences (0.759), customer relationship management – provision of customized services (0.728), supply chain performance – plan process (0.730), supply

chain performance – source process (0.704), supply chain performance – make process (0.767) and supply chain performance – deliver process (0.788).

4.2 Common Method Variance (CMV)

CMV is not related to the constructs which are focused on in study, rather it is more relevant to the measurement method (Podsakoff, 2003). While doing research, variations become the key problem for a researcher when the same respondents provide self-reported data to measure the items of exogenous and endogenous variables (Podsakoff, 2003; Richardson, Simmering, & Sturman, 2009). In this report, there is no problem with CMV because the information was gathered from various sources (e.g., three key personnel were selected from each organization heading the procurement, production and sales department of the firm). Therefore, there is no need to use statistical remedies to reduce/eliminate issues of CMV.

4.3 Assessment of Reflective Measurement Model

The consistency of every construct is determined by an inspection of item loading on their respective latent construct (Hulland, 1999). When there is higher loading, then it means that construct and measurement share more variance rather than error variance, and when there is low loading, then it means that the power of model explanation is very low which results in reducing the estimated factors linking the variables (Hulland, 1999). In order to implement an effective measurement model, the factors should be closely linked and interchangeable and their validity and reliability should be analyzed in detail and reported accordingly. For this purpose, both reliability and validity are verified in this research to evaluate measurement model. To measure the reliability, CR was used, and convergent and discriminant validity was assessed using SmartPLS software to measure validity. The internal accuracy of the tool for data collection (questionnaire), e.g. (CR), convergent validity (e.g., AVE) and discriminant validity (i.e. cross

loadings and Fornell-Larcker criterion) of the tool was verified by CFA. This was all done to ensure that all the measurements were reliable and valid before checking the relationships in the structural model.

4.4 CR

CR is used to measure the reliability of items. All items, in this process, constructs for reflective loadings were tested to know the cut off values of 0.5 as suggested by (Henseler et al., 2014). Respective construct items were loaded in Table 5.4. The condition of recommended cut off value of 0.5 was considered in all items in Table 6. The construct was explained and observed, the loading values ranged between 0.296 and 0.932. Step by step, items were deleted that had a value less than 0.5 in order to achieve significant threshold for internal consistency of items. The conceptual meaning of the items might not be affected due to the reflective scale as long as it meets the conditions of adequate internal consistency. Direction of causality flows is the reason that the flow of constructs was not affected as demonstrated in their respective items. Due to the cause underlying the same constructs, the items are highly correlated as suggested by Henseler et al. (2014) and MacKenzie, Podsakoff, and Jarvis (2005). The research shows that during the analysis the internal consistency of all items was present in the same category even after the deletion of items from scale. The CR value ranged between 0.747 and 0.945, that is greater than the threshold value of 0.7 (Hair, Babin, & Anderson, 2010). Hence, internal consistency reliability of each variable reflected a high level.

4.5 Convergent Validity

For the assessment of convergent validity, AVE was calculated. Table 6 shows the convergent validity and it is clear from the table that all latent constructs had AVE values more than the acceptable level of 0.5; the values ranged from 0.504 to 0.852. An AVE value more than

0.5 shows that more than half of the variance of its parameters were explained by the latent construct. Table 6 describes the outcomes of measurement model l. It shows that all the variables namely customized services, collaboration, eco design, internal environment management, understanding customer preferences, providing customized services, knowledge acquisition process, knowledge dissemination process, knowledge storage, knowledge implementation aspects, KMP, plan process, source process. Depending on their parameter estimates and statistical significance, the method and delivery process were accurate measurements of their respective constructs (Chow & Chan, 2008). Therefore, the convergent validity of all constructs in the model was adequate.

Table 6: **Factor Loadings**

1st Order Constructs	**2nd Order Constructs**	**Items**	**Loadings**	**CR**	**AVE**
Customized Services		CS1	0.851	0.87	0.577
		CS2	0.806		
		CS3	0.527		
		CS4	0.833		
		CS5	0.737		
Collaboration		C1	0.66	0.81	0.59
		C2	0.843		

	C4	0.79		
Eco Design	ED1	0.861	0.819	0.544
	ED2	0.489		
	ED3	0.647		
	ED4	0.882		
Internal Environmental Management	IEM1	0.833	0.886	0.662
	IEM2	0.842		
	IEM3	0.703		
	IEM4	0.867		
Provision of Customer Services	PCS1	0.839	0.833	0.629
	PCS2	0.649		
	PCS3	0.872		
Understanding Customer Preferences	UCP1	0.87	0.928	0.812
	UCP2	0.927		
	UCP3	0.906		
Knowledge Acquisition	KAP1	0.677	0.917	0.69
	KAP2	0.748		

		KAP3	0.716		
		KAP4	0.686		
		KAP5	0.705		
Knowledge Storage		KS1	0.92	0.945	0.852
		KS2	0.932		
		KS4	0.918		
Knowledge Dissemination		KDP1	0.705	0.828	0.504
		KDP2	0.709		
		KDP3	0.613		
		KDP4	0.296		
		KDP5	0.384		
Knowledge Implementation		KIA1	0.908	0.939	0.794
		KIA2	0.865		
		KIA3	0.882		
		KIA4	0.907		
	Knowledge Management Practices	KAP	0.853		
		KDP	0.806		
		KIA	0.558		
		KS	0.77		

Plan Process	PP1	0.879	0.747	0.516
	PP2	0.416		
	PP3	0.777		
Source Process	SP1	0.866	0.887	0.724
	SP2	0.896		
	SP3	0.786		
Make Process	MP1	0.873	0.821	0.697
	MP3	0.795		
Delivery Process	DP1	0.861	0.882	0.715
	DP2	0.894		
	DP3	0.777		

4.6 Discriminant Validity

The amount of difference between 2 variables is called discriminant validity (Hair, Black, et al., 2010). In order to calculate discriminant validity, two methods were used in this study: Fornell–Larcker criterion (Fornell & Larcker, 1981) and HTMT (Henseler, Ringle, & Sarstedt, 2015).

4.7 HTMT

A new criterion was presented by Henseler et al. (2015) that helps to calculate discriminant validity for variance-based SEM. They concluded that the assessment of discriminant validity for variance-based SEM can be done through two major approaches which are Fornell-Larcker criterion and cross-loadings. On the other hand, they also mentioned that these approaches were unable to measure the absence of discriminant validity in various research scenarios. Hence, an alternative approach “the heterotrait-monotrait ratio of correlations” was presented by (Henseler

et al., 2015), which relies on the "multitrait-multimethod matrix" to analyze discriminant validity. Many studies used HTMT for the calculation of discriminant validity and recommended use of this approach in diverse scenarios (Ali, Rasoolimanesh, Sarstedt, Ringle, & Ryu, 2018; Haider, Jabeen, & Ahmad, 2018; Hamid, Sami, & Sidek, 2017; Henseler et al., 2015; Hussein & Baharudin, 2017; Janadari, Sri Ramalu, & Wei, 2016).

Discriminant validity can be calculated by using HTMT in two ways; first, as a criterion and, second, as a statistical test (Henseler et al., 2015). The first approach advocates that the HTMT should not be greater than 0.85 (Clark & Watson, 1995; Kline, 2011) or it should be less than 0.90 (Gold et al., 2001). The problem of discriminant validity arises when the HTMT is higher than the above-mentioned thresholds. The second one is used for the test of null hypothesis (H0: HTMT ≥ 1) against the alternative hypothesis (H1: HTMT < 1) and if the confidence interval includes value one, it shows a lack of discriminant validity (Henseler et al., 2015). In this research, the researcher used the first criterion approach to calculate the discriminant validity using the HTMT.

Table 7: Heterotrait-Monotrait Ratio

	C	CS	DP	ED	IEM	KAP	KDP	KIA	KS	MP	PCS	PP	SP	UCP
C														
CS	0.38													
DP	0.284	0.608												
ED	0.121	0.372	0.555											
IEM	0.165	0.517	0.645	0.699										
KAP	0.317	0.582	0.839	0.549	0.628									
KDP	0.349	0.635	0.691	0.433	0.629	0.691								

KIA	0.111	0.182	0.37	0.174	0.323	0.329	0.292						
KS	0.161	0.434	0.591	0.278	0.533	0.542	0.631	0.381					
MP	0.374	0.69	0.739	0.564	0.675	0.696	0.706	0.299	0.492				
PCS	0.084	0.336	0.348	0.897	0.446	0.341	0.388	0.041	0.238	0.432			
PP	0.475	0.691	0.787	0.459	0.498	0.649	0.686	0.369	0.542	0.572	0.368		
SP	0.283	0.587	0.756	0.508	0.668	0.688	0.859	0.322	0.533	0.812	0.447	0.69	
UCP	0.164	0.43	0.509	0.433	0.712	0.421	0.535	0.347	0.507	0.458	0.337	0.434	0.598

Table 7 shows all the values of the HTMT for the first-order constructs and higher order constructs, respectively. As shown in Table 7, all the values of the HTMT for the first-order constructs were less than 0.90 and passed the criterion of the HTMT<0.90 (Gold et al., 2001). Hence, it is revealed through the findings that discriminant validity had been established for all the first-order constructs.

