

Predicting supply chain effectiveness (SCE) through Performance Management Systems (PMSs): Evidence from Logistic Services in the UAE

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Abstract

The current study set out to look into how performance management systems (PMS) might help logistic services in the United Arab Emirates achieve supply chains effectiveness (SCE). Using a mixed method approach, this study employed the self-administered questionnaire and semi-structured interviews to investigate the connections between SCE and its precursors. Examining how goal alignment, networking commitment, and decision-making play a part in accomplishing the SCE was the focus of the quantitative aspects. The research used a quantitative cross-sectional survey to identify the key metrics that were used in management systems. Data were gathered through online questionnaires. Through a deliberate selection strategy, 150 respondents were selected from two eminent private firms in the UAE who were employed in various logistics and supply chain jobs. In order to clarify and augment the quantitative data, fourteen interviews with top level managers from the two case supply chain organizations were undertaken. In essence, the interview questions utilized in this study were designed to discover supply chain management methodologies, trends, practices, and abilities in order to achieve effectiveness. The quantitative section's findings indicated that decision-making, goal alignment, and networking commitment all have a considerable positive influence on SCE. Furthermore, the study concludes that PMSs that are essential to decision-making, goal alignment, and a commitment to networking, as well as other variables such as delivery, cost, flexibility, and quality, have a strong favourable effect on SCE. While the qualitative section's findings suggested that managers highlighted the practices that reflect seven internal characteristics of an organization that are interrelated and must be aligned to be effective, namely strategy, structure, systems, shared values, skills, workforce, and style. The significance of the study includes promoting the creation of a systematic approach for interpreting the supply chain and assessing its relative efficacy while considering the methodological basis regarding the regressions among its aspects and the efficacy of its competitive supply. By combining aspects of a competitive supply chain through SCE, the structure can help supply chain professionals with a better grasp of its complexities. The study's limitations include the challenges faced while collecting data from the government sector and COVID-19 restrictions.

Keywords: *supply chain effectiveness (SCE), logistic services, performance management systems (PMS), decision-making.*

Declaration of Original Content

I declare that, except where noted and credited, the content of this thesis is my work. I further declare that this thesis was created following the regulations and guidelines of the University. No part of the thesis has been submitted as part of any other academic award. The thesis has not been presented to any other educational institution overseas.

All the opinions and views detailed in this thesis are those of the research and in a manner to represent the views of the university.

Signed:

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Chapter 1

INTRODUCTION

Chapter 1: INTRODUCTION

1.1 Introduction

The rapid evolution of the broadly economic systems and the escalating competition promotes the chains of logistics services to adopt decisions regarding the measures used to improve performance and cut costs to allow them focus on their key capabilities (Song et al., 2016). For logistic companies worldwide, supply chain effectiveness (SCE) is regarded as a critical issue (Sobolevskaya 2021). The effective supply chains framework must constantly be improved, which highlights how they differ from general supply chains, in order to be able to effectively manage the enormous variety of logistics services (Williams & Visser 2002). The UAE logistics industry is still establishing to support its position as a global logistics hub, which is enabled by its geographical location and developed infrastructure (Albishri 2018).

Currently, the logistic operations are an integration of the enforcing, planning, and performance management that serve to both satisfy customer needs and provide the main source for strategic collaboration between logistic service companies and forwarders, which, in turn, ensures the effectiveness of the logistic supply chain (Sobolevskaya 2021). The rapidly evolving logistic services have an effect on the supply chain system targets by emphasizing more flexible logistic performance, centralized information technologies, decision-making techniques, the varied range of stakeholders, and planned work operations to meet customer needs of the UAE supply chains (Ibrahim & Al Falasi 2016). Therefore, this study examines the role of performance management systems (PMSs) in the effectiveness of logistic supply chain services in the United Arab Emirates (UAE).

This chapter describes the conceptual foundations of the research as well as the research challenge, objectives, and hypotheses. It provides a summary of the study background, with an emphasis on the supply chain (SC), logistics, and performance management system. Furthermore, the chapter explores the contribution of research to theoretical and empirical knowledge.

1.2 Background of the Study

The supply chain is becoming more complex as a result of growing company sizes, diverse product/service portfolios, and multiple geographic markets to be served (Kamble et al. 2018). In today's globalized world, supply chain management (SCM) is a highly competitive process with considerable risks. Anca (2019) argued that SCs must deal with all of the activities that make up the value chain, which includes all interactions between inbound logistics operations, outbound logistics activities, marketing, sales, and customer service. This value chain is the basis upon which the supply chain structure is established (Frank 2018).

In the UAE, SCs have gained importance as organisations throughout the UAE are battling considerable operational and profitability challenges (Ashai et al. 2007). According to Al-Suwaidi (2011), the 2008/2009 economic downturn had significant implications on the international economy, along with the economy of the UAE. Consequently, SC operations need to become more dynamic due to competitive pressure and global network (Creazza et al. 2010). The field of supply and logistics is vital to the UAE economy and serves as a powerful facet of businesses operating in the country (Frost & Sullivan 2011). According to

the Gulf News (2014), "UAE Logistics Market to be Worth \$27 Billion in 2015," the logistics and transportation industries in the UAE profit from the country's enviable location, sophisticated infrastructure, and non-bureaucratic, liberal administration devoted to the growth of these industries (Delgado 2016; World Bank 2016). The UAE is widely recognized as the Middle East's financial centre. The UAE is the regional industrial growth leader, having achieved remarkable success in building numerous industries such as construction, tourism, finance and insurance, logistics, and education (eGovernment 2012). A significant part of the UAE economy depends on the logistics sector, and complications within that sector might lead to deleterious implications for the businesses, logistical entities, and, ultimately, the UAE economy (Frost & Sullivan 2011).

SCM, as an increasingly important part of modern business, has received a lot of attention in terms of market sustainability and profitability (Arminas 2004). Controlling performance is thus the first step towards the SCs' strategic improvement (Leonzuk 2016). The SC is a management technique that entails preparing, planning, securing, engineering, and transforming raw resources into finished goods or services before distributing them to customers through a variety of distribution channels and intermediaries at the proper time, place, and price, as well as without any harm (Fox et al. 2000). They added that the SCM is a management concept that entails planning, procurement, manufacturing, and turning raw materials into completed products and services.

To compete successfully, organizations look for new business models that will provide a competitive advantage (Elshaer 2021). SCM is one such solution that can assist businesses in improving production processes, lowering costs, and competing successfully in a range of

business situations (Awad & Nassar 2010). Despite experts' and academics' increased emphasis on SCM practices (Tracey et al. 2005), there are still issues with efficiently and successfully applying SCM procedures (Yap & Tan 2012). Many studies have clearly highlighted the importance of implementing performance management strategies in crucial supply chain aspects (Chen & Paulraj 2004; Li et al. 2005; Tan, Lyman & Wisner 2002). Sheridan (1997) called for focusing on the competence and effectiveness of SCs in the early 1990s. He asserted that the idea of SC organizations or entities are anticipated to be incredibly effective in developing key strategic procurement and manufacturing management competencies. Considerable research has been conducted to explain how appropriate performance management features of supply chain assessment, metrics, targets, incentives, and other management mechanisms produce their desired outcomes (Kamble & Gunasekaran 2020; Zaridis et al. 2021). At the very least, performance management systems (PMS) PMS consists of: a planning element, which includes goals that represent stakeholders' expectations and define performance; a component of measurement, such as the performance operationalization metrics a review aspect; which denotes the assessment and feedback of performance data; and a performance-related incentive element, such as bonuses or other extrinsic rewards (e.g. a clear sense of achievement) (Ferreira and Otley 2009; Vieira et al. 2015).

Researchers have investigated how PMSs affect several aspects, including strategic alignment (Dossi & Patelli 2010), marketing and collaboration (Godener & Eric 2004), centralized control (Cruz et al. 2011), and corporate financial performance (Crabtree & DeBusk 2008). These are a few of the anticipated results that most business leaders envision

when they advocate for performance management within their companies (Ferreira and Otley 2009). However, the unexpected consequences of PMSs have received less attention (Franco-Santos et al. 2012). In order to truly measure SC effectiveness, it is imperative to consider multiple dimensions of performance management. It is crucial to assess the operational aspects of SCM using an organization's performance measures because a supply chain has ramifications for organizations (Green et al. 2006). Additionally, Albaloushi and Skitmore (2008) claimed that it is vital to determine which PMS characteristics are connected to the efficiency of SCs, as the conventional supply chain architecture has not taken the strategic supply chain dimensions into account. As a result, this study will add to the body of knowledge and support businesses in recognizing performance systems that enable efficacy as a fundamental component of SC functioning in this competitive world.

1.3 Research Gaps

SCE is a very complex process in a globalized market that entails significant risks (Leonczuk 2016). The world economy, including that of the UAE, was severely impacted by the recent health and economic crises (Albishri 2018). In terms of operations and profitability, organizations in the UAE's logistics cluster face enormous constraints (Ashai et al. 2007). Given its limited manufacturing base, the supply chain and logistics sector plays a crucial role in the UAE economy (Frost & Sullivan 2011). The logistics sector is an important component of the UAE economy, and failures in this sector could have a detrimental impact on the business community, logistics organizations, and the country's economy (Frost & Sullivan 2011).

Despite the increased focus on supply chain management (SCM) approaches by practitioners and academics (Donlon 1996; Malik, Niemeyer & Ruwadi 2011; Tracey et al. 2005), failures to adopt SC practices effectively continue to exist (Arzu et al. 2010; Moberg & Speh 2003; Yap & Tan 2012). A number of factors can be attributed to such failure in the academic tacking of SCC implementation. First, what constitutes the essential aspects of SCM are not commonly acknowledged upon by researchers (Chen & Paulra 2004; Lambert et al. 2005; Li et al. 2005; Min & Mentzer 2004). Second, their studies explicitly state the need to relate the SCM aspects and the firm performance at some point in their analysis (Lambert et al. 2004; Li et al. 2005). Researchers have often ignored this concern. Third, the supply chain is a complicated entity made up of several tiers such as manufacturers, suppliers, distributors, and customers. Searching relevant performance measurements for supply chain analysis presents difficulties (Akyuz et al. 2010). Lastly, the majority of SCM literature emphasizes the significance of a few select supply chain parameters (Albishri 2018). As consequence of this failures in properly addressing implementing SC effectiveness, four research gaps have been identified and presented in Table 1.1.