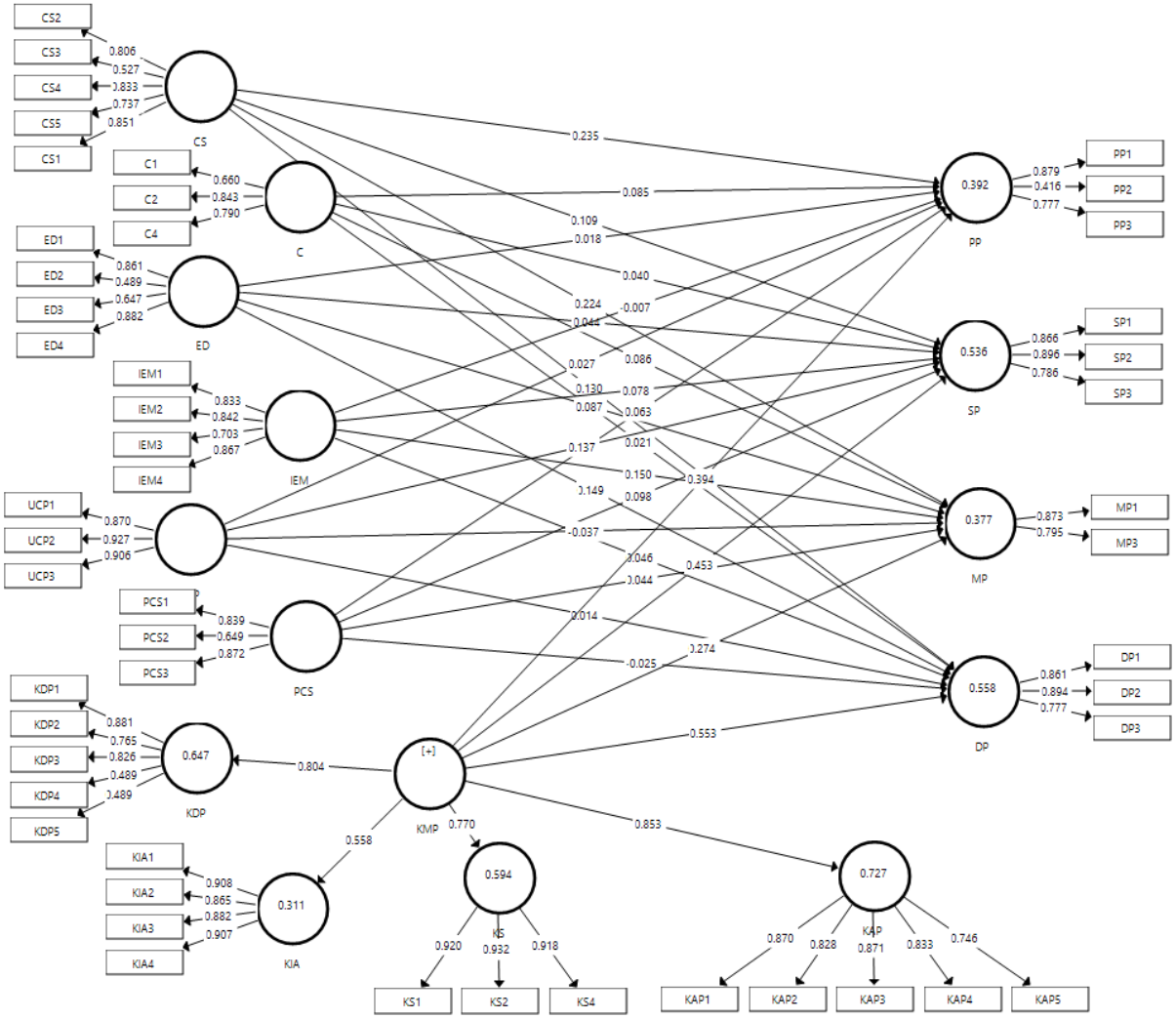

Figure 12: Measurement Model Assessment

4.8 Establishing Higher-Order Constructs

There are many reasons for establishing higher-order constructs but one main cause is to minimize the links of constructs in the model (Hair et al., 2016) so the model can be parsimonious and the issue of multi-collinearity the arises due to multidimensional model structures can be overlooked (Henseler et al., 2014; Ringle, Sarstedt, & Straub, 2012). In this study, "knowledge management practices" was abstracted as second-order constructs with reflective indicators. All the first-order constructs were taken collectively as a reflective measure of second-order constructs by using repeated indicator approach while calculating second-order constructs. Hence, every indicator of first-order constructs was used to measure the second-order constructs (Becker, Klein, & Wetzels, 2012; Chin, Marcolin, & Newsted, 2003; Wetzels, Odekerken-Schröder, & Van Oppen, 2009). Almost an equal number of indicators of every construct in first-order model was used again for an improved operationalization of the model (Chin et al., 2003). KMP was conceptualized in this research as second-order constructs consisting of four first-order constructs named as knowledge acquisition process, knowledge dissemination process, knowledge storage and knowledge implementation aspects. Such treatment was similar to that given by previous researchers (Hakala & Kohtamäki, 2011; Li & Debo, 2009; Moreno & Casillas, 2008; Stam & Elfring, 2006).

4.9 Assessment of Structural Model

When the consistency of the measurement model was identified, the next step was hypothesis testing. The structural model was tested by PLS-SEM and bootstrapping algorithms (Chin, 2010). At start, the endogenous construct's coefficient of determination (R2 values) was used to quantify the structural model's predictive power (Chin, 2010; Henseler et al., 2014) and

the path coefficient level and significance were calculated (Hair, Babin, et al., 2010). Table 8 displays R2 of each of this study's endogenous latent variables.

(Cohen, 1988) proposed that, as a rule of thumb, R2 values of endogenous latent constructs 0.26, 0.13, or 0.02 can be described as substantial, moderate and small. Table 8 shows that 399 contributed to exogenous constructs such as Personalized Services, Partnership, Eco Design, Internal Environmental Management, Consumer Expectations Awareness, Customized Services Provision of Customized Services contributed 39.2%, 53.6%, 37.7% and 55.8% of the variance in plan process, source process, make process and delivery process, respectively.

Table 8: R Square of Endogenous Constructs

Constructs	R Square	Effect
Plan Process	0.392	Substantial
Source Process	0.536	Substantial
Make Process	0.377	Substantial
Delivery Process	0.558	Substantial

Second, the predictor constructs can be assessed by using the effect size of Cohen (*f*2) (Cohen, Cohen, West, & Aiken, 2013). Because endogenous construct (Supply Chain Performance) had more than one exogenous construct (Customized Services, Collaboration, Eco Design, Internal Environmental Management, Understanding Customer Preferences, Provision of Customized Services), the relative effect sizes (*f2*) of the exogenous constructs were calculated. According to (Cohen et al., 2013), *f2* values of 0.35, 0.15 and 0.02 are considered large, medium and small, respectively. Table 9 shows that *f2* of all exogenous constructs had relatively no to small effect sizes (Cohen et al., 2013). This range of effect sizes was reasonable since there were many

factors that affect SCP (Luk, Lau, & Yue, 2008). This means that the estimated model fitted the data very well.

Table 9: **Effect Size**

Constructs	PP		SP		MP		DP	
	f^2	ES	f^2	ES	f^2	ES	f^2	ES
Customized Services	0.061	Small	0.017	No	0.053	Small	0.025	Small
Collaboration	0.011	No	0.003	No	0.011	No	0.001	No
Eco Design	0.001	No	0.002	No	0.006	No	0.025	Small
Internal Environmental Management	0.001	No	0.006	No	0.015	No	0.002	No
Providing Customized Services	0.004	No	0.014	No	0.002	No	0.001	No
Understanding Customer Preferences	0.001	No	0.024	Small	0.001	No	0.001	No

4.10 Direct Relationship

Hair et al. (2016) claimed that the non-significant paths or paths with signs of opposite direction to the hypothesis do not support earlier theories, whereas the proposed causal association is empirically validated by paths with significant values. Bootstrapping with a resample of 500 was run to obtain the t-value before checking the moderating effect in order to determine whether the specific interactions were appropriate. The path coefficients were produced as shown in Figure 5.3. Figure 5.4 and Table 5.11 show the bootstrapping results. Detailed results are as follows:

Hypothesis 1: There is a relationship between customized services (CS) in supplier relationship management (SRM) and plan process (PP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between customized services and plan process ($\beta = 0.344$, $t = 7.497$, $p < 0.05$). Therefore, Hypothesis 1 is supported.

Hypothesis 2: There is a relationship between collaboration (Col) in supplier relationship management (SRM) and plan process (PP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between collaboration and plan process ($\beta = 0.143$, $t = 4.62$, $p < 0.05$). Therefore, Hypothesis 2 is supported.

Hypothesis 3: There is a relationship between eco design (ED) in internal supply chain management (ISCM) and plan process (PP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between eco design and plan process ($\beta = 0.075$, $t = 1.701$, $p < 0.05$). Therefore, Hypothesis 3 is supported.

Hypothesis 4: There is a relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and plan process (PP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between internal environmental management and plan process ($\beta = 0.104$, $t = 2.085$, $p < 0.05$). Therefore, Hypothesis 4 is supported.

Hypothesis 5: There is a relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and plan process (PP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between understanding customer preferences and plan process ($\beta = 0.089$, $t = 2.001$, $p < 0.05$). Therefore, Hypothesis 5 is supported.

Hypothesis 6: There is a relationship between provision of customized services (PCS) in customer relationship management (CRM) and plan process (PP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is no association between the provision of customized services and plan process ($\beta = 0.063$, $t = 1.509$, $p > 0.05$). Therefore, Hypothesis 6 is not supported.

Hypothesis 7: There is a relationship between customized services (CS) in supplier relationship management (SRM) and source process (SP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between customized services and source process ($\beta = 0.23$, $t = 5.967$, $p < 0.05$). Therefore, Hypothesis 7 is supported.

Hypothesis 8: There is a relationship between collaboration (Col) in supplier relationship management (SRM) and source process (SP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between collaboration and source process (β = 0.094, $t = 3.324$, $p < 0.05$). Therefore, Hypothesis 8 is supported.

Hypothesis 9: There is a relationship between eco design (ED) in internal supply chain management (ISCM) and source process (SP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between eco design and source process (β = 0.098, $t = 2.42$, $p < 0.05$). Therefore, Hypothesis 9 is supported.

Hypothesis 10: There is a relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and source process (SP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between internal environmental management and source process (β = 0.217, $t = 4.802$, $p < 0.05$). Therefore, Hypothesis 10 is supported.

Hypothesis 11: There is a relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and source process (SP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between understanding customer preferences and source process (β = 0.226, $t = 5.379$, $p < 0.05$). Therefore, Hypothesis 11 is supported.

Hypothesis 12: There is a relationship between provision of customized services (PCS) in customer relationship management (CRM) and source process (SP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between provision of customized services and source process ($\beta = 0.089$, $t = 2.403$, $p < 0.05$). Therefore, Hypothesis 12 is supported.

Hypothesis 13: There is a relationship between customized services (CS) in supplier relationship management (SRM) and make process (MP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between customized services and make process ($\beta = 0.295$, $t = 6.87$, $p < 0.05$). Therefore, Hypothesis 13 is supported.

Hypothesis 14: There is a relationship between collaboration (Col) in supplier relationship management (SRM) and make process (MP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between collaboration and make process ($\beta = 0.119$, $t = 3.938$, $p < 0.05$). Therefore, Hypothesis 14 is supported.

Hypothesis 15: There is a relationship between eco design (ED) in internal supply chain management (ISCM) and make process (MP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between eco design and make process ($\beta = 0.121$, $t = 2.713$, $p < 0.05$). Therefore, Hypothesis 15 is supported.

Hypothesis 16: There is a relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and make process (MP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between internal environmental management and make process (β = 0.234, *t* = 4.692, < 0.05). Therefore, Hypothesis 16 is supported.

Hypothesis 17: There is a relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and make process (MP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is no association between understanding customer preferences and make process (β = 0.015, *t* = 0.386, *p* > 0.05). Therefore, Hypothesis 17 is not supported.

Hypothesis 18: There is a relationship between provision of customized services (PCS) in customer relationship management (CRM) and make process (MP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is no association between provision of customized services and make process (β = 0.04, *t* = 1.053, *p* < 0.05). Therefore, Hypothesis 18 is supported.

Hypothesis 19: There is a relationship between customized services (CS) in supplier relationship management (SRM) and delivery process (DP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between customized services and delivery process (β = 0.278, *t* = 7.488, *p* < 0.05). Therefore, Hypothesis 19 is supported.

Hypothesis 20: There is a relationship between collaboration (Col) in supplier relationship management (SRM) and delivery process (DP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between collaboration and delivery process ($\beta = 0.088$, $t = 3.056$, $p < 0.05$). Therefore, Hypothesis 20 is supported.

Hypothesis 21: There is a relationship between eco design (ED) in internal supply chain management (ISCM) and delivery process (DP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between eco design and delivery process ($\beta = 0.219$, $t = 5.188$, $p < 0.05$). Therefore, Hypothesis 21 is supported.

Hypothesis 22: There is a relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and delivery process (DP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between internal environmental management and delivery process ($\beta = 0.219$, $t = 5.182$, $p < 0.05$). Therefore, Hypothesis 22 is supported.

Hypothesis 23: There is a relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and delivery process (DP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between understanding customer preferences and delivery process ($\beta = 0.119$, $t = 3.087$, $p < 0.05$). Therefore, Hypothesis 23 is supported.

Hypothesis 24: There is a relationship between provision of customized services (PCS) in customer relationship management (CRM) and delivery process (DP) in supply chain performance (SCP).

It is clear from the results found in the output of the algorithm and bootstrapping PLS-SEM that there is a positive and significant association between provision of customized services and delivery process ($\beta = -0.04$, $t = 1.12$, $p > 0.05$). Therefore, Hypothesis 24 is not supported.

Table 10: **Path Analysis**

		beta	SE	T	P	LL	UL	Decision
1	CS -> PP	0.344	0.046	7.497	0	0.268	0.418	Supported
2	Col -> PP	0.143	0.031	4.62	0	0.092	0.194	Supported
3	ED -> PP	0.075	0.044	1.701	0.045	-0.001	0.146	Supported
4	IEM -> PP	0.104	0.05	2.085	0.019	0.019	0.184	Supported
5	UCP -> PP	0.089	0.044	2.001	0.023	0.017	0.162	Supported
6	PCS -> PP	0.063	0.042	1.509	0.066	-0.003	0.132	Not Supported
7	CS -> SP	0.23	0.039	5.967	0	0.162	0.289	Supported
8	Col -> SP	0.094	0.028	3.324	0	0.049	0.142	Supported
9	ED -> SP	0.098	0.041	2.42	0.008	0.03	0.163	Supported
10	IEM -> SP	0.217	0.045	4.802	0	0.143	0.291	Supported
11	UCP -> SP	0.226	0.042	5.379	0	0.159	0.298	Supported
12	PCS -> SP	0.089	0.037	2.403	0.008	0.028	0.149	Supported
13	CS -> MP	0.295	0.043	6.87	0	0.224	0.365	Supported
14	Col -> MP	0.119	0.03	3.938	0	0.069	0.169	Supported

15	ED -> MP	0.121	0.045	2.713	0.003	0.048	0.194	Supported
16	IEM -> MP	0.234	0.05	4.692	0	0.153	0.317	Supported
17	UCP -> MP	0.015	0.04	0.386	0.35	-0.05	0.081	Not Supported
18	PCS -> MP	0.04	0.038	1.053	0.146	-0.022	0.101	Not Supported
19	CS -> DP	0.278	0.037	7.488	0	0.216	0.338	Supported
20	Col -> DP	0.088	0.029	3.056	0.001	0.042	0.137	Supported
21	ED -> DP	0.219	0.042	5.188	0	0.146	0.288	Supported
22	IEM -> DP	0.219	0.042	5.182	0	0.153	0.292	Supported
23	UCP -> DP	0.119	0.039	3.087	0.001	0.056	0.184	Supported
24	PCS -> DP	-0.04	0.036	1.12	0.131	-0.1	0.018	Not Supported

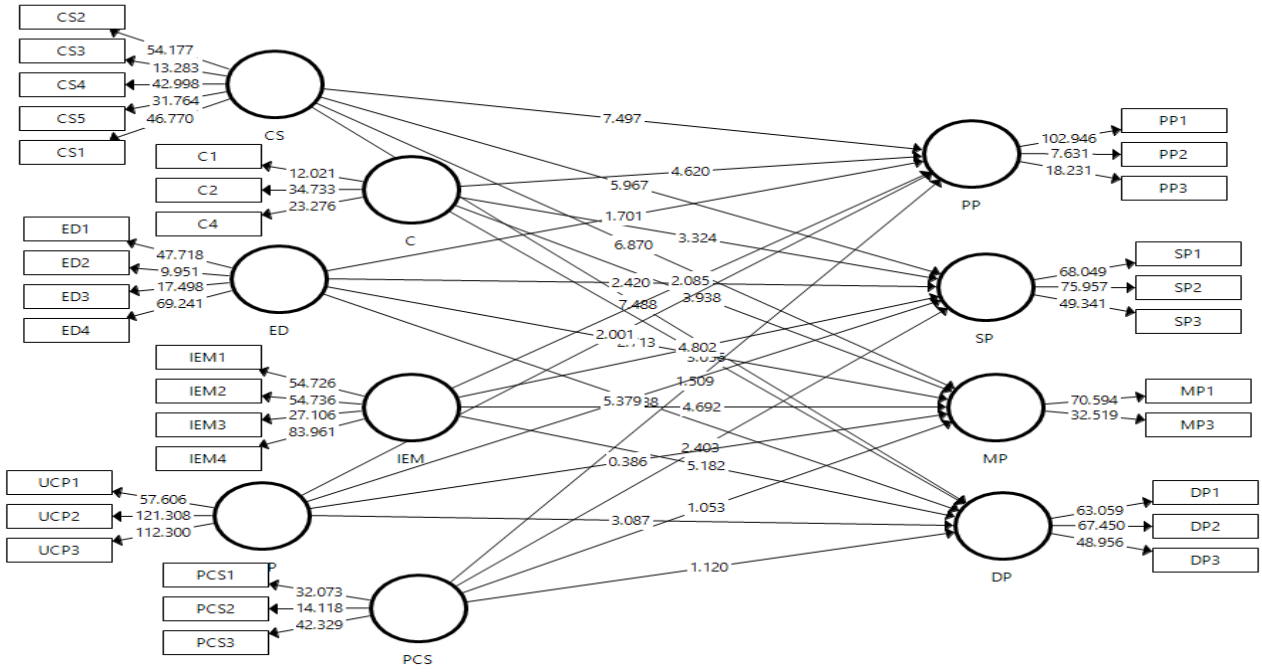

Figure 13: Structural Equation Modeling

4.11 Testing Moderating Effect

The moderating role of KMP is determined in this study by using the product indicator approach between the SCMP (i.e. SRM, ISCM and CRM) and SCP (SCOR model, i.e. plan, source, make, deliver). Rigdon, Schumacker, and Wothke (1998) suggested that the product indicator approach is appropriate while determining the moderating effect of the moderator and the moderator itself is continuous in nature. Furthermore, Henseler and Fassott (2010) also suggested the same approach as the results found through this approach present a more appropriate picture of the results in comparison to other approaches. In addition to this, the guidelines of Cohen (1988) were considered and used while determining the size of effect of interaction terms.

Table 11 presents the results related to the interaction terms. Table 11 illustrates the acceptance and rejection of direct and moderating hypotheses formed in the study.

Hypotheses 25: Knowledge management practices moderate the relationship between customized services (CS) in supplier relationship management (SRM) and plan process (PP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of customized services and plan process as interaction term of customized services and knowledge management practices is not significant (β = -0.04, t = 0.799; LL = -0.115, UL = 0.041). Therefore, Hypothesis 25 is not supported.

Hypothesis 26: Knowledge management practices moderate the relationship between collaboration (Col) in supplier relationship management (SRM) and plan process (PP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of collaboration and plan process as interaction term of collaboration and knowledge management practices is not significant (β = -0.003, *t* = 0.112; LL = -0.049, UL = 0.041). Therefore, Hypothesis 26 is not supported.

Hypothesis 27: Knowledge management practices moderate the relationship between eco design (ED) in internal supply chain management (ISCM) and plan process (PP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of eco design and plan process as interaction term of eco design and knowledge management practices is not significant (β = 0.01, *t* = 0.173; LL = -0.085, UL = 0.091). Therefore, Hypothesis 27 is not supported.

Hypothesis 28: Knowledge management practices moderate the relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and plan process (PP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of internal environmental management and plan process as interaction term of internal environmental management and knowledge management practices is not significant (β = -0.075, *t* = 1.436; LL = -0.162, UL = 0.001). Therefore, Hypothesis 28 is not supported.

Hypothesis 29: Knowledge management practices moderate the relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and plan process (PP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of understanding customer preferences and plan process as interaction term of understanding customer preferences and knowledge management practices is not significant ($\beta = 0.063$, $t = 1.442$; LL = -0.002, UL = 0.139). Therefore, Hypothesis 29 is not supported.

Hypothesis 30: Knowledge management practices moderate the relationship between provision of customized services (PCS) in customer relationship management (CRM) and plan process (PP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of provision of customized services and plan process as interaction term of provision of customized services and knowledge management practices is not significant ($\beta = 0.058$, $t = 1.456$; LL = -0.009, UL = 0.121). Therefore, Hypothesis 30 is not supported.

Hypothesis 31: Knowledge management practices moderate the relationship between customized services (CS) in supplier relationship management (SRM) and source process (SP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices moderate the relationship of customized services and source process as interaction term of customized services and knowledge management practices is significant ($\beta = -0.103$, $t = 2.979$; LL = -0.158, UL = -0.044). Therefore, Hypothesis 31 is supported.

Hypothesis 32: Knowledge management practices moderate the relationship between collaboration (Col) in supplier relationship management (SRM) and source process (SP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices moderate the relationship of collaboration and source process as interaction term of collaboration and knowledge management practices is significant (β = 0.037, *t* = 1.792; LL = 0.004, UL = 0.073). Therefore, Hypothesis 32 is supported.