Table 1.1: Summary of Research Gaps

| RESEARCH GAP | OUTCOMES | REFLECTION |
|--|---|---|
| <p>Evidence Gap: If a new research discovery conflicts with widely acknowledged conclusions, there is a gap in the evidence (Miles 2017).</p> | <p>The previous studies on the potential impacts of PMSs appeared to have a gap in the evidence. Several characteristics of negative repercussions have been the subject of prior investigation (Bevan and Hood 2006; Christopher 2011; Kamble et al. 2018). However, these prior studies</p> | <p>The effects of PMSs are not thoroughly covered in the SCM literature, hence more research is needed.</p> |

| | | |
|--|--|---|
| | did not address a number of discrepancies in their findings. | |
| Knowledge Gap: The desired research results are not available (Müller-Bloch & Kranz 2014). | Prior research on the effectiveness of implementing SC practices had an obvious knowledge gap. In addition, prior research did not discuss the topic of PMS consequences on the managerial and financial measures of SC. This includes various undiscovered dimensions that have recently piqued the interest of researchers in other fields (Kamble & Gunasekaran 2020; Vieira et al. 2015; Zaridis et al. 2021). | Further research into analyzing, tracking, and managing the performance of SC activities in light of the PMS has become critical in order to reach supply chain effectiveness. |
| Practical-Knowledge Gap: Professional conduct or procedures are not addressed or diverge from study scope (Miles 2017). | Many of the previous research that have looked at the PMS have established their conclusions by concentrating on the theoretical components of the subject of SMEs (Mulchandani et al. 2022; Erol et al. 2016; Zaridis et al. 2021). However, the sector of logistic services has very few applied studies or action research. | In the logistics sector, strategies for effective supply chains are advised. |
| Empirical Gap: This gap is related to the need for research findings or hypotheses to be evaluated or empirically verified (Müller-Bloch & Kranz 2014; Miles 2017). | There appears to be an empirical gap in previous studies. Many recent studies have indicated that PMS is an approach that can maximize working capital (Gelsomino et al. 2016; More & Basu 2013; Stefanovic 2014), but other aspects are ignored. Additionally, previous research has mostly emphasized qualitative research in relation to the internal managerial characteristics of SC. There has been little empirical research investigating the internal and external aspects influencing SCE. | More research is needed to identify the areas that could be changed by PMS adoption in the context of SCP. To achieve strategic improvement in the logistic service companies, an empirical research addressing the internal and external areas is crucial (e.g. developing positive relationships with partners, making sound decisions, and adhering to strategic goals). |
| <i>Note: SCE = supply chain effectiveness; SMEs = Small and medium-sized enterprises; SCP = supply chain performance.</i> | | |

SCM is an increasingly commercial network that must be managed cooperatively and optimized internationally. Furthermore, the global commercial scene is evolving continually and quickly. Uncertainty, increasing competitiveness, reduced cycle periods, higher demanding consumers, and cost-cutting pressures are some of the factors pressurizing SCM. Measuring, tracking, and managing the performance of SC activities has become crucial (Stefanovic 2014).

Despite the substantial impact that logistical services and SCs have on the UAE economy, research on the effectiveness of SCs is lacking, and the elements that influence their performance are not consistently taken into account (Kim & Lee 2010; Lockamy & McCormack 2004). Furthermore, it is anticipated that SCE is understudied, necessitating additional research into its connection to managerial activities (Kim et al. 2006; Kim & Lee 2010). In this essence, many studies have clearly established that there is a need to correlate strategic supply chain characteristics with organizational performance (Chen & Paulraj 2004; Cousins 2005; Li et al. 2005; Tan et al. 2002). Therefore, this study intends to address these gaps in knowledge by providing research contributions to the field with a particular emphasis on SC effectiveness in the UAE. The aim of this study is to identify the variables influencing SCE in the UAE's logistic sector. The study looks into the components of performance management systems and how they might improve supply chain effectiveness.

1.4 Study Questions and Objectives

The study aims to investigate the function of PMS in achieving the efficacy of SCs in the context of logistics services in the UAE private sector. The study delves into the effectiveness of the SC in great detail. As a result, the following research questions will be addressed in this study:

- 1- What specific internal and external dimensions of PMSs are directly related amongst each other and to SCE? [There is a call for further research into the dimensions of a strategic supply chain that contribute to SCE (Arantes et al. 2018). In order to fully understand the construct of PMSs, the internal and external elements must be addressed in terms of their effects on SCE (Cousins 2005)].
- 2- What affects does PMS have on SCs? [Previous research indicates that certain PMSs dimensions might directly influence SCE (Babbar et al. 2008; Deshpande 2012)].
- 3- What are the key approaches and competencies of PMSs that SC executives value? [There is still a lot of uncertainty about which elements of SCM at the managerial level are clearly related to supply chain performance and, finally, business effectiveness (Haddouch et al. 2022; Harrison & Hoeck 2002; Mentzer et al. 2004)].

Three primary goals derived from the study questions, which are at the core of any effort at theorizing: to examine the performance effectiveness of SC, as follows:

- To identify the existing aspects of PMSs (internal and external dimensions) that could help in boosting the SCE of selected firms in the UAE.
- To explore how PMS can boost the efficiency of logistics services across supply chains.

- To identify the performance management competencies and techniques needed by logistics professionals to effectively manage logistic processes.

1.5 The Study Hypotheses

In light of the aforementioned objectives, the following hypotheses were developed:

1. Goal alignment is positively related to supply chain effectiveness.

1.1. Goal alignment has a positive impact on SCF.

1.2. Goal alignment has a positive impact on SCQ.

1.3. Goal alignment has a positive impact on SCC.

1.4. Goal alignment has a positive impact on SCD.

2. Commitment to networking throughout a supply chain is positively related to supply chain effectiveness.

2.1. Commitment to networking has a positive impact on SCF.

2.2. Commitment to networking has a positive impact on SCQ.

2.3. Commitment to networking has a positive impact on SCC.

2.4. Commitment to networking has a positive impact on SCD.

3. Centralized decision-making process is positively related to supply chain effectiveness.

3.1. Decision-making process has a positive impact on SCF.

3.2. Decision-making process has a positive impact on SCQ.

3.3. Decision-making process has a positive impact on SCC.

3.4. Decision-making process has a positive impact on SCD.

4. There is significant differences across supply chain companies in terms of CDM, CN, GSA, SCF, SCQ, SCC, and SCD.

1.6 Contribution of the Study

The SC and logistics industry is a significant aspect of any economy, but especially the UAE's, and any challenges the logistics industry faces have a significant impact on any businesses operating in the UAE (Frost & Sullivan 2011). Despite the industry's significant influence on UAE society, there is a glaring lack of academic research on the effectiveness of the UAE's SC and a drop in standardized studies of the problems impacting performance and their impact on logistics and SC (Kim & Lee 2010). Due to the underrepresentation of scientific research on SC performance in the UAE, this indicates a considerable research gap. Therefore, this research investigated the role of PMSs in enhancing the SC performance in the context of the UAE' private SC. As a result, the current study adds to the logistics industry's body of knowledge.

This study significantly contributes by advancing a methodology for leading supply chain effectiveness among logistic service providers. This study extends previous work by Ali et al. (2019), as the external dimension is only included as construct in their study on Pakistan's SMEs. In this study, both internal and external dimensions are incorporated in the model and examined to examine whether they are valid to the UAE scenario.

The UAE's logistic service is extremely distinct from that of other Middle Eastern countries, and creating networks with partners and making vital decisions that correspond with their strategic goals is critical in the UAE context to maintain this business viable.

Internal and external dimensions were addressed as an important construct because the UAE is well-known around the world for its role as a regional center that serves multinational organizations by providing much-needed technological, economic, and social infrastructure.

Thus, the study aims to expand the model to a three-factor model that includes goal alignment, networking commitment, and decision-making process and SCE in order to ensure quality, cost, flexibility and delivery. Since there is currently no framework available to investigate the interactions between these factors, this research offers a comprehensive model. As a result, this study adds to the existing literature on supply chain effectiveness and tries to improve it, primarily through a deeper understanding of the many components of a strategic supply chain and their interactions with SCE. Since best practices are currently being applied throughout the UAE's logistic and supply chain industries, this research has mostly practical relevance.

As a result, the study is of utmost significance to academics and professionals since the proposed framework is anticipated to reveal a number of underutilized connections that are relevant to managers. It would also be possible to identify distinct PMS practice patterns, which would further persuade managers to use this strategy and perhaps enhance SCM and organizational performance.

1.7 Significance of the Study

For different reasons, this study is significant. On a macro scale, the study is distinctive in that no previous study has looked at the interactions between important PMS aspects and

supply chain performance in a critical economic sector (Lockamy & McCormack 2004). Particularly recently, the logistics and supply chain sector in the UAE incorporated new technologies, improved policies and procedures, and development strategies. The study intends to practically address this issue.

Second, on a micro scale, the study aims to identify numerous possibly understudied areas in the literature on logistic services. The study can also be considered as a response to the call for research that seeks further investigation into the relationship between supply management principles and performance systems (Chen & Paulraj 2004; Cousins 2005; Deshpande 2012). Investigating this connection will therefore be beneficial for logistic service-related working businesses in the UAE. Given the requirement for organizations in a supply chain to grasp the impact of several PMS dimensions on SCE in today's highly competitive market. Numerous businesses have realized the need of evaluating PMS in order to create a successful supply chain (Sum et al. 2001; Tan et al. 2002). Through the use of these findings, organizations will be able to create effective procedures and policies.

Third, in terms of theoretical contributions, previous models only investigated a few aspects of supply chain performance, such as cost (Song et al. 2016), and flexibility (Sanchez & Perez 2005). This issue will therefore be addressed by the integrated framework developed in this study. A comprehensive survey was developed which included measurement scales for PMS components (e.g., goal alignment, networking commitment, decision-making) and SCE aspects (flexibility, quality, cost, and delivery). There is a need to incorporate the internal and external performance measure into this examination considering the importance of effective performance in supply chain strategy (Williams & Visser 2002).

1.8 The Research Methodology

The main objective of this study is to investigate supply chain effectiveness (SCE) through performance management systems (PMS). In addition, it explores the management perceptions of the competency-based performance management needed for organizational effectiveness. Therefore, an exploratory mixed-method approach was used as the methodology to achieve the study's objectives. In order to address the first and second objectives, a structured questionnaire was distributed with 148 valid responses being received from respondents occupying different positions in private logistics and supply chain companies in the UAE. The management perceptions and strategies to achieve effectiveness in their businesses were then investigated in a qualitative study based on 14 semi-structured interviews.

The study's methodology was a mixed-method approach, which resulted in an impactful and complete data analysis. Mixed methods research approach implicates incorporating or merging qualitative and quantitative research and data in a single study (Creswell, 2014). In this research methodology, the research begins with the quantitative section of the study to examine, analyze, and then extensively explain the results using the qualitative data (Hafsa 2019).