Hypothesis 33: Knowledge management practices moderate the relationship between eco design (ED) in internal supply chain management (ISCM) and source process (SP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices moderate the relationship of eco design and source process as interaction term of eco design and knowledge management practices is significant (β = 0.074, *t* = 2.323; LL = 0.03, UL = 0.136). Therefore, Hypothesis 33 is supported.

Hypothesis 34: Knowledge management practices moderate the relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and source process (SP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices moderate the relationship of internal environmental management and source process as interaction term of internal environmental management and knowledge management practices is significant (β = -0.091, *t* = 2.408; LL = -0.152, UL = -0.032). Therefore, Hypothesis 34 is supported.

Hypothesis 35: Knowledge management practices moderate the relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and source process (SP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of understanding customer preferences and source process as interaction term of understanding customer preferences and knowledge management practices is not significant ($\beta = 0.012$, $t = 0.34$; LL = -0.052, UL = 0.069). Therefore, Hypothesis 35 is not supported.

Hypothesis 36: Knowledge management practices moderate the relationship between provision of customized services (PCS) in customer relationship management (CRM) and source process (SP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of provision of customized services and source process as interaction term of provision of customized services and knowledge management practices is not significant ($\beta = -0.013$, $t = 0.5$; LL = -0.052, UL = 0.032). Therefore, Hypothesis 36 is not supported.

Hypothesis 37: Knowledge management practices moderate the relationship between customized services (CS) in supplier relationship management (SRM) and make process (MP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices moderate the relationship of customized services and make process as interaction term of customized services and knowledge management practices is significant ($\beta = 0.066$, $t = 1.935$; LL = 0.007, UL = 0.165). Therefore, Hypothesis 37 is supported.

Hypothesis 38: Knowledge management practices moderate the relationship between Collaboration (Col) in supplier relationship management (SRM) and make process (MP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of collaboration and make process as interaction term of collaboration and knowledge management practices is not significant ($\beta = 0.01$, $t = 0.405$; LL = -0.036, UL = 0.046). Therefore, Hypothesis 38 is not supported.

Hypothesis 39: Knowledge management practices moderate the relationship between eco design (ED) in internal supply chain management (ISCM) and make process (MP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of eco design and make process as interaction term of eco design and knowledge management practices is not significant ($\beta = 0.048$, $t = 0.782$; LL = -0.041, UL = 0.147). Therefore, Hypothesis 39 is not supported.

Hypothesis 40: Knowledge management practices moderate the relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and make process (MP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of internal environmental management and make process as interaction term of internal environmental management and knowledge management practices is not significant ($\beta = -0.058$, $t = 0.97$; LL = -0.138, UL = 0.051). Therefore, Hypothesis 40 is not supported.

Hypothesis 41: Knowledge management practices moderate the relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and make process (MP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices moderate the relationship of understanding customer preferences and make process as interaction term of understanding customer preferences and knowledge management practices is significant (β = 0.061, *t* = 1.794; LL = 0.003, UL = 0.144). Therefore, Hypothesis 41 is supported.

Hypothesis 42: Knowledge management practices moderate the relationship between provision of customized services (PCS) in customer relationship management (CRM) and make process (MP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices moderate the relationship of provision of customer services and make process as interaction term of provision of customer services and knowledge management practices is significant (β = -0.132, *t* = 3.453; LL = -0.203, UL = -0.076). Therefore, Hypothesis 42 is supported.

Hypothesis 43: Knowledge management practices moderate the relationship between customized services (CS) in supplier relationship management (SRM) and delivery process (DP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of customized services and delivery process as interaction term of customized services and knowledge management practices is not significant (β = -0.026, *t* = 0.602; LL = -0.094, UL = 0.049). Therefore, Hypothesis 43 is not supported.

Hypothesis 44: Knowledge management practices moderate the relationship between collaboration (Col) in supplier relationship management (SRM) and delivery process (DP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of collaboration and delivery process as interaction term of collaboration and knowledge management practices is not significant ($\beta = 0.027$, $t = 1.21$; LL = -0.009, UL = 0.064). Therefore, Hypothesis 44 is not supported.

Hypothesis 45: Knowledge management practices moderate the relationship between eco design (ED) in internal supply chain management (ISCM) and delivery process (DP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices moderate the relationship of eco design and delivery process as interaction term of eco design and knowledge management practices is significant ($\beta = -0.1$, $t = 2.786$; LL = -0.152, UL = -0.036). Therefore, Hypothesis 45 is supported.

Hypothesis 46: Knowledge management practices moderate the relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and delivery process (DP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of internal environmental management and delivery process as interaction term of internal environmental management and knowledge management practices is not significant ($\beta = -0.043$, $t = 1.157$; LL = -0.105, UL = 0.014). Therefore, Hypothesis 46 is not supported.

Hypothesis 47: Knowledge management practices moderate the relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and delivery process (DP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices do not moderate the relationship of understanding customer preferences and delivery process as interaction term of understanding customer preferences and knowledge management practices is not significant (β = 0.027, *t* = 0.856; LL = -0.022, UL = 0.08). Therefore, Hypothesis 47 is not supported.

Hypothesis 48: Knowledge management practices play a moderating role between the relationship of provision of customized services (PCS) in customer relationship management (CRM) and delivery process (DP) in supply chain performance (SCP).

As shown in Table 11, it is clear from the results that knowledge management practices moderate the relationship of provision of customer services and delivery process as interaction term of provision of customer services and knowledge management practices is significant (β = 0.093, *t* = 3.067; LL = 0.041, UL = 0.14). Therefore, Hypothesis 48 is supported.

Table 11: **Moderation Analysis**

	beta	SE	T	P	LL	UL	Decision
Moderating Effect (CS*KMP) -> PP	-0.04	0.051	0.799	0.212	-0.115	0.041	Not Supported
Moderating Effect (Col*KMP) -> PP	-0.003	0.029	0.112	0.456	-0.049	0.041	Not Supported
Moderating Effect (ED*KMP) -> PP	0.01	0.055	0.173	0.431	-0.085	0.091	Not Supported

Moderating Effect (IEM*KMP) -> PP	-0.075	0.052	1.436	0.076	-0.162	0.001	Not Supported
Moderating Effect (UCP*KMP) -> PP	0.063	0.044	1.442	0.075	-0.002	0.139	Not Supported
Moderating Effect (PCS*KMP) -> PP	0.058	0.04	1.456	0.073	-0.009	0.121	Not Supported
Moderating Effect (CS*KMP) -> SP	-0.103	0.035	2.979	0.002	-0.158	-0.044	Supported
Moderating Effect (Col*KMP) -> SP	0.037	0.021	1.792	0.037	0.004	0.073	Supported
Moderating Effect (ED*KMP) -> SP	0.074	0.032	2.323	0.01	0.03	0.136	Supported
Moderating Effect (IEM*KMP) -> SP	-0.091	0.038	2.408	0.008	-0.152	-0.032	Supported
Moderating Effect (UCP*KMP) -> SP	0.012	0.036	0.34	0.367	-0.052	0.069	Not Supported
Moderating Effect (PCS*KMP) -> SP	-0.013	0.025	0.5	0.308	-0.052	0.032	Not Supported
Moderating Effect (CS*KMP) -> MP	0.066	0.031	1.935	0.047	0.007	0.165	Supported
Moderating Effect (Col*KMP) -> MP	0.01	0.025	0.405	0.343	-0.036	0.046	Not Supported

Moderating Effect (ED*KMP) -> MP	0.048	0.062	0.782	0.217	-0.041	0.147	Not Supported
Moderating Effect (IEM*KMP) -> MP	-0.058	0.06	0.97	0.166	-0.138	0.051	Not Supported
Moderating Effect (UCP*KMP) -> MP	0.061	0.034	1.794	0.046	0.003	0.144	Supported
Moderating Effect (PCS*KMP) -> MP	-0.132	0.038	3.453	0	-0.203	-0.076	Supported
Moderating Effect (CS*KMP) -> DP	-0.026	0.043	0.602	0.274	-0.094	0.049	Not Supported
Moderating Effect (Col*KMP) -> DP	0.027	0.023	1.21	0.113	-0.009	0.064	Not Supported
Moderating Effect (ED*KMP) -> DP	-0.1	0.036	2.786	0.003	-0.152	-0.036	Supported
Moderating Effect (IEM*KMP) -> DP	-0.043	0.037	1.157	0.124	-0.105	0.014	Not Supported
Moderating Effect (UCP*KMP) -> DP	0.027	0.032	0.856	0.196	-0.022	0.08	Not Supported
Moderating Effect (PCS*KMP) -> DP	0.093	0.03	3.067	0.001	0.041	0.14	Supported

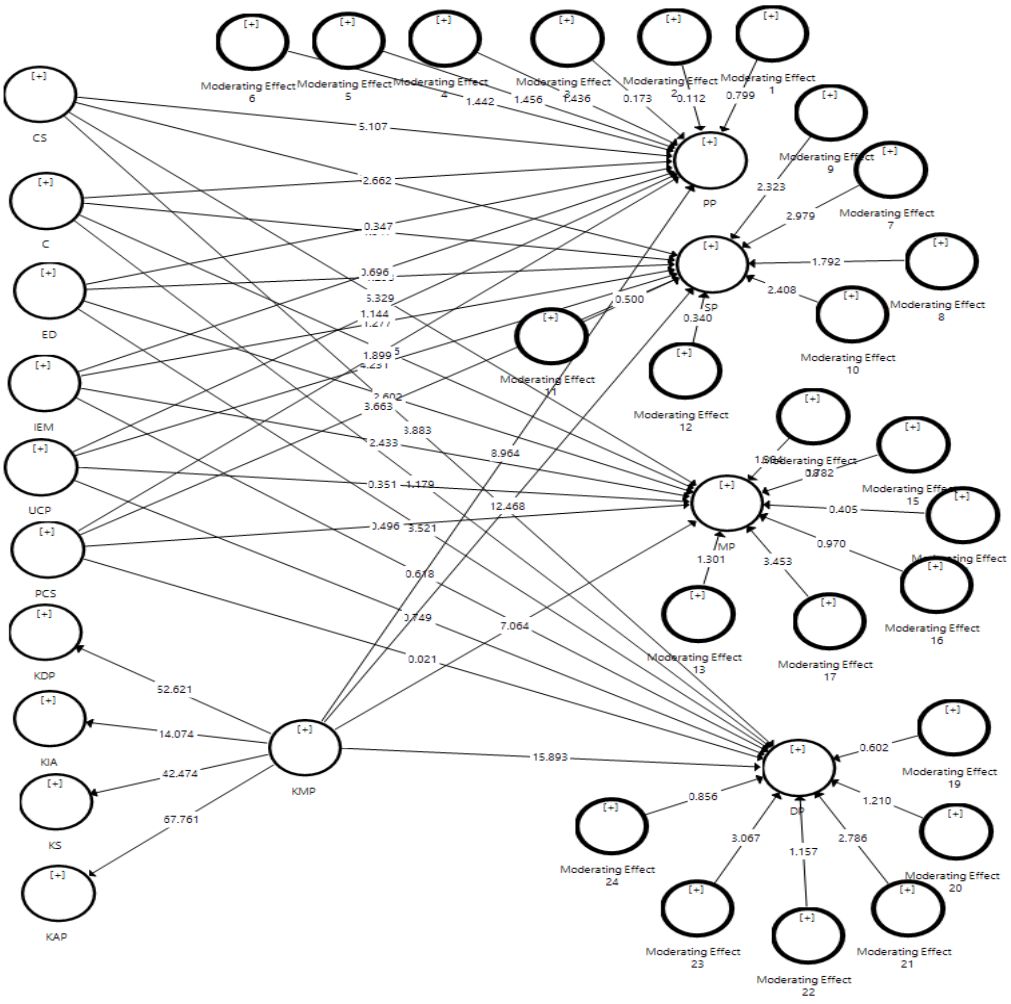

Figure 14: Moderation Analysis

4.12 Summary of the Findings

Table 12 summarizes the research findings. As shown, out of 24 direct hypotheses, only three failed to receive empirical support. On the other hand, out of 24 moderating hypotheses only 9 moderating hypotheses were significantly moderating the relationships.

Table 12: Summary of Hypotheses

Hypothesis #	Description	Decision
H_1	There is a relationship between customized services (CS) in supplier relationship management (SRM) and plan process (PP) in supply chain performance (SCP).	Supported
H_2	There is a relationship between collaboration (Col) in supplier relationship management (SRM) and plan process (PP) in supply chain performance (SCP).	Supported
H_3	There is a relationship between eco design (ED) in internal supply chain management (ISCM) and plan process (PP) in supply chain performance (SCP).	Supported
H_4	There is a relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and plan process (PP) in supply chain performance (SCP).	Supported
H_5	There is a relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and plan process (PP) in supply chain performance (SCP).	Supported
H_6	There is a relationship between provision of customized services (PCS) in customer relationship management (CRM) and plan process (PP) in supply chain performance (SCP).	Not Supported

H_7	There is a relationship between customized services (CS) in supplier relationship management (SRM) and source process (SP) in supply chain performance (SCP).	Supported
H_8	There is a relationship between collaboration (Col) in supplier relationship management (SRM) and source process (SP) in supply chain performance (SCP).	Supported
H_9	There is a relationship between eco design (ED) in internal supply chain management (ISCM) and source process (SP) in supply chain performance (SCP).	Supported
H_{10}	There is a relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and source process (SP) in supply chain performance (SCP).	Supported
H_{11}	There is a relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and source process (SP) in supply chain performance (SCP).	Supported
H_{12}	There is a relationship between provision of customized services (PCS) in customer relationship management (CRM) and source process (SP) in supply chain performance (SCP).	Supported
H_{13}	There is a relationship between customized services (CS) in supplier relationship management (SRM) and make process (MP) in supply chain performance (SCP).	Supported

H_{14}	There is a relationship between collaboration (Col) in supplier relationship management (SRM) and make process (MP) in supply chain performance (SCP).	Supported
H_{15}	There is a relationship between eco design (ED) in internal supply chain management (ISCM) and make process (MP) in supply chain performance (SCP).	Supported
H_{16}	There is a relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and make process (MP) in supply chain performance (SCP).	Supported
H_{17}	There is a relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and make process (MP) in supply chain performance (SCP).	Not Supported
H_{18}	There is a relationship between provision of customized services (PCS) in customer relationship management (CRM) and make process (MP) in supply chain performance (SCP).	Not Supported
H_{19}	There is a relationship between customized services (CS) in supplier relationship management (SRM) and delivery process (DP) in supply chain performance (SCP).	Supported
H_{20}	There is a relationship between collaboration (Col) in supplier relationship management (SRM) and delivery process (DP) in supply chain performance (SCP).	Supported

H_{21}	There is a relationship between eco design (ED) in internal supply chain management (ISCM) and delivery process (DP) in supply chain performance (SCP).	Supported
H_{22}	There is a relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and delivery process (DP) in supply chain performance (SCP).	Supported
H_{23}	There is a relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and delivery process (DP) in supply chain performance (SCP).	Supported
H_{24}	There is a relationship between provision of customized services (PCS) in customer relationship management (CRM) and delivery process (DP) in supply chain performance (SCP).	Not Supported
H_{25}	Knowledge management practices moderate the relationship between customized services (CS) in supplier relationship management (SRM) and plan process (PP) in supply chain performance (SCP).	Not Supported
H_{26}	Knowledge management practices moderate the relationship between collaboration (Col) in supplier relationship management (SRM) and plan process (PP) in supply chain performance (SCP).	Not Supported

H_{27}	Knowledge management practices moderate the relationship between eco design (ED) in internal supply chain management (ISCM) and plan process (PP) in supply chain performance (SCP).	Not Supported
H_{28}	Knowledge management practices moderate the relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and plan process (PP) in supply chain performance (SCP).	Not Supported
H_{29}	Knowledge management practices moderate the relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and plan process (PP) in supply chain performance (SCP).	Not Supported
H_{30}	Knowledge management practices moderate the relationship between provision of customized services (PCS) in customer relationship management (CRM) and plan process (PP) in supply chain performance (SCP).	Not Supported
H_{31}	Knowledge management practices moderate the relationship between customized services (CS) in supplier relationship management (SRM) and source process (SP) in supply chain performance (SCP).	Supported
H_{32}	Knowledge management practices moderate the relationship between collaboration (Col) in supplier relationship	Supported

	management (SRM) and source process (SP) in supply chain performance (SCP).	
H_{33}	Knowledge management practices moderate the relationship between eco design (ED) in internal supply chain management (ISCM) and source process (SP) in supply chain performance (SCP).	Supported
H_{34}	Knowledge management practices moderate the relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and source process (SP) in supply chain performance (SCP).	Supported
H_{35}	Knowledge management practices moderate the relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and source process (SP) in supply chain performance (SCP).	Not Supported
H_{36}	Knowledge management practices moderate the relationship between provision of customized services (PCS) in customer relationship management (CRM) and source process (SP) in supply chain performance (SCP).	Not Supported
H_{37}	Knowledge management practices moderate the relationship between customized services (CS) in supplier relationship management (SRM) and make process (MP) in supply chain performance (SCP).	Supported

H_{38}	Knowledge management practices moderate the relationship between collaboration (Col) in supplier relationship management (SRM) and make process (MP) in supply chain performance (SCP).	Not Supported
H_{39}	Knowledge management practices moderate the relationship between eco design (ED) in internal supply chain management (ISCM) and make process (MP) in supply chain performance (SCP).	Not Supported
H_{40}	Knowledge management practices moderate the relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and make process (MP) in supply chain performance (SCP).	Not Supported
H_{41}	Knowledge management practices moderate the relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and make process (MP) in supply chain performance (SCP).	Supported
H_{42}	Knowledge management practices moderate the relationship between provision of customized services (PCS) in customer relationship management (CRM) and make process (MP) in supply chain performance (SCP).	Supported
H_{43}	Knowledge management practices moderate the relationship between customized services (CS) in supplier relationship	Not Supported

	management (SRM) and delivery process (DP) in supply chain performance (SCP).	
H_{44}	Knowledge management practices moderate the relationship between collaboration (Col) in supplier relationship management (SRM) and delivery process (DP) in supply chain performance (SCP).	Not Supported
H_{45}	Knowledge management practices moderate the relationship between eco design (ED) in internal supply chain management (ISCM) and delivery process (DP) in supply chain performance (SCP).	Supported
H_{46}	Knowledge management practices moderate the relationship between internal environmental management (IEM) in internal supply chain management (ISCM) and delivery process (DP) in supply chain performance (SCP).	Not Supported
H_{47}	Knowledge management practices moderate the relationship between understanding customer preferences (UCP) in customer relationship management (CRM) and delivery process (DP) in supply chain performance (SCP).	Not Supported
H_{48}	Knowledge management practices moderate the relationship between provision of customized services (PCS) in customer relationship management (CRM) and delivery process (DP) in supply chain performance (SCP).	Supported

4.13 Summary of Chapter

This section of the study has covered the results drawn from the analysis of collected data from the respondents related to the moderating role of KMP between SCMP and SCP. Descriptive data is presented by using SPSS where important variables related to the respondents' profiles were described, whereas PLS-SEM analysis was used to check the validity and reliability of the instrument. Bootstrapping techniques were used in PLS-SEM to investigate the hypothesis test. Overall, results from the analysis reflected that the constructs in the instrument were adequate and the values of convergent and discriminant validity along with reliability test confirmed this conclusion. The test of SEM was followed by the test of measurement model. The upcoming chapter explains the results along with appropriate discussion and evidence from the literature where required. The final chapter covers the conclusion of the study with implications for practitioners, researchers and policy makers.

Chapter 5: Discussion

5.1 Introduction

In order to understand the connection between the relationship between SCMP, KMP and SCP, this chapter provides a detailed evaluation and discussion of all the research results of this report. Discussion is one of the most significant yet challenging sections of the research paper. According to Rucker (2016a), discussion in a research paper provides an opportunity to researchers to explore the variant dimensions to which the results of collected data point along with relating the findings of their research with the previous findings presented in the literary analysis (Rucker, 2016b). Discussion of the research findings enables researchers to look into the topic following a new perspective in order to extract ideas from the study coupled with comparing and contrasting it with the literature.

This study investigated the moderating function of KMP in the SCP by analyzing many phases of SC process in the automobile sector of Pakistan. To be more specific, the major variables of this study were SRM, CRM, internal supply chain drivers, KMP along with SCP, all of which have been considered. Furthermore, this research has been conducted in order to understand that KMP has a great effect on all supply chain practices, which eventually yields an improved SCP, while being focused on gaining a competitive advantage, and ensuring long-term sustainability and stability in the ever-growing market.

This study model was chosen with an aim to conduct the study included the SCMP which are SRM, ISCM system and CRM as independent variables. SCP has been presented as a dependent variable whereas the KMP has been the moderator. Within SRM, two aspects were studied: customized services and collaboration. The second variable, which is ISCM, has taken into account eco design as well as internal environmental management. Considering CRM, provision of customized services and understanding of customer preferences have been examined.