This approach is advantageous when the researcher and the topic of the study are more quantitative in nature, when the researcher has already chosen a variable to measure, when the researcher has access to participants for the collection of qualitative data, when the researcher has the time to gather data in two phases, and when the researcher is the sole

researcher collecting and analyzing the data one at a time (Creswell & Plano Clark 2018). In other words, using mixed methodologies enables researchers to respond to study questions sufficiently in depth and breadth (Enosh et al. 2014) and aids in generalizing findings and implications of the studied topics to the entire community. Therefore, by integrating two sets of strengths and simultaneously making up for each method's shortcomings, a mixed-methods design offers the best opportunity of answering research problems (Johnson & Onwuegbuzie, 2004). Mixed-method research approaches are therefore "becoming highly relevant to handling impact research topics."

Self-administered questionnaire was considered an appropriate choice for this research to gather the required data. A sufficient sample was drawn from two leading companies working in the UAE, hiring about 5,000–10,000 employees. Then the study employed a purposeful sampling approach. Following that, 14 semi-structured interviews were carried out to investigate managers' perspectives of competences and tactics to attain effectiveness. Figure 5.1 provides an overview of the research plan, which highlights the sequential steps involved in executing the research.

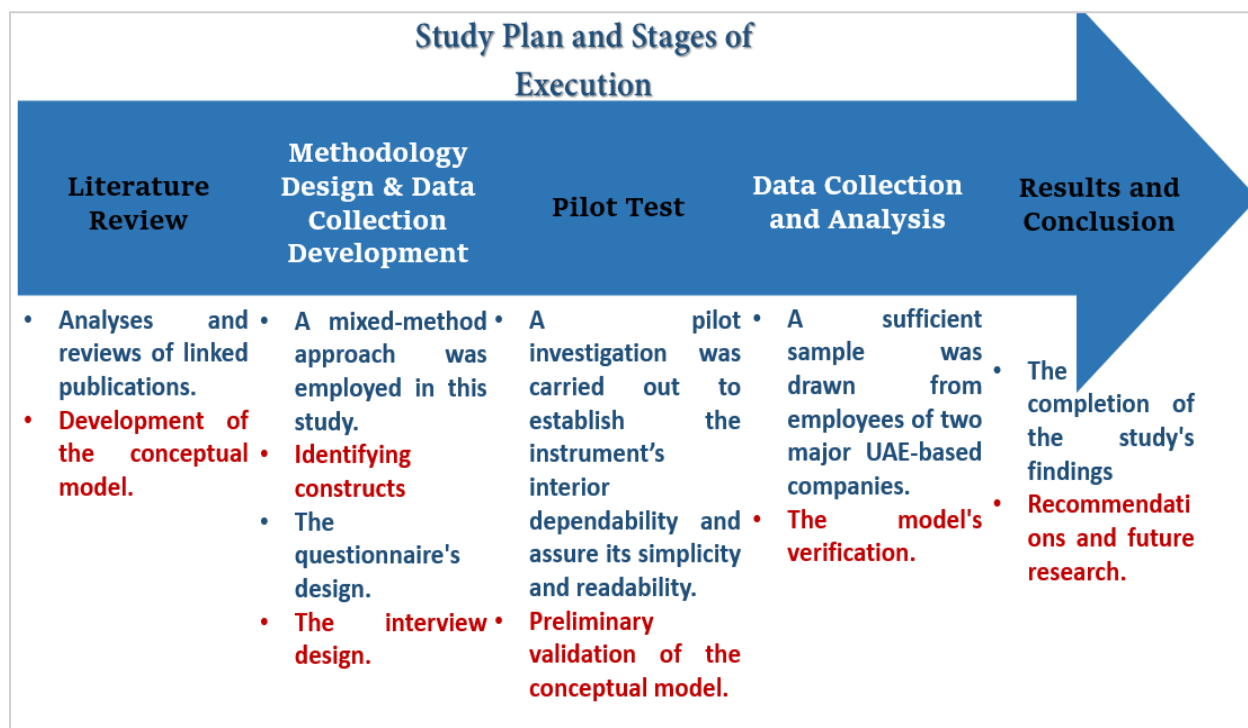


Figure 1.1: Study Plan and Stages of Execution

1.9 Thesis Outlines

This thesis comprises seven chapters. Figure 1.2 depicts the Arrangement of the thesis. Chapter one delivers an introduction to the study, including a brief background of the study, research problem, research aims and objectives, research questions, and finally, the contribution of this research.

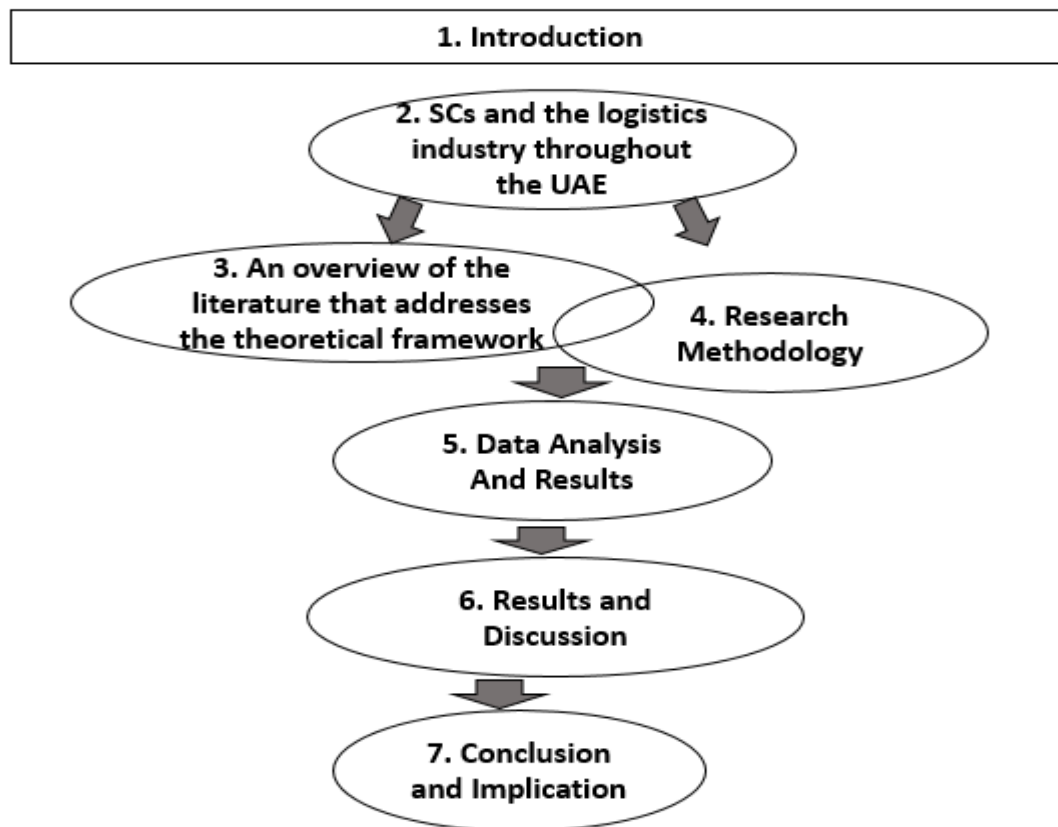


Figure 1.2: Arrangement of the thesis

Chapter 2 presents a general overview of the UAE as a context for this study, highlighting SCs and the logistics industry throughout the UAE. This is followed by a detailed background of the country's economic growth with a special emphasis on Dubai. Chapter 3 provides a thorough overview of the literature that addresses the theoretical

framework and structures under investigation in the thesis. Chapter four presents a comprehensive explanation of the method of the present study, which involves the motivations of this study, the research methods, research design, sampling procedure, data collection techniques, the final measurements, and data analysis. Chapter five provides full details of the statistical methods and techniques used for analyzing the primary data collected for the current research. The results of the PLS analysis used to investigate the effects of goal alignment, commitment to networking, and decision-making on SCE are shown in the chapter's conclusion. The examination of the results is therefore the main topic of chapter 6, which aims to contextualize them within the body of prior research. Finally, Chapter 7 provides the conclusion and recommendations by summarizing the findings and then providing recommendations that will enhance SC efficiency.

1.10 Conclusion

This chapter provided general insight, including an introduction to the study and background for the topic, which presents a broad overview of the study along with a brief description of the research problem. Additionally, the chapter examined the UAE's logistics industry and presented the research gap, followed by the motivation for and objectives. Moreover, the research hypotheses related to the study objectives are presented. Ultimately, the chapter delves into the key significance and contributions of this study.

Chapter 2

LOGISTICS IN THE UAE

Chapter 2: LOGISTICS IN THE UAE

2.1 Introduction

The UAE is recognized globally by its position as a strategic hub supporting international firms by offering commercial, social, and technical infrastructure. The UAE has experienced tremendous progress in recent years, particularly economically, due to numerous drivers, including innovative leadership, connections to natural assets, and its vital position (Walter & Eiermann, 2006). The geographical position of Dubai, its utilities, infrastructure, facilities, SC, and logistics render it a main distribution and shipment portal. The nation is blessed with vast oil resources that have improved its economic development (Walter & Eiermann, 2006). Therefore, the UAE's logistical and transportation industries benefit from the unique positioning, infrastructure, and non-bureaucratic administration that has focused on improving these industries (eGovernment, 2012).

The UAE spends billions of US dollars on its logistics sector, specifically to enhance its infrastructure, such as airports, free trade zones, and seaports. Both Dubai and Abu Dhabi have established large centres and facilities specializing in logistics operations (Gupta et al., 2014). Moreover, throughout the early 2000s, Abu Dhabi and Dubai launched an industrial planning framework to streamline the distribution of goods and services (eGovernment 2012). The country's logistics sector comprises human resources, selling and marketing, and development and consultancy departments (UAE Logistics Organization, 2007). Through the years, the UAE has developed considerably, particularly across real housing, financing, and logistics industries. The nation has focused on developing a new advanced logistics hub to promote multinational trading operations and improve its current infrastructure (Gupta et al., 2014). The establishment of the Al Maktoum International Airport that launched for freight services in June 2010 was a significant

achievement for the government in terms of logistics facilities and networks. Al Maktoum International Airport will become the biggest airport globally when it opens to passenger transport. The modern airport within Dubai was designed to help and promote the SC operations in the country (Frost & Sullivan, 2011). However, the logistics sector throughout the UAE is facing systemic changes due to economic differentiation programs, the incorporation of national businesses and customs legislation, and expansion and modernization within the logistics network (World Bank 2016). The economic growth of the UAE is predicted to be extracted from non-oil financial sectors' construction enterprises linked to potential enlargement and logistics facilities transition (Pekkola, 2016). **An overview of the logistics sector's growth in the UAE from 2010 to 2025 is shown in Figure 2.1. According to Frost and Sullivan (2011), the organizational structure and requirements of the various economic system divisions are the main determinants of economic growth. However, UAE initiatives and regulations have promoted a rise in international investment.**

The concepts of production, distribution, and strategic purchasing have influenced supply chain effectiveness ideas in the same manner that they have traditional management, but there hasn't been any considerable research on how effective supply chains and the logistics industry may be (Albaloushi & Skitmore, 2008). They further claimed that the industry is mostly unaware of the idea of supply chain effectiveness and its techniques, especially in countries like the United Arab Emirates (UAE).