The interpretative review of the findings of the present study has been clarified in this section along with relating the similarities and differences of the results to the literary research. The chapter has been divided into five sub-sections which have discussed the impact of SRM, ISCM and CRM on the SCP where the moderating role of knowledge management has been investigated, respectively.

5.2 SRM and SCP

The first relationship which has been tested in the present study is between two determinants of SRM and four processes of SCP.

The existence of a relationship has been examined between customized services and plan process, customized services and source process, customized services and make process, and customized services and delivery process along with extending the testing of the relationship between collaboration and all the related processes of SCP.

Following the results of Li and Ragu-Nathan (2006) the analysis investigated the relationship between supplier relationships and SCP, who have identified organizational success and vitality of SCP as an aftereffect of effective SRM. The analysis of results has clearly revealed a positive relationship between customized services and collaboration with plan process depicting that businesses which tend to increase the provision of customized services and collaboration with their suppliers, plan their processes appropriately, due to the expected variation in the requirements or demands of the suppliers. So, effective planning has a positive impact when a high level of customization and collaboration with suppliers are being practiced by businesses or they are getting their suppliers involved in the planning process. According to the strategic partnership and amalgamation of businesses with suppliers in the planning process fosters mutual efforts towards solving business problems, emphasizes mutual planning considering the shared benefits for the

organizations and suppliers, while leading to long-term associations. Besides that, Min and Kim (2012) revealed that the amalgamation of suppliers into the design phase or planning process may yield cost-effective alternative choices for the businesses and aid in choosing the best designs through considering multidimensional perspectives, opinions and criticism, which leads to an effective and well-performing supply chain.

Akintoye (2013) have revealed that the supplier relationship approach is also considered time and resources efficient whereas the integrated approach provides a broader and multidimensional view and, hence, eliminates wasteful time as well as efforts which might hinder performance. Deficiencies in building long-term relationships with the suppliers. Most companies, especially those who do not perceive the need for SRM, are threatened by their lack of integration with other supply chain activities. Following the compliance of customized services and collaboration, the results of the present study have found a positive relationship between customized services and source process of SCP which support the arguments which have been put forth in previous studies (Autry & Golicic, 2010; Griffith & Zhao, 2015; Li & Ragu-Nathan, 2006; Rezaei Somarin, Asian, Jolai, & Chen, 2018). The positively significant relationship between customized services and collaboration with source process have revealed that when businesses follow a customized approach to facilitate their suppliers, the ability of business in terms of inventory management as well as infrastructural sourcing increases. The direct association has also highlighted that the process of material acquisition and handling supplier payments also lacks standardization and hence is positively impacted due to customized offerings. The same results were recorded for make and delivery process. In simpler words, upon testing the relationship between customized services and collaboration with all the processes of SCP (plan process, source process, make process and delivery process), a positively associated relationship has been found

which means that customized services and collaboration enhances the complete output of SC process being followed by a business. The researchers Li and Ragu-Nathan (2006) further stated that an effective SCP process generates viable profitability and financial assets for the organization if the suppliers are provided with customized services after gaining understanding of their preferences and needs. The results of this study are reasoned and well organized through findings (Li & Ragu-Nathan, 2006) where supplier relationship and customized services and collaboration has clearly been shown to have a beneficial correlation with the success level of a company's supply chain operation. Rezaei Somarin et al. (2018) has made another major contribution to the study of the motivating factors of the supply chain considering the performance measures and aspects of buyer–supplier partnerships, specifically customized services, within small and medium industries. The researchers highlighted SRM as the functional parameter of performance of supply chain process of an organization which aligns with the findings of the present study.

5.3 ISCM and SCP

The second relationship which has been tested in the present study is between two determinants of ISCM and four processes of SCP.

The existence of a relationship has been examined between eco design and all processes of SCP along with testing the association between internal environmental management and all processes of SCP. Although external factors and resources are important, the production and delivery of a quality product cannot be guaranteed when there has been a lack of stability of the internal supply chain within an organization, referring to strengthening of the internal processes. A few important constituents of ISCM include optimized internal processes, strategic and in-depth planning, production and marketing aspects, comprehensive management, human capital management and adoption of a proactive approach against unforeseen circumstances; all of which

combine to define the efficiency, improved ability and affectivity of an organization's SCP (Virpi Turkulainen & Mikko Ketokivi, 2012). Virpi Turkulainen and Mikko Ketokivi (2012) stated that ISCM refers to the achieved integration level among the varying organizational components, processes and activities; following which, in the current research, the two dimensions of internal sustainable development and eco-design were discussed.

5.4 CRM and SCP

The third relationship which has been tested in the present study is between two determinants of CRM and four processes of SCP.

The existence of a relationship has been examined between understanding customer preferences and all processes of SCP along with testing the association between provision of customized services and all processes of SCP. Understanding customer preference has shown a positive association with plan, source, and delivery process except make process. Following the previous results, the second aspect of CRM, provision of customized services, is positively associated only with source process; however, plan, make and delivery process remained insignificant statistically.

Since the concept of CRM has dominated all the industries where the relationship between customers and suppliers is another significantly important constituent of SCMP, the present study has clearly identified it as one of the primary contributors to SCP where a very high level of consistency has been witnessed in terms of determining the positive relationship between CRM aspects and SCP. The study has partially justified the findings of previous studies stating that CRM involves building and maintenance of good and long-term relationships with customers with an ultimate focus on fulfilling their needs (Nyadzayo & Khajehzadeh, 2016). Besides that, the results have backed the notion that CRM system proves to be highly useful in order to get an in-depth

insight about the tracking, preferences, needs, likes and dislikes all centered on customers where the relevant departments of the business have a greater extent of reliability on such systems to track and structure their strategic moves, which are based on customers' information, and fulfil the expectation through using the purpose-built tool of CRM (O'donnell et al., 2020). It is not confined to outperforming the industrial competition but also it has been integrated into other SCMP in order to gain a breakthrough into the industry; the breakthrough is based on customer-focused needs while improving the financial metrics of an organization, hence, necessitating the need of integration of business and supply chain practices to avoid the complexity which a standalone constituent might have faced (O'donnell et al., 2020). The insignificant relationships of understanding customer preferences with make process and provision of customized services with plan, make and delivery process could be due to the disconnect of the industry with its customers. If we take a deep look at the dynamics of the industry, it clearly shows that most of the manufacturers, which are also covered in this study, work on a small scale. In most of the organizations, a formal structure of SCM which results in reduced understanding of customer requirements and hence a lack in providing customized services.

5.5 Moderating Role of KMP between Various Stages of Supply Chain and SCP

This section has presented the results of testing the relationship between SRM (first variable of supply chain practices in the study), ISCM (second variable of the study) and CRM (third variable of SCMP in the study) and SCP considering the moderating role of KMP in all the above-mentioned tested relationships. The moderation analysis has been conducted by following the moderation strategies introduced by (Hair et al., 2016).

The results of moderation analysis show a significant moderation of KMP between customized services and source process, collaboration and source process, eco design and source process, internal environmental management and source process, customized services and make process, understanding customer preferences and make process, provision of customized services and make process, eco design and delivery process, and provision of customized services and delivery process, whereas all other moderations remained insignificant.

Within the context of knowledge management, Benton and Magnier-Watanabe (2014) conducted a research and highlighted that integrating relationships between companies and their stakeholders rely on patterns of information or knowledge sharing while ensuring to keep the products, plans and capabilities on the same node. In addition, review-based reports have significantly contributed to the convergence of supply chain activities with SCP , business process management and knowledge management, which covered a huge and wide perspective by investigating people, processes and numerous functional or operational aspects (Akyuz & Erkan, 2010; Ansari & Kant, 2017; Meixell & Luoma, 2015; Roy & Schoenherr, 2018; Touboulic & Walker, 2015). The findings of the current research contrast literary studies where KMP and plan process have been found to be directly associated revealing that increased indulgence of businesses into planning their processes, to accomplish their supply chain operation at a high level of efficiency enriches their knowledge base as being supported by research and development activities (Roy & Schoenherr, 2018). The results of the study considering the moderation aspects are unique because no previous studies focused on examining the role of KMP as a moderator of SCMP and SCP, which was identified as a literary gap.

SRM and organizational performance are interrelated where the collaboration of suppliers of a business is considered to be a vital contributor towards the improved SCP level leading to

improved business performance (Fredendall & Hill, 2016). SC from the viewpoint of collaboration and the central issue of interest to researchers has been coordination ; they identified the collaborative approach amongst the buyers and sellers specifically as being related to determining the performance level of supply chains (Maestrini, 2017). in the current era of 2000s, many studies (Chan et al., 2018; Reham Eltantawy, Antony Paulraj, Larry Giunipero, Dag Naslund, & Abhinay A Thute, 2015; Esmaeili & Zeephongsekul, 2010; Heydari et al., 2017; Sarkar, 2016) have also validated the extent to which coordination schemes influence decisions regarding supply chain integration along with its impact on SCP (Veera Boonjing et al., 2015). These studies have formulated the basis of the present research, encouraging the researcher to examine the relationship of collaboration of suppliers with SCP considering the moderation of knowledge management. Although, the concept of SCM amalgamates a huge network while encompassing all the internal and external components where collaborative and coordinating approaches towards the business stakeholders are considered the bridges to eradicate the gap in information flow, and lead the organization towards a progressive and developmental track (Christopher et al., 2016), outcomes of this research have clearly revealed that collaboration is negatively associated with the two processes of SCP (plan process and make process); however, source process and delivery process have clearly shown a positive association with collaboration (Chan et al., 2018; Heydari et al., 2017).

The results of the research are quite unique because most of the research conducted in this domain so far have focused on studying the impact of buyer–supplier relationship on improved market standing and competitive edge. However, considering the success of SC by improving the relation between seller and buyer, not much investigation has been conducted out through considering knowledge management approaches (Touboulic & Walker, 2015). Overall, the results

have revealed that KMP does moderate the relationship of SRM practices with SCP. This study has certainly posited collaboration of businesses with their suppliers as a significant approach; however, contradicting results have countered the impact of all the previous studies which have demonstrated it as an excellent strategy to increase the level of the business and its stakeholders (Eltantawy et al., 2009; Wang et al., 2010).

The relationship between ISCM (the second variable of the study's supply chain practices) and SCP has also been evaluated, taking into account the moderating function of KMP in all of the relationships tested above. The moderation analysis has been conducted by following the process introduced by(Hair et al., 2016). The outcomes of this research considering the positive association of knowledge management with performance have partially supported the arguments which were put forth by (Pérez-Agote, 2000), it notes that globalization, increased competition and the transformation of developed economies from natural resources to intellectual capital have greatly contributed to the notion of intellectual ability in the current information age or strength of an organization which is termed as knowledge management. As a strategy to achieve competitive advantage in the market, knowledge-based competencies have been adopted.

The study has also partially justified the findings of previous studies stating that CRM includes establishing and sustaining strong and long-term customer relationships with an ultimate focus on fulfilling their needs (Nyadzayo & Khajehzadeh, 2016). Besides that, the results have backed the notion that a CRM system proves to be highly useful in order to get an in-depth insight about the tracking, preferences, needs, likes and dislikes of customers, where the relevant departments of the business have a greater extent of reliability on such systems to track and structure their strategic moves, which are based on customers' information and fulfilling their expectation through using the purpose-built tool of CRM (M. J. O'Donnell et al., 2016). It is not confined to outperforming

the industrial competition but also it has been integrated into other SCMP with an aim to achieve a breakthrough into the industry based on customer-focused needs while improving the financial metrics of the organization; hence, it necessitates the need for integration of business and supply chain practices to avoid the complexity which a standalone constituent might have faced (M. J. O'Donnell et al., 2016) . In brief, the moderation analysis has clearly revealed that KMP partially moderates the relationship between SCMP and SCP as some of the moderations remained significant whereas others were insignificant. In fact, most of the moderating hypotheses remained insignificant in this study for which due reasons are also given.

Chapter 6: Conclusion

6.1 Conclusion

Conclusion is the last but one of the most significant parts of the whole research where the presented argument is restated along with reiterating the evidence which supports or contradicts the argument. Besides that, the chapter helps readers understand the purpose of the research along with stating its practical implications in order to provide a reason why the research matters for the readers. In the present research, this chapter of conclusion has detailed a summarized synopsis of the research findings providing support to explain the implications for practitioners. Besides covering the key findings of the study, this chapter has covered theoretical implications, contributions to knowledge, research limitations and potential research areas for the future.

6.2 Key Findings and Implications

Literary analysis has revealed that most of the research conducted within the domain of SCMP has been on the interdisciplinary origination of SCMP and perspectives, the conceptual confusion, and the evolutionary nature of SCM concept encompassing the impact of SCMP on the sustainability of an organization (Heckmann et al., 2015; Rajeev, Pati, Padhi, & Govindan, 2017; Touboulic & Walker, 2015). In spite of the contribution of strengthened buyer-supplier relationships CRM or ISCM in improving the performance of supply chain process through considering knowledge management approaches, not much study was carried out., (Touboulic & Walker, 2015). Similarly, all the research and studies which have been conducted in the domain of knowledge management present a general perspective of detailing the impact of KM strategies on the output of an organization or SCP (Handfield & Cousins, 2015; Sangari et al., 2015). Despite the increased attention being paid to SCM and its various aspects, the existing studies did not offer much about the relationship between the numerous levels or relative stages of a supply chain and

its relevant performance through considering the mediating and moderating role of KMP. Hence, it left a research gap for the researcher to extend the studies in this domain by studying the impact of various stages of supply chain on SCP where KMP was considered a moderating variable.

The main objectives of the present research included an investigation of the impact of SCM tiers which include supplier, customer relationship and ISCM on the SCP. Besides that, the research aimed at measuring the moderating impact of KMP on the relationship of SRM, ISCM and CRM and SCP.

SCP is the central controlling factor of the whole supply chain process (Paolo Taticchi, Flavio Tonelli, & Luca Cagnazzo, 2010) . The present study has identified that scholars, specialists and business administrators studied the determinants of performance within the framework of SC by considering different supply chain management strategies which included integrated procurement approach (Burt, 1984; Guerrero & Kirkpatrick, 2001), supplier's amalgamation (Autry & Golicic, 2010; Griffith & Zhao, 2015), CRM perspectives (Behrad & Mozaffari, 2016; Kasemsap, 2018) and ISCM (Wong et al., 2011) while ensuring strategic alliances (Dyer et al., 1998; Lewis et al., 1997) among these processes. Besides that, to a great degree, review-based articles have led to the convergence of supply chain activities with SCP, information technology, business process management and knowledge management, which covered a huge and wider perspective by investigating people, processes and numerous functional or operational aspects (Akyuz & Erkan, 2010; Ansari & Kant, 2017; Meixell & Luoma, 2015; Roy & Schoenherr, 2018; Touboulic & Walker, 2015).

The outcomes of this research have shown that by maintaining the pace of creation, sharing, storage and application of knowledge databases with an aim to achieve high place the industry through optimized processes and increased performance ratio, KMP has contributed to the

efficiency and skill levels of a supply chain. The findings of the study favoring the moderating role of KMP have revealed that automobile businesses do consider knowledge management a tool, which acts strategically while being focused on maximization of intellectual capital (Ansari & Kant, 2017), productivity improvement (Wiig & Jooste, 2003) , and innovative and progressive approach (Pitt & MacVaugh, 2008), increased agility and, lastly, improved operational efficacy (Dove & Dove, 2003; Hult et al., 2004) support the highlighted aspects of all the previous researchers.

Considering the highly complex, dynamic and continuously evolving nature of SRM, not ignoring the considerable expansion of distribution channels (Smith, 2013), there is a dire need for the automobile companies of Pakistan to understand the comprehensive yet highly challenging and critical nature of buyer–supplier relationship, their collaboration and relative connectivity to the organization's competitive edge, sustainability of business in the market, SCP and organizational performance (Akyuz & Erkan, 2010; Azevedo et al., 2017). Furthermore, the companies need o consider internal SCP to reinforce operational and functional structure providing support to optimize the positive impact of external advantageous factors.

Although the present research has put forth unique results within the context of considering moderating role of KMP between SCM and SCP, the results have validated that successful businesses do realize the importance of creating, transforming, disseminating and utilizing knowledge in order to accomplish the envisioned goals and objectives and, hence, consider knowledge management as the primary driver of organizational performance (Bosua & Venkitachalam, 2013). Furthermore, it has been identified that knowledge management assists the decision makers and other management representatives to enhance their knowledge capacity by providing a structured guideline of how to develop and explore the knowledge base, think to

innovate, disseminate the learned knowledge and eventually succeed to automate the company's operations and functional domains (Bosua & Venkitachalam, 2013).

The unique research findings have authenticated the point of view of (Jali, Abas, & Ariffin, 2017; Kim & Netessine, 2013; Lindel, Hanson, Antezza, & Buhmann, 2018) that although a lot of studies have been presented in the subject's domain, validating the existence of connecting dots among supply chain, knowledge-centered approach and SCP, there are several aspects and questions that are still unanswered – one of which has been to study the moderating role of KMP between SCMP and SCP, which is covered in the present study.

6.3 Contribution to the Body of Knowledge

This research has added its contribution in literature in a significant manner. Not only has it provided future scholars and researchers a ground to enhance the research in the field of SCP. SCM, and KM but it has also identified a significant connectivity between the concepts through investigating a moderation analysis.

The previous studies that have been mentioned do recognize the vitality of SRM, customized services and CRM by individually connecting them to SCP as well as to organizational performance (Akyuz & Erkan, 2010; Ansari & Kant, 2017; Chan et al., 2017; Handfield & Cousins, 2015; V. Kumar & W. Reinartz, 2018; Maestrini, 2017; Mumtaz & Ali, 2018; Paulraj, 2017; Roy & Schoenherr, 2018). Likewise, the researchers delved into considering the part of KM for the success of organizations and its usability for enhancing SCP. However, in the past, the moderating function of knowledge management was not studied in the sense of SCM and SCP. For example, (Marra et al., 2014) explored the interrelationship of internal as well as external knowledge-based approaches linked with the supply chain processes of an organization with an aim to assess the performance of an organization. The researchers adopted a basic knowledge

management model by considering varying aspects of knowledge development, storage and sharing to enrich the knowledge-based assets of the company and to improve its intellectual capacity to achieve a competitive advantage in the market. The researchers adopted a case study approach where only one Italian rubber manufacturer company was studied. The research revealed a positive link between the external knowledge-based approaches and organizational performance where buyers, competitors, suppliers and subcontractors were found to be vital contributors to the improved operational performance of the business. However, the research lacked the dynamic capabilities of knowledge-based approaches and knowledge flows leaving a research gap to be filled by future researchers. The research also recommended that the moderating impact of KMP on the SCP of an organization be studied through considering multiple companies followed by strong and reliable empirical evidence.

As the current study aims to explain the relationship between SCMP and SCP, taking into account the moderating influence of KMP,, the study adds to the literature by considering KC, KS, KS and KA as first-order variables and KMP as a second-order variable, which was used as moderator of relationship between the determinants of SCMP and SCP aspects, when studied within the context of automobile companies of Pakistan. In view of this, the findings are based on the views or experiences of the CEOs of Pakistan's selected car companies.

Most of the research which has been conducted within the context of understanding the significance and vitality of SCP and their effect on output level manufacturing businesses, other than the automobile sector of Pakistan. Likewise, no study has taken into account the selected variables from the perspectives of CEOs. Likewise, within the context of KMP, a lot of literary or theoretical studies have been conducted which leave a gap for the researcher to consider knowledge management as a moderator and investigate its role in enhancing the SCP of automobile

businesses. Since the automobile sector is a less focused on domain, the researcher was unable to find any study that studied the impact of KMP on SCP as a moderator in the automobile sector of Pakistan. In brief, the present study has offered a literary breakthrough to future researchers to start considering knowledge management, SCMP and SCP from a broader and practical perspective in Pakistan.

Although the three domains, which include SCM, knowledge management and SCP, are individually highly researched areas, many researches are directed to understand the association between SCM and SCP.A new approach to justify the relationship between SCMP and SCP has been introduced in the present research , as identified in previous studies, from the lens of moderation of knowledge management. The findings of the current study have obviously supported and authenticated the relationship between the independent and dependent variable previously established, which can help professionals increase the quality performance of their supply chain operation. Moreover, the research has clearly evidenced the practical notion that, when businesses adopt KMP to strengthen their supply chain, the negative performance determinants are moderated leading to a positive performance outcome.