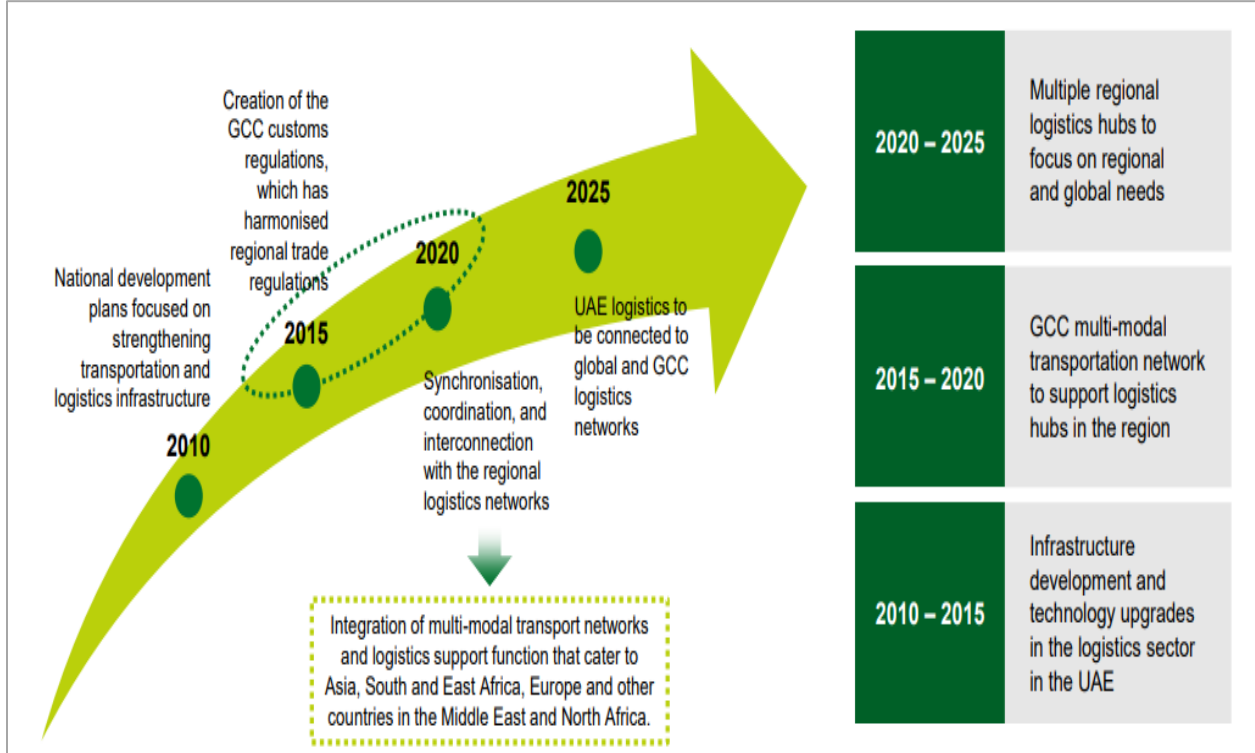


Figure 2.1. UAE Sector Developments for the Logistics Industry from 2010 to 2025 (Gopal, 2017).

2.2 An Overview of the UAE's Logistics Industry

The United Arab Emirates (UAE) recently received recognition as one of the Middle East, Gulf region, and North Africa's (World Bank, 2016) fastest-growing economies, with the goal of becoming one of the top service-focused economies worldwide (Ibrahim & Al Falasi, 2016). The UAE has turned into a major centre of international trading within the Indian sub-continent and western economies by exploiting the benefits of its free economy, competitive investment conditions, and sustained economic progress. UAE economic policy aims to position the country as a global hub for sustainable and innovative companies that will constitute the backbone of UAE industry in the future – see Figure 2.2. Abu Dhabi and Dubai, members of the UAE, have endorsed fair markets and secure trade ties with nations globally (ASME, 2021).

| | Maintenance | Manufacturing | EPC | Service |
|----------------|-------------|---------------|-----------|------------|
| Abu Dhabi | 81 | 192 | 41 | 210 |
| Dubai | 53 | 131 | 7 | 73 |
| Sharjah | 24 | 84 | 3 | 37 |
| Ras Al Khaimah | 6 | 24 | - | 3 |
| Ajman | - | 2 | - | 1 |
| Umm Al Quwain | 1 | 1 | - | - |
| Fujairah | 1 | 3 | - | 1 |
| Total | 166 | 437 | 51 | 325 |

Figure 2.2. Emirates' capacity to supply (ASME, 2021).

This section covers some of the significant historical milestones throughout the UAE, focusing on Dubai's logistics developments. In 1971, the UAE was established as a Federation of 7 emirates after the withdrawal of British colonial rule. This was followed by the establishment of Rashid port, which was finalized in 1972 and subsequently became the first shallow-water port within that area. In 1978, the construction of "Jebel Ali" Port began (Al Hosani, 2019; Delgado, 2016). By 1979, the port construction was finished, and then due to its crucial importance, the UAE government established the Jebel Ali free zone in 1985 (Delgado, 2016). Another vital development was the formation of a new authority called the Dubai Port Authority (DPA) in 1991 that involved the integration of Rashid and Jebel Ali ports. The newly established DPA took the responsibility of monitoring the outgoing processes (Al Hosani, 2019). The improved rate of facilities and the innovative utilization of technologies have made much of the country's logistics activities simpler to run (World Bank, 2016). Moreover, there was a new proposal of developing Dubai city for logistics (Fernandes, 2009). **The UAE is already recognized well by international institutions such as the World Bank as a country that provides a favourable climate for doing business, owing to its position as a top destination and meaningful business environment (Sundarakani et al., 2012). According to Gopal (2017), there are three primary factors promoting the logistic economy in the UAE, including:**

- **In the UAE, more than 30 free zones have been developed. These free zones make it simple to set up industrial facilities and offer various advantages regarding customs duties for import and export of goods.**

- **The United Arab Emirates (UAE) Vision 2021 and Abu Dhabi's Economic Vision 2030 are the two documents that serve as the foundation for investments pertaining to the Emirates' efforts at economic transformation.**
- **The Union Railroad Network and Emirates level development projects with an emphasis on free zones and port modernization are in the works; it is anticipated that expenditures for EXPO 2020 would enhance the transportation system.**

Such favourable conditions appeal to many international companies, especially in e-trading, as trends are shifting to online shopping (Knight Frank, 2018). Consequently, the country is witnessing a rapid expansion in the manufacturing and logistical sectors regionally and internationally. Therefore, the UAE has also become a strategically positioned hub for serving China and other manufacturing countries. It is among Asia's leading importers of commodities, mostly to the Middle East and is classified as an exporter for the North and Middle East. Most products are typically transported through China and other Asian nations and re-distributed in limited amounts to African and European nations. The UAE offers companies with close socio-economic connections to Asia, Europe, and Africa as an ideal geographical location for distributing goods (eGovernment 2012).

To meet the expanding needs of businesses, the UAE government has taken steps to establish economic zones across the country. Furthermore, its government has implemented best business practices to guarantee that enterprises have easy access to resources to run their operations effectively (Arafat et al., 2018). Throughout 2011, Jebel Ali expanded its ability to deliver sea, air, and land links supported by logistics services. The port was also designed for storage and freezing goods that required refrigeration. Ultimately, in 2014 it was announced that Dubai had been chosen

to hold the world EXPO 2020 (Delgado, 2016). The event significantly opened the way for the interconnected, multidimensional Dubai Logistics City (DLC) project. The UAE economy is now focused on improving its commerce, transportation, logistics, finance, property, construction, and tourist activities (Frost & Sullivan 2011). **To address the main concern of the United Arab Emirates Federal Government, which is that the Emirates economy should be broadened to include commerce, logistics, tourism, and financing (Delgado, 2016), this study seeks to examine supply chain effectiveness (SCE) through Performance Management Systems (PMSs).**

2.3 The Structure of the Supply Chain in the UAE

The UAE's economic growth trend "did not pass through the hypothesized development "stages" that other industrialized countries appear to have undergone (Shihab, 2001). As noted by Beblawi (2011), the large oil income allowed the Emirates economy to leap forward in the several "stages". Nonetheless, from 2010 to 2015, the UAE had the most steady annual growth rate among GCC economies, ranking third in terms of average annual growth rate. The UAE's geostrategic position has allowed the nation to develop into a regional business centre and a platform for transshipment (National Media Council, 2001). The UAE is situated adjacent to countries like India and China that have less expensive productive sectors and raw material suppliers (Aldhaferi et al., 2022). It is also close to markets where it can offer finished goods, including those in Europe (Delgado, 2016). Due to this, the Emirates have been able to negotiate a number of trade agreements with Arab, Gulf, Asian, and Western nations (mainly Europe). The UAE government has worked to diversify its

economy by putting an emphasis on trade, logistics, tourism, and financing in order to reduce its reliance on the lucrative petroleum and gas reserves sector (Delgado, 2016). The UAE had also established considerable logistics hub facilities to fulfil the demand of national and international logistics (EAD, 2015). Over the past three decades, the UAE has been on a rising trajectory. This drive for expansion, along with cheap energy prices, cheap immigrant labour prices, and a thriving economy, has resulted in a decreased concern for sustainable structures along the path. A lack of awareness regarding green construction, especially within warehouse installation, is likely to have aggravated the situation, as is described below (EAD, 2015).

The Supply Chain Capabilities (SCC) include the functions that are interconnected in the process of providing products to a manufacturing company and then making and delivering completed items to the market (Jimenez-Jimenez et al. 2019). Ground transportation, air, and marine freight routes, warehousing, and SCM activities comprise the overall UAE logistics industry, which has grown rapidly in recent years, reaching a total value of more than USD 30 billion towards the close of 2013 (TI, 2014). Accordingly, the local addressable UAE logistics market has grown by 5.7% between 2015 and 2020 and transformed from a logistics hub into an SC hotspot. Localization is becoming increasingly important, and there will be a reliance on factories and closeness to regional or national distribution centres (UAE-MoE, 2021).

Table 2.1 shows the real GDP ranking position (of a total of 220 countries) from 1975 to 2014.

| UAE Real GDP Ranking | | | | | | |
|-----------------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 1975 | 1980 | 1990 | 2000 | 2005 | 2010 | 2014 |
| 36 th | 36 th | 45 th | 36 th | 36 th | 36 th | 32 nd |

Table 2.1. UAE - Real GDP ranking position (of a total of 220 countries) – 1975 to 2014

Source: United Nations, 2015

The achievement of various economic variables and the efficient execution of national logistics strategies and digital change activities conducted through public and commercial spheres are recognized as major contributing elements (International Finance 2020). The growth opportunities were for businesses looking to shorten and diversify SCs to build greater SC security and resilience, develop a regional storage hub, allow nearby nations to secure SCs, and allow suppliers to maintain demand and increase dependence on robotics and automation (UAE-MoE, 2021). The UAE has now remarkably turned from a logistical powerhouse toward an SC nerve centre (Delgado 2016). Undoubtedly, several factors and methods are driving the transition, through which it serves as a redistribution conduit for global firms. Subsequently, the more apparent inquiries include: What factors are influencing its transition? What are all the far-reaching consequences for the economy?

The UAE's continued logistic development was evident by introducing new research, the Agility Developing Markets Logistics Ranking 2020 (Agility), which found that the region's ratings for opportunities, global possibilities, and business principles have increased. The UAE appeared in the top ten among all three sub-indices for the first time. It witnessed substantial progress through business fundamentals, moving up two spots to the ninth position for international logistics. Recognizing the country's growth through logistics, Agility has credited its success towards the e-commerce business, which is expected to grow at a compound annual growth rate of 19.1 % by 2023 (International Finance, 2020). The UAE's logistics business is thriving and reinforced by enhanced investment in logistics infrastructure growth, emphasising international interconnections with multidimensional logistics services, logistics procedure digitalization,

warehouse mechanization business climate reforms, and economic integration measures. Furthermore, because of the establishment of free areas near ports and airports, the proportion of non-oil exporters increased (Fernandes, 2009). Coordinated free zones and large infrastructure expenditures are important components of the logistics revolution in the UAE. This reflects the reality that Dubai International Airport is now the sixth busiest airport with regards to cargo traffic, and Jebel Ali Port is the ninth largest container port, with additional growth planned to match the expected increase in traffic. The clear benefit of free zones is that they create a tax-free setting for interregional trade, contributing to the UAE's ongoing progress as a favoured local SC and distribution gateway (International Finance, 2020).

2.4 Market Size of the Logistics Industry in the UAE

Logistics is the art and science of transporting goods, activities, including information to and from a business. Within a business, it includes components of the SC such as inventory administration and product transportation (Stockdale, 2015). The UAE GDP by major industries in 2017 is depicted in Figure 2.3. It demonstrates that 8.4% of the UAE GDP is contributed by the transport and warehousing sector.

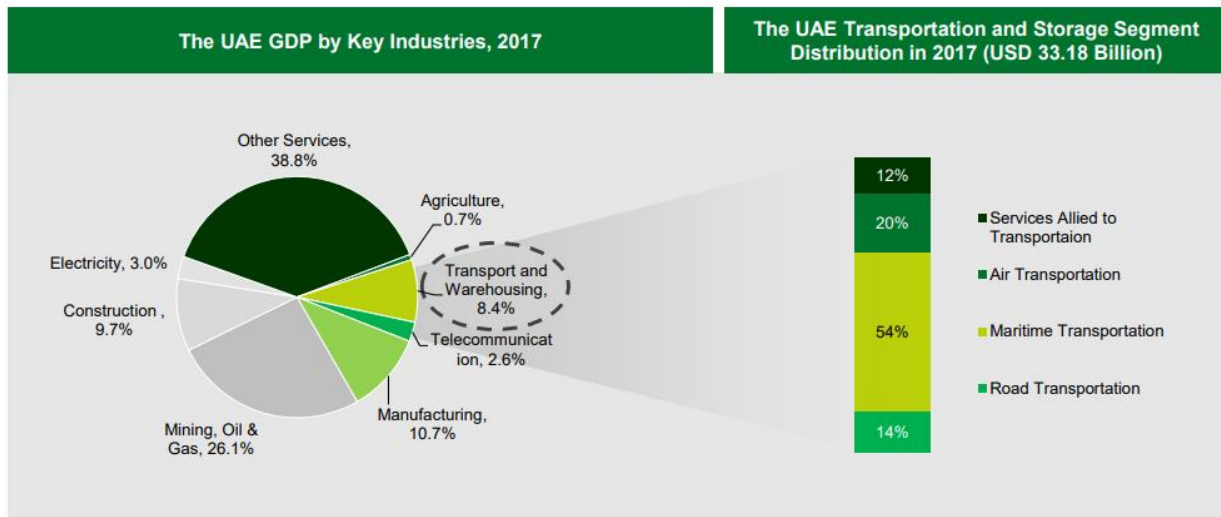


Figure 2.3. The UAE GDP by Key Industries, 2017 (Gopal, 2017).

The UAE's logistics industry consists of services for supply chain management, warehousing, ground transportation, and shipping by air and sea. Recent years have seen rapid expansion, with a total value topping US\$30 billion by the end of 2013 (Transport Intelligence, 2014). The loop supply chain is shown in Figure 2.4 below, along with the essential elements referred to as the physical logistics enablers.

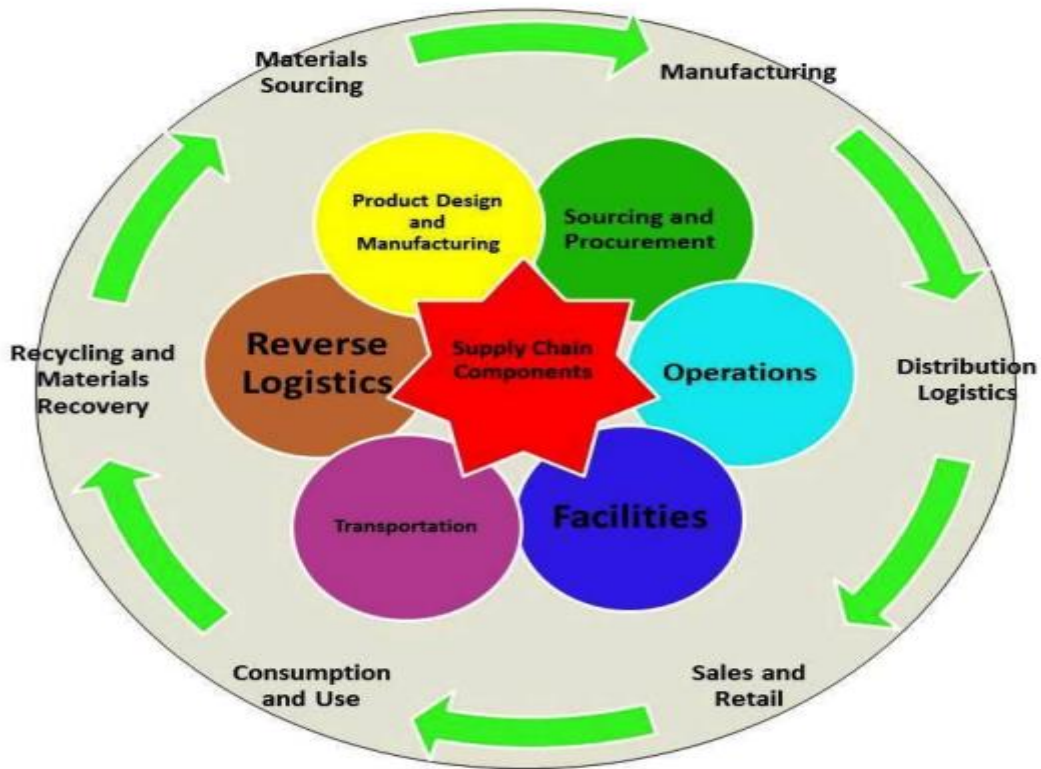


Figure 2.4. Logistics elements and closed-loop supply chain (Stockdale, 2015)

According to Barloworld (2013), UAE organizations have stated their aim to investigate the supply chain's potential as a source of competitive advantage in the years to come. The UAE offers a fantastic business climate that is backed up by government benefits. Throughout the UAE, there are several wealthy and appealing places. One of these is the logistics industry and its associated actions, and it is one of the most successful industries throughout the UAE (Al Sadik, 2001; Delgado, 2016). Customer preferences are consistently high, resulting in a fast expansion in local and worldwide transportation related to large-scale global freight administration and small wholesale delivery of various commodities (Zaara, 2019).

The industry is generally unregulated and fragmented, with strong growth rates and alluring operating margins. Its participants span the full range from major progressive multinationals to tiny, basic local service providers (Stockdale, 2015; Alderei et al., 2022). Many companies are operating in logistics throughout the UAE; the most important of these companies are summarized as follows (Goodfirms, 2021):

- **UKR Shipping LLC:** After more than twenty years of importing, exporting, and international shipment operations, UKR Trading FZ LLC was formed in 2019. It has been active throughout the Middle East marketplace since 2000 and is well-known among its customers. The company provides reliable customer service and creates an appealing operating environment for its employees. The company actively upholds high ethical principles to encourage continuous processes to improve freight safety insurance for air and sea cargo with efficient customs.
- **Freight Systems:** FS is a global freight forwarding organization that produces a wide range of services to satisfy the demands of businesses. They believe in providing timely logistical services and have customers from over 30 nations. With a comprehensive range of services, continuously expanding geographical scope, and methodical operations, the company has established itself as among the globe's premier worldwide freight forwarders. The firm provides all of its clients with the facilities they demand under one platform, whether it is basic freight transfers from a port or coordinating complicated SCs.

- **Qafila:** Via online logistics services, Qafila promotes growth and revenue for their customers. They have used the potential of AI to encourage growth, bringing efficiency and transparency across organizations in the Middle East and North Africa region.
- **Al-Futtaim Logistics:** Al-Futtaim Logistics, founded in the 1980s, is a prominent regional supplier of international SC services and provides worldwide coverage to 150 nations via strategic alliances with worldwide network partnerships. Al-Futtaim Logistics provides a comprehensive spectrum of innovative end-to-end SCM products with its comprehensive interconnectivity from strategically situated state-of-the-art operations in most major freight hubs.
- **Jenae Logistics:** Jenae Logistics, operated by a collection of logistics and shipping specialists, strives to ensure consistency across the entire business and with a highly skilled team. They are the premier global shipping business located in Dubai, UAE.

2.5 Performance Management of Logistics in the UAE

Research on performance measurement in supply chain operations (e.g. Lai et al. 2002; Forslund and Jonsson 2007; Alnuaimi et al., 2022) have demonstrated that in addition to performance measures, a more comprehensive view of performance management (PM) should also be taken into consideration. Lead time, flexibility, and on-time delivery are examples of logistics performance in supply chains that are established by employees, suppliers, customers, and LSPs and should be a shared responsibility (Forslund *et al.* 2009). Several organizations that originally did not dedicate enough time or power to logistics administration and knowledge have begun to pay attention (Piplani *et al.* 2004). According

to Lehtinen and Ahola (2009), companies have begun to compare their return processes to those of the highest quality operators. Supply chain performance management is now built on cross-company partnerships rather than functional hierarchies, ownership, or internal power (Lehtinen and Ahola 2009).

There is a lot of general literature on SCM and logistics performance measures (Tan 2001). **Five activities make up the PM process: identifying performance measures, defining criteria, setting goals, monitoring, and analysing (Forslund and Jonsson 2007). Supply chain performance can be described in a variety of ways. A balanced scorecard approach with four dimensions—customer, business operations, innovation/learning, and financial—was proposed by Brewer and Speh (2001). The Supply Chain Operation Reference (SCOR) model offers a different approach. Based on five common supply chain operations, a language and framework of performance indicators - dependability, responsiveness, agility, cost, and asset usage efficiency - were devised (Lockamy and McGormack 2004). Also, Wilding and Juriado (2004), on-time delivery, picking quality, availability, flexibility, transportation damage, quality of goods received, prices, on-time shipments, and capacity utilization are just a few examples of the many logistical performance metrics that LSPs were discovered to use (Wilding and Juriado 2004). Furthermore, Forslund and Jonsson (2007) discovered that on-time delivery was a crucial factor in the performance of logistics.**

Moreover, Arvis and colleagues (2007) performed research that measured the overall logistics performance index over 150 nations. Singapore was selected as the top nation in their research for all metrics, and the UAE was among the top twenty quartiles having a logistics performance index (LPI) value of 3.73, compared to the highest grade of 4.19 for Singapore. It is noteworthy that all

Middle Eastern nations are listed amongst the highest 50 out of 150 nations surveyed, which indicates further research is required on performance metrics among UAE-based firms (Arvis et al., 2007).

The retail industry in the UAE is seeing a positive upswing. Consumers have grown more discriminating and anticipate more valuation from their purchases, and the retail industry is expected to expand at a compound yearly growth frequency of 4.9%. According to recent research, the Emirates retail industry was valued at USD 56.6 billion towards the close of 2016, with a predicted sales volume of USD 71 billion around 2021 (Sadaqat 2018). Furthermore, the retailing and hotel industries are anticipated to be the quickest expanding sectors (EI 2018). The UAE retailing market is anticipated to develop considerably and represents the highest promising business throughout the Middle East with considerable potential prospects. Dubai has the largest proportion within the UAE retail industry, followed by Abu Dhabi. However, the retail sector is experiencing a difficult trading period because of rising supply rates, the impact of digital shopping on physical retailing, and local economic concerns (EI 2018).

Moreover, the e-commerce retailing industry had the greatest increase. This retail industry may expect further increases in the coming years, but the pace appears to have slowed slightly. Additionally, the most important component of retail expansion has been innovation, and action has been undertaken to ignite and maintain customer attention (Warschun et al. 2018).

2.6 The Value of the UAE's Logistics Sector over the Past 20 years

The logistics industry has been a driving factor in the development of globalization. The unification and harmonization of transportation systems and methods to improve the magnitude of

economies and elevate the entire industry to unprecedented heights are at the core of this growth of the logistics industry (Delgado 2016). Since about the late nineteenth century, once ports were declared free zones, the UAE has been at the forefront of meeting the economic needs of the UAE (John 2015). Nowadays, the UAE, particularly Dubai, has succeeded in its position as the major hub of the international logistics network, making it one of the most important nodes in international SC. This progression portrays the area's enlarging prospects. Although the Gulf States were previously viewed primarily as energy exporters, the progression of sectors such as logistics has assisted them in establishing a wider and differentiated economy with an improved economic base (UKEssays, 2018). According to Hyung et al. (2016), any international firms have used the UAE as a logistical centre for manufacturing semi-finished items and re-exporting through Middle Eastern and African nations. They are classified into two kinds: logistics-hub-based producing firms and logistics firms. Canon Middle East in Dubai is an example of a manufacturing company with a logistics hub (Hyung et al. (2016). It sees Jebel Ali as more than just a transit site and a regional industrial centre for assembly and exporting to the Middle East, Africa, and possibly Europe. Pantos Logistics provides an instance of the other sort of business, as it has developed the Middle East Logistics Ring, which connects Saudi Arabia, Oman, Turkey, and the UAE, to increase logistics activity services like air/ocean transportation, customs clearing, and warehousing (Hyung et al. 2016).

Until the late nineteenth century, Middle Eastern countries such as the UAE and others were regarded as key power and petro product exporters (National Media Council 2001). However, as the concepts of globalization and industrialization became more prominent, the leaders of the UAE and other gulf states recognized that to become part of globalization, they needed some

modifications (Omaira 2001). Logistics has a past as ancient as humanity itself; people have needed the appropriate product for the correct reason at the correct time, and this is logistics. The sector emerged in the eighteenth century throughout the UAE and Gulf nations, when people began to conceive better means of transportation and improved infrastructure, mostly in the form of civic and military developments. However, the links between transportation costs, production facilities, and sales were evident (UKEssays, 2018).

Succeeding in increased sales, trading, and therefore, profit, and as transportation infrastructure improves, intra-industry commerce rises, eventually promoting speciality and supporting the economy. The UAE authorities chose to develop stronger infrastructure that allows them to improve and strengthen their business and puts them into competition with other nations that are already participating in globalization (WTO 2012). Additionally, incorporating improved logistics also contributes to a larger and stronger SC networking, as it becomes increasingly necessary for firms to enhance their activities at all stages of production, resulting in more complex SC systems. The overall shape on which UAE administration is functioning to improve logistic systems in the region and services offered to other nations is evident in Abu Dhabi's ultimate plan and economic vision 2030, which comprises infrastructure investments and logistic facilities to introduce them to an international market (UKEssays 2018).

2.7 Government Policy on Logistics

The UAE has established itself as a world-class logistics hub, serving the Middle East, Africa, Asia, and Europe. A successful logistics hub is where the numerous supply chain components

converge and maximize the chain's value (Stockdale 2015). According to Fernandes (2009), a logistics hub should include the following characteristics:

- **An advantageous location near busy shipping lanes,**
- **World-class airports and sea ports,**
- **Effective and appropriate logistics infrastructure,**
- **The capacity to offer value-added service,**
- **Cost-effective pricing, and**
- **Minimal government red tape.**

The UAE has expanded existing port and airport facilities and improved business conditions through legal changes and logistics-friendly policies. Based on the current LPI, the UAE ranks first amongst the Middle East nation-states and 27th overall among 160 states (Stockdale 2015). Amongst six GCC nations, the UAE demonstrated the greatest performance within logistics, encompassing trade-related organizations and laws. Despite its small domestic economy, the UAE has become a large re-exporting nation because of its effective infrastructure and economic zones throughout Abu Dhabi and Dubai (Hyung et al. 2016). Capitalizing on its advantageous position, the UAE has effectively established itself as a major logistics centre, spending as much as 220 billion DH (Rizvi, 2021) to promote the growth of warehousing services and transportation networks. The UAE was perceived as a region of considerable opportunities regarding logistics facilities suppliers, particularly those engaged in cargo processing and transportation facilities. This occurs because numerous traditional industrial companies run trading activities throughout the UAE, leading to a logistics market that is oriented to freight shipping (Awad & Nassar 2010). In 2011, income from this logistics sector amounted to USD 7.03 billion,

and this was estimated to grow to USD 9.40 billion in 2014 (Ramakrishnan 2010). In 2015, the transportation and logistics industry contributed approximately USD 29.08 billion to the UAE's GDP. During 2017, logistics businesses within Dubai led the logistics sector in the UAE, with an approximate 45 % share, followed by Abu Dhabi (Farza 2018).

Throughout Dubai and Abu Dhabi, free trading zones and industrial zones provide a multi-modal logistics network that connects ports, airports, and manufacturing facilities. In 2013, the UAE harbours' transshipment volume was 19 million twenty-foot equivalent units, accounting for 34.7% of all container throughput in the Middle East (World Bank 2014). In the context of global passenger numbers and cargo transport, Dubai International Airport was the seventh-busiest and fifth-busiest airport in 2013, respectively (Stockdale 2015). By early 2020, Dubai International Airport had one of the greatest levels of growth across both traveller and cargo activity among the top ten international airports. The UAE represents one of the globe's major re-export centres, offering several benefits and tax breaks. Most free trade areas allow for 100% foreign property, no customs charges on importing and re-exports, and exclusions from corporation taxes. Several products imported within the UAE are being re-exported to countries such as Saudi Arabia and Oman (Hyung et al. 2016).

2.8 Logistics problems, challenges, and vision in the UAE

The manufacturing sector of the UAE focuses on trading and transportation; consequently, the demand for transportation companies and shipments in the logistics field is strong. According to its strategic position, the UAE can introduce itself as a worldwide hub for logistics facilities, such as exporting, importing, and cross-trading activities (Sundarakani 2012). However, **the**

management of PM in supply chains is a challenging problem. Its drawbacks include a small domestic economy, limited manufacturing capabilities, and perhaps unstable geopolitics due to nearby terrorist organizations (Omaira 2001). Other studies (e.g., Brewer and Speh 2001; Forslund and Jonsson 2009) have discussed challenges for managing PM in supply chains, such as competing objectives between supply chain partners, inadequate IT assistance, and a lack of trust. Also, in their study of PM in a trio (one supplier, one client, and one LSP), Forslund et al. (2009) discovered that the LSP hampered PM by focusing on other measures than those the customer required. Additionally, between LSPs and their clients, there are a number of coordination challenges that Larson and Gammelgaard (2001) identified, including varying definitions of metrics. Additionally, Mortensen and Lemoine (2008) discovered IT-related barriers to LSP and customer performance improvements. However, little is known about the challenges facing PM from the standpoint of LSPs. Furthermore, Arafat et al. (2018), claimed that the logistics and SCs sectors across the UAE have encountered persistent challenges, like political instability in neighbouring nations and overcapacity and production cuts that continue to endanger drive-back rates and hit earnings. The main terminals of the UAE were expected to expand across the middle run but at a slower pace compared to before the financial crisis. The aviation and logistics industries in the UAE continue to develop at a fast rate, with further logistics firms shifting their centres towards the UAE and local airports proceeding to broaden and report better outcomes (eGovernment 2012; Arafat et al. 2018).

The UAE's logistical assets include its geographical position at the crossroads of the Middle East, Africa, and Europe, developed infrastructure like ports, airports, transportation systems, and distinct economic regions and a business-friendly environment (Taylor-Evans &

Coyne, 2013). An effective logistics centre occurs wherever the different components across the SC meet and bring the highest benefit to the whole chain (Omaira 2001). The primary attributes regarding the logistics centre are its strategic position across main shipping lanes, international air and sea terminals, productive and sufficient logistics facilities, capacity to deliver real-worth products, fair prices and costs, and minimal authority bureaucracy (Fernandes 2009). The UAE authorities have provided these attributes across the country's logistics sectors to enhance the SC and logistics industry. Nevertheless, there were certain restrictions on working solely throughout this offshore free trade zone. In this case, the offshore companies are confined to trading just across the free zone border (Frank 2018). Therefore, companies cannot negotiate with UAE homeland companies or tender for government agreements. The solution was to establish an onshore company, but this involves an Emirati investor retaining majority control of the property, which dissatisfies many international corporations. The increasingly rigid structure might have led to the mild progress rates seen among certain industries relative to the progress levels seen across other company sectors (Frank, 2018). To overcome such hurdles that may stifle foreign investors and promote more expenditure by international companies, the UAE government has accepted various regulations that would simplify investment policies throughout the Emirates (Bloemhof 2005; Frank 2018).

The previous ten years have been immensely fruitful for the UAE because it has become the main preference destination for business and recreational passengers (Frost & Sullivan 2011). Nowadays, the UAE encourages free trading and tourism to improve economic development across the country. By launching freehold properties in specified regions of the nation, the UAE has experienced development in property investment and other facets of the economic system,

attracting numerous high-profile corporations and individuals (Frost & Sullivan, 2010). Nevertheless, the UAE was affected by the onset of the economic crisis in 2008. The failure of two main banks in the USA caused world economic instability, which generated financial troubles that affected the UAE until 2010. The UAE logistics sector was expected to produce record sales and keep expanding as a consequence of intensive endeavours to align itself as the centre of the international shipment forwarding system (Frost & Sullivan 2011; Sundarakani 2017). Following the international economic downturn, a significant downturn in the global economy, and a reduction of growth in the UAE, the area has influenced the logistics industry. Irrespective of whether international trade is growing, there are significant questions about the capacity of the logistics sector in the UAE to understand their growth and success.

Creating a unique strategic edge would be vital for maintaining consumers and acquiring a stake in this developing and lucrative marketplace. Additionally, four factors indicate a favourable industry logistic landscape and the promising future expansion capacity of the UAE (Stockdale, 2015):

- 1) Strong economic development and significant continuing investments across logistics networks by the government and private companies.
- 2) Local authority adopted a transparent and dedicated strategy that is based on leading by example.
- 3) Implementation of a range of major logistics headquartered throughout the UAE, owing to the substantial growth of road, railway, sea, and air hubs and the effective management of free trading zones.

- 4) Advancement of the UAE as a vital logistics centre owing to its crucial position in the trading route between the European continent and Asia and better accessibility to businesses throughout the Mid-East and other African regions

The logistics and SCs industries in the UAE were seen as being productive and fiercely competitive, but they have been unable to advance due to external environmental factors. Therefore, by handling containers, stock, and other port cargo effectively, 6000 skilled workers across the UAE improve both the quality and the supply network of consumers (Gupta et al. 2014).

2.9 Logistics Sustainability and Advancing Strategies in the UAE

Companies aspire to follow their growth objectives by progressively involving sustainability strategies like “green energies” and “green buildings” (UN Global Compact 2010). The logistics industry can be defined as a national and international trading engine area; it creates the conditions to satisfy consumer SC requirements but is largely overlooked and ignored by many customers. It is still noted for its poor performance with socio-ecological sustainability, and with sustainability gradually being recognized throughout the world by experts and consumers throughout the logistics sector, strategies are necessary to implement sustainability in the UAE (Linton et al. 2007). Due to its development as an international logistics centre and as one of the largest carbon releasing regions globally per capita, the UAE is well placed to become a model for accountable GSC activities (Stockdale 2015).

According to Christensen et al. (2008), a plurality of multinational commercial and logistics companies are now operational in the UAE, and the region has been a leader in logistics. From the development of SC, some of the sustainable development programs declared by

corporations working in the UAE may be successful and long-lasting, while others will not survive or will be financially unsuccessful (Tolba & Saab 2009). Consequently, environmental accountability has become a corporate priority, and several managers are currently viewing SCs as an unknown industry to achieve their businesses' sustainability outcomes (Christensen et al. 2008).

The region has become largely fractured and poorly regulated with high levels of expanding favourable profit margins, featuring many players across significant progressive transnationals and local corporations and from independent regional service suppliers (Andrianyaha et al. 2011). Several logistics providers throughout the UAE are now pushing their variety of green and social projects, like pollution control schemes and renewable warehouses, mostly as a core element of their advertising strategies. Consequently, in the UAE, advanced logistics companies are introducing new strategies and technologies to multinational customers as a component of their regular service portfolio (Stockdale 2015).

2.10 Conclusion

The logistics sector in the UAE represents one of the most important and rapidly growing industries, and it only took a few decades for the UAE to become a leading country with a highly evolved and diversified logistic industry. The UAE has become a logistic hub because of its strategic, highly valuable geographic position, creating an effective trade belt that is formed of many countries. Additionally, the powerful infrastructure, continuous economic transformations, and technological advancements all are effective factors that have increased the effectiveness and

success of the UAE's logistic sector. However, while some challenges and problems face the logistic sector in the UAE, effective policies have helped to overcome most of these challenges.

Chapter 3

LITERATURE REVIEW

Chapter 3: LITERATURE REVIEW

3.1 Introduction

Performance management is a continuous strategy by which people and organizational outcomes are tracked to maximize the potential benefits. High-performance entities require a useful PMS to enhance and maintain the values, ideals, and competencies necessary to accomplish optimum efficiency (Sahoo & Mishra 2005; Khalifa et al. 2023). Therefore, in the light of contemporary management principles and the complexities of coping with such a fast-changing, dynamic, and extremely competitive market situation, performance measurement and management are crucial for sustainability and competitive advantage (Iyibildiren & Karasioglu 2018). This chapter discusses the background of the research and the conceptualization of the suggested framework. The formulation of the research hypotheses is thoroughly described, and the links between the study's important variables are discussed.

Several approaches can be deployed in synthesizing literature, including narrative or traditional literature reviews, critically appraised topics (CAT), scoping reviews, systematic literature reviews, and annotated bibliographies. The most suitable approach for this study was narrative/traditional generic literature. This approach can be used to identify and review published literature on a topic in a broader manner by including wide concepts and aspects concerning the phenomenon under exploration. The section typically uses a narrative style to present the review's conclusions (Grant & Booth 2009).

SCs are defined as a network of institutions, actors, facilities, and distribution chains that conduct the procurement activities for buying materials, converting them into finished goods, and

delivering these products or services to consumers. SCs are deployed by service and manufacturing firms, but their complexities differ based on the type of the organization or sector (Chopra 2001; Kamble & Gunasekaran 2020). The review of the literature showed that the term "supply chain," which refers to the cooperation of entities, is frequently used (Sobolevskaya 2021).

3.2 Supply Chain Management

Supply chains are today very complex commercial networks that must be managed collaboratively and globally optimized. Furthermore, the global commercial scene is constantly and rapidly evolving (Anca 2019; Pienaar 2009). Uncertainty, more competition, shorter processing times, more demanding customers, and cost-cutting pressure are only a few of the major characteristics of the twenty-first-century corporate sector. Measuring, tracking, and managing the performance of SC operations has become increasingly important (Elshaer, 2020). Using procedures, methods, measurements, and technology to build a coherent linkage throughout SC tactics, planning, execution, and administration are referred to as PM (Stefanovic 2004).

The purpose of SCM is to optimize company processes by tracking and analysing key performance indicators. Organizations could offer value to vast amounts of data created by evaluating and tracking metrics versus set targets. This analysis enables businesses to track multiple indicators at multiple organizational rates and respond promptly (Cai et al. 2009; Leonczuk 2016).

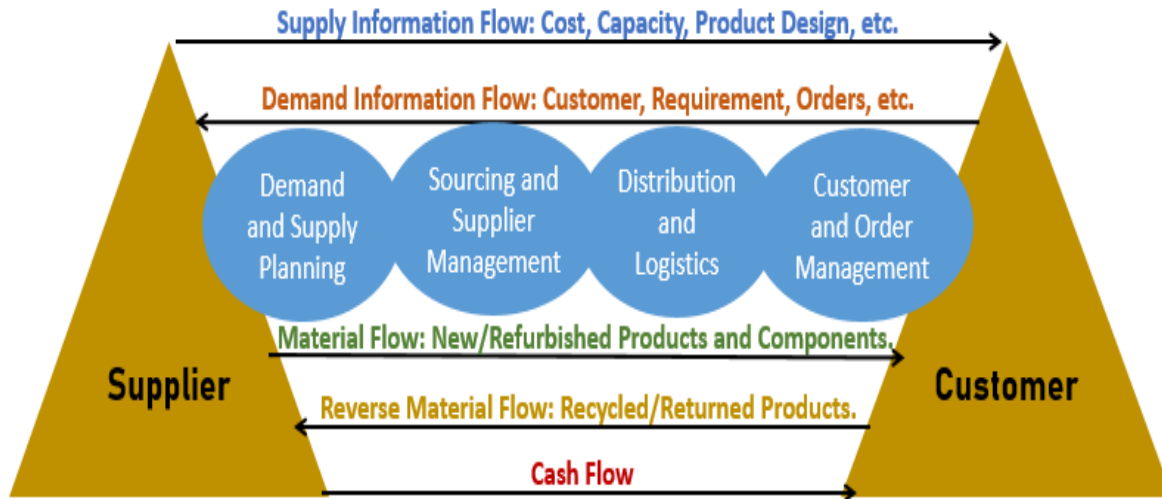
SCM is described in multiple ways and from different viewpoints (Priem & Swink 2012). Mentzer and colleagues (2001) argue that there are over 100 definitions of SCM. Consequently,

there are various interpretations of SCs and SCM. Kamble et al. (2018) describes an SC as a network of organizations engaged in various procedures and tasks that generate demand for the services and products used by consumers or end-users. While, Pienaar (2009) defines SC as “a broad explanation of the process integration that involves businesses producing finished goods and transporting them to the end customer”. According to Akkermans et al. (2003), the SC platform is guided by three key elements:

- 1) Processes, including a company's capability in the SC, the production of new goods/services, and information management.
- 2) Organizational structures, such as the degree of vertically integrated relations.
- 3) Performance measurement and supporting technologies, involving technological advancement and information technology.

Due to SCs' increasing sophistication, a growing amount of data must be tracked in order to assess how well they are performing in their intended purpose (Leonczuk 2016). SCM are used by both product and service provisioning organizations, despite the fact that the chain's volume varies greatly from one company activity to another (Janvier-James 2012). SCM acts as the hub for coordination between manufacturing and procurement, which promotes and maintains any company's operational productivity (Lu & Swaminathan 2015). The Supply Chain Management Professionals' Council (2009) states that SCM entails creating and overseeing operations for purchasing, providing, transforming, and all other logistical processes. Collaboration with network participants, such as retailers, logistics service providers, and customers, is also necessary. The management of the entire end-to-end process, from the creation of the good or service to its sale, consumption, and eventual

disposal by the customer, is known as the supply chain process (Leonczuk 2016). This entire process entails the creation of the product, its acquisition, its planning and forecasting, its



manufacture, its distribution, its fulfillment, and its post-sale support (see Fig. 2.1).

Figure 3.1. Supply Chain Process

SCM was explored and described in terms of strategic direction by McCue and Pitzer (2005) in the context of the private sector. Lambert (2004) studied the private sector's SCM as the integration of eight business processes: (1) customer relationship management, (2) customer service management, (3) demand management, (4) order fulfilment, (5) manufacturing flow management, (6) supplier relationship management, (7) product development and commercialization, and (8) returns management. Also, Janvier-James (2012) describes SCM as management that enables an organization to obtain the appropriate goods and distribute them on time at the desired place, in adequate amounts, and at a reasonable price. SCM is performed to determine and control SC processes and is based on the premise of saving expenses and enhancing customer service. A significant aim is to strengthen the performance of an organization in the

globalized economy in terms of market rivalry and changing consumer preferences (Agami et al. 2012).

SCM seeks to increase effectiveness while lowering operating costs, improving operational effectiveness and product or service quality (Lu & Swaminathan 2015). According to Boubekri (2001), the primary goals of SCM are varied and include providing the best service to the customer, cutting down on production and processing times, lowering risk across the SC, ensuring that the right procedures are followed, maintaining inventory levels, and putting a strong emphasis on the SC's efficiency.

The performance of SCs needs to be continually improved (Leonczuk 2016). A study by Hausman (2004) argued that various steps could be used to improve the SCP beyond those affiliated with different businesses and their roles. Managing a company or its SC might be evaluated openly based on the products or services delivered to the consumers and other indicators defined by these entities. Nevertheless, it is more important to analyse the whole SC. Gunasekaran et al. (2001) established the need to assess SCM's efficiency for effective and reliable SCs.

3.3 Performance Management

Understanding the significance and value of PM inside any business is essential for any firm to fulfil its business goals and objectives (Leonczuk 2016). Business managers that are knowledgeable about performance can use it to their advantage to acquire a competitive edge. Effective PM helps firms make sure they are utilizing their systems, employees, and resources to get the most out of them, according to Carvalho et al. (2010) and Elshaer (2020).

PM is the managerial process for integrating enterprise plans, including transforming plans into specific outcomes. Thinking of PM as a paragliding theory that blends rising business and technology development methods (Leonczuk 2016). In short, it is no longer necessary to enforce techniques of isolation and coordination (Cokins 2004; Elshaer 2020). PM is a systematic and holistic approach to producing positive outcomes for organizations by enhancing staff productivity and through leaders' strategies and skills (Armstrong & Baron 2004). The overriding goal of PM is to generate a high-performance atmosphere in which individuals and organizations take responsibility for the ongoing growth of business processes and their strengths and accomplishments in the sense of effective management (Anca 2009). The key goal is to inspire people to do the best job possible by following a clear objective (Armstrong 2006).

According to Armstrong (2006), PM is a systematic process in which key elements are consensus, evaluation, feedback, positive change, and interaction. It is a matter of measuring the results based on the results obtained about the goals provided as objectives. It is focused on the goals, aspirations, and measures or indicators of performance in this regard (Elshaer 2020). This is focused on recognising standards for work, goals, and performance enhancement and strategies for personal development. This offers a forum for an established performance dialogue, including a shared and ongoing review of progress towards goals, objectives, and strategies. PM is a complex and flexible process involving managers and staff operating as partners in a framework that sets out how efficiently they can aim to achieve the intended outcomes (Kamble et al. 2018). This is based on contract and agreement formation theory rather than on command-by-command management (Armstrong 2006).

PM in SCs is not different; the role is to ensure companies optimize their SC effectively to enhance their efficiencies and eventually reach their goals and objectives. The PM of SCs determines the most effective SCM technologies, processes, metrics, and indicators (Kurien & Qureshi 2011). To achieve this, PMS examines qualitative metrics like quality of organizational products and services and client satisfaction and can quantitatively evaluate SC KPIs like time for delivering a product.

According to Stefanovic (2014), PM is a cohesive aspect that brings together various business initiatives for improvement and directs the formulation of company strategies. It also assists in strategy monitoring and implementation processes. PM plays a great deal in managing SCs. Accurate and timely evaluations of SCs plus individual actors are a prerequisite for prosperous functioning (Stefanovic 2014). PM needs to be part of any well-designed SC strategy, planning, or reporting process. The objective of the PM or SCs in any company is to optimize processes by analysing and monitoring KPIs. Measuring and monitoring metrics against predetermined objectives of an organization can offer added value to voluminous data (Ibrahim & Al Falasi 2016). The analysis enables businesses to track their metrics at various levels and make decisions that will enhance business performance.

3.3.1 Benefits of Supply Chain Performance Management

One of the benefits of effective PM of SCs involves increasing organizational profits. Effective SCM assists in realizing this goal by maximizing efficiency. Applying more efficient SC practices can propel a business to improve its revenue returns and cut down on costs (Carvalho et al. 2010; Elshaer 2020). PMS assist in measuring the levels of SC efficiency of a given

organization via performance metrics and SC measures. For instance, SC measures like inventory turnover can assist a company to measure the speed with which it moves its inventory (Zaridis et al. 2021). Rapid inventory movement reduces storage expenses and assists an organization to sell goods at the right price instead of giving discounts to clear its stock. Additionally, an SC measures of on-time delivery (OTD) can assist businesses to minimize troublesome expenses (Kurien & Qureshi 2011). OTD evaluates whether finished products or raw materials are delivered at the requested time with the right data at a given stage in the SC, and OTD helps businesses obtain products rapidly and minimize storage costs (Kurien & Qureshi 2011).

Additionally, PM ensures the effective flow of information. For businesses to function effectively, there is a need for effective communication throughout every facet of the business. All business divisions, departments, workers, managers, and systems are interconnected to realize an organisation's overall strategy (Cai et al. 2009; Ibrahim & Al Falasi 2016). Information flow fosters effective decision-making and cuts down on costs. PM assists businesses to track various details and information concerning the cost of goods, delivery time, or inventory levels (Kurien & Qureshi 2011). The availability of an effective PMS can streamline the flow of information and decision-making processes.

3.4 Performance Measurement of Supply Chains

Performance measurement is the process of determining how effectively and efficiently certain actions are carried out (Leonczuk 2016). In SCM, performance measurement is used to identify activities that are not in line with the goals and to develop a plan of action that may be implemented (Widyarto et al. 2019). Handfield and Bechtel (2002) suggested that it is essential to assess the relative efforts and contributions of each actor, and this calls for PMSs that operate at various

levels and connect the efforts of these levels to realize the overall objectives of the SC. To achieve this, PM processes should offer tools and techniques for measuring, managing, and monitoring SC processes. In the last few decades, SCM has drawn a lot of interest from both professional and academic areas (Elshaer 2020). Nonetheless, there is a lack of integration between PMSs and SCM systems. Most PM frameworks and approaches have concentrated on a single company or only cover a particular type of performance like monetary performance (Handfield & Bechtel 2002). Shepherd and Gunter (2010) presented a taxonomy of measurement that can be used to evaluate the performance of an SC that is generally categorized into macro and micro-processes. Firms can evaluate performance at operational, strategic, and tactical levels using metrics that deal with customer services, sourcing, planning, manufacturing (making), and delivery (Gunasekaran et al. 2001; Kamble & Gunasekaran 2020).

- Key Performance Indicators, or KPIs, are necessary for measuring supply chain performance (Balfaqih et al. 2016). The selection of KPIs for measuring supply chain performance must be customized to meet company objectives.
- Agrawal (2014) applied a process-based methodology to measure the performance of the supply chain using the Supply Chain Operation Reference (SCOR) model. Plan, source, make, deliver, and return or customer satisfaction are the five supply chain activities that can be used to categorize supply chain performance. These procedures measure cost, time, flexibility, and inventive quality as well as qualitative and quantitative measures (Shepherd & Günter 2006).

- Various scholars have employed a process-based approach for SCPMS. For instance, Ross-Smith and Yearworth (2011) employed a process-centric approach to create models and assess the performance of SCs by employing six sigma metrics.

Shepherd and Gunter (2010) and Zaridis et al. (2021) demonstrate that despite the considerable improvements in literature in the past decade, there are still vital aspects associated with SC PM that has not received sufficient attention, like process modelling, predicting, data integration, and software support (Shepherd & Gunter 2010). A limiting factor of the existing PMSs is that they are mostly centred on financial and cost indicators, and they are also internal facing, historical, and incompatible. In the dynamic contemporary business environment, these measures are no longer sufficient (Cai et al. 2009), and the dynamic environment needs new and innovative PMS that have the following attributes:

- Related to the company strategy
- Timely and actual
- Extensive by taking into consideration relevant parameters
- Simple and easy to utilize
- Consider non-financial KPIs
- Foster improvement but not only monitoring
- Adaptable to the particulars of SC configuration