The research has a few unique findings which contradicted the results of previous studies due to the intervention of KMP. For example, according to (Kroes & Ghosh, 2010), the strategic partnership and amalgamation of businesses with their suppliers in the planning process fosters mutual efforts towards solving business problems, emphasizes mutual planning considering the shared benefits of the organizations and suppliers, while leading to long-term associations. Besides that, (Min & Kim, 2012) revealed that the amalgamation of suppliers into the design phase or planning process may yield cost-effective alternative choices for the business and aid in choosing the best designs through considering multidimensional perspectives, opinions and criticism, that

contributes to a productive and well-performing supply chain. The interpretation of the findings of this study, however, has clearly contradicted the earlier studies. by identifying a negative relationship between customized services and plan process, depicting that the businesses which tend to increase the provision of customized services to their suppliers become unable to plan their processes due to the expected variation in the requirements or demands of the suppliers. So effective planning is negatively impacted when a high level of customization is being practiced by businesses or by getting the suppliers involved in the planning process. The results of this study have highlighted unique results which do not support the findings of the mentioned literary studies. Furthermore, Li and Debo (2009) found a constructive relation b/w supplier relationship and customized services if taken together in the sense of a company's supply chain operation output standard . By contrast, upon testing the relationship between customized services and all the processes of SCP (plan process, source process, make process and delivery process), a negatively associated relationship has been found in this study, this means that the overall output level of the supply chain system being pursued by a company is decreased by personalized services. The outcome of the latest review has clearly supported most of the direct relationship results which have been identified in the research of Western countries supporting the supply chain practices to be implemented in Pakistan. For example, the research shows that KMP's real influence on the supply chain experienced in Western companies might be replicated in the automobile sector of Pakistan if implemented. Besides that, the study also supports the need to widen the scope of research in Pakistan with a specific focus on identifying the practical implications and affectivity of knowledge management to strengthen the supply chain of businesses in Pakistan.

6.4 Limitations of the Study

The current research, though intended to understand the moderating role of KMP on SCMP and SCP, has made an important influence to previous study and, hence, has framed a guideline for professionals to take into account such steps could increase the level of consistency of that supply chain there are certain limitations to the study which have confined its scope.

The effects of the results of this study are important to Pakistan's automotive sector which is a developing country; hence, the implications might differ if the research was conducted within a developed country. Likewise, since the study has studied only the automobile sector of Pakistan, so the results cannot be applied to other sectors of the same country or the same sector in other countries; the results are specific to the automobile businesses of Pakistan.

In this study, 53 participants took part in the research with 100% response; however, all of the participants were CEOs of automobile businesses, which means that results of the study are confined to the opinions and views of only CEOs of the companies. Since the views of managers or employees of the relevant departments were not gathered, to evaluate the variables from a wider viewpoint , it cannot be inferred that the results of the study truly reflect the moderation of KMP on SCM and SCP. The results might differ if the sample and sample size were increased; hence, the researcher might achieve more clear knowledge the association of selected variables of the study.

Cross-sectional data is another significant limitation of the study. The data has been collected only at one point in time without considering any situational factors, behavioral notions and subjective aspects, which limits the study. It is quite possible that results might differ and be more detailed if the data were collected at different timeframes when a proper SCM system coupled with a knowledge management system may have been implemented in those firms. So,

the comparison of before and after the implementation of systems could produce deeper understanding.

6.5 Recommendations for Future Research

The essential relationship between SCMP and the purpose of understanding the influence of knowledge management practices has been considered in this study. .. Besides the identification of certain aspects where this research has contributed in theoretical and practical terms, various limitations have also been highlighted. The identified research limitations have created a need for future researchers to bridge the gap and widen the scope of their studies. A few possible extensions paving the pathway for the future researchers are as follows.

Although the presented study has identified the existence of a moderating impact of KMP between SCMP and SCP. However, with an aim to avoid the boundaries of research, future research studies are advised to consider real-time performance data of the businesses instead of relying merely on self-reported measures.

Besides that, the current study adopted a quantitative approach to data collection through using a questionnaire, which means that the study lacked subjectivity. To resolve this restriction and to extend the reach of study, future researchers can adopt a mixed method approach following the pragmatism paradigm where two techniques of collecting data whether quantitative or qualitative can be adopted. In addition, the present study considered the viewpoints and opinions of CEOs only, which might lead to biasedness; this can be eradicated in future research by involving the employees and managerial staff of the businesses. Doing so will not only help in analyzing the vitality of the relationship between the selected variables, but also aid in expanding the generalizability of the results of the study. Likewise, doing so will enable future researchers to consider situational factors that enhance or hinder the effectiveness of the relationships.

In addition, the present study has considered the moderating impact of knowledge management this leaves space for future researchers to understand relationship mediation in order to achieve clear understanding of relationship between variables. The relationships can further be validated by comparing with them with the results of international studies in order to generalize the connectivity between SCM, knowledge management and SCP.

6.6 Concluding Remarks

The integration of SCMP, knowledge management perspectives and SCP are emerging concepts in Pakistan. A lot of businesses have already adopted this strategy and have SCM departments in their organizations in order to gain competitive advantage. Likewise, the companies have invested in enriching their knowledge databases to cope with the latest market trends and forecast the future direction of their businesses strategically. This research has bridged the gap which has been identified in the existing literature pertaining to SCM, SCP measures along with the knowledge management domain through following an empirical approach to achieve an understanding of the effect of a whole range of supply chain-related activities on the quality level of the subject area in the sense of KMPP's moderating role. Findings of the study have clearly identified SRM, ISCM and CRM as the functional parameters of SCP where knowledge management is identified as the relationship moderator; however, there is a need to further extend the scope of the study by expanding the cultural, industrial and practical foci of the study with an aim to achieve clear knowledge of the subject domain and utilize the generalized information to formulate proactive supply chain and knowledge management strategies of businesses.

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Appendix 01: Sample Questionnaire

Below is a preview of the questionnaire used in this study;

AIM:

To determine the moderating role of knowledge management activities in enhancing the efficiency of the supply chain by comparing different supply chain phases. A Case of the Pakistani Automobile Industry.

PERSONAL AND PROFESSIONAL DETAILS

Age o Below 30 o 31 – 40 o 41 – 50 o Above 51	Gender o Male o Female	Qualification o Graduation o Masters o M. Phil o PhD o Others: _____
Company Name: _____	Size of the company o Small o Medium o Large	Type of the company o Local o International o Multinational o Global
Number of employees o Less than 100 o 100 – 200 o 201 – 300 o 301 – 400 o 401 and Above	International exposure o Yes o No	

For each of the following, point out your satisfaction level with the statement.	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Knowledge **Management Practices (KMP)**						
	Knowledge Acquisition Process					
1	Problems, failures, and doubts are discussed openly in our institution.					
2	Members are assigned to new projects and programs, depending on their know-how and availability.					
3	Members are assessed and rewarded for developing new knowledge and for testing new ideas.					
4	At our learning groups, members can discuss their work experiences and strategies.					
5	Important issues are explored, using scenarios or simulation techniques.					
	Knowledge Dissemination Process					
6	There are communities of practices or learning groups to share knowledge and experiences.					
7	Organizational culture helps to encourage information flows and improve employees' communication.					
8	There are frequent, well-distributed internal reports that inform employees about the firm's progress.					
9	There are formal mechanisms that guarantee best practices to be shared in the firm.					

10	There are projects with interdisciplinary teams to share knowledge.					
	Knowledge Storage					
11	Organizational knowledge is codified and documented in manuals or other types of devices.					
12	There are databases that allow employees to use knowledge and experiences that have previously been loaded into the databases.					
13	It is possible to access knowledge databases and documents through some kind of internal computer network.					
14	There are databases with updated information about customers.					
15	Databases are frequently updated.					
	Knowledge Implementation Aspects					
16	All the employees have access to relevant information and key knowledge within the firm.					
17	There are interdisciplinary teams with autonomy to apply and integrate knowledge.					
18	Suggestions from employees, customers or suppliers are frequently incorporated into products, processes or services.					

19	Knowledge that has been created is structured in independent modules, which allow for its integration or separation to create different applications and new usages.					
20	It is quite common to use external experts with experience on a specific subject in order to solve particular problems.					
Internal Supply Chain Management (ISCM)						
	Eco Design					
21	Design of products for reduced consumption of material/energy.					
22	Design of products for reuse, recycle, recovery of material, component parts.					
23	Design of products to avoid or reduce use of hazardous products.					
24	Design of processes for minimization of waste.					
	Internal Environmental Management					
25	Special training for workers on environmental issues.					
26	Existence of Pollution Prevention Programs.					
27	The internal performance evaluation system incorporates environmental factors.					
28	Generate environmental reports for internal evaluation.					

29	Cross-functional cooperation for environmental improvements.					
Supplier Relationship Management (SRM)						
	Customized Services					
30	Suppliers can provide customized products/services for our company to enhance our relationships.					
31	We can effectively classify our suppliers and then demand our target suppliers to provide customized products/services.					
32	We can learn valuable knowledge from our existing suppliers.					
33	We can maintain close interactions with our suppliers to establish long-term relationships.					
34	We can effectively identify and acquire the correct suppliers.					
	Collaboration					
35	We are willing to cooperate with our suppliers to improve the logistics and shipping processes.					
36	We are willing to cooperate with our suppliers to improve the production and operation processes.					
37	We are willing to cooperate with our suppliers to improve the quality of products/services.					

38	We are willing to cooperate with our suppliers to improve the inventory management.					
Customer Relationship Management (CRM)						
	Understanding Customer Preferences					
39	We understand what kinds of products customers like.					
40	We understand what kinds of services customers like.					
41	We understand our customers' preference on marketing methods.					
	Providing Customized Services					
42	We can effectively identify and acquire the right customers.					
43	We can effectively segment and classify customers in order to provide customized products and services for our target customers.					
44	We can learn valuable knowledge from our existing customers.					
Supply Chain Performance (SCP)						
	Plan process					
45	My organization performs very well in demand and supply planning and management activities.					

46	My organization performs very well in planning activities for the entire supply chain including source, make, and delivery.					
47	My organization performs very well in gathering customer requirements, collecting information on available resources, and balancing requirements and resources to determine planned capabilities and resource gaps.					
	Source process					
48	My organization performs very well in the ordering and receipt of goods and services from suppliers.					
49	My organization performs very well in managing inventories, capital assets, and incoming products.					
50	My organization performs very well in identifying and selecting supply sources as well as managing supplier networks and supplier agreements					
	Make process					
51	My organization performs very well in executing production or manufacturing activities.					
52	My organization performs very well in scheduling production activities and managing production performance as well as in-process products.					

53	My organization performs very well in managing production equipment and facilities.					
	Delivery process					
54	My organization performs very well in customer order management activities.					
55	My organization performs very well in warehouse management activities from receiving and picking products to loading and shipping products.					
56	My organization performs very well in routing shipments, selecting carriers, product transportation, as well as product reception and verification at the customer site.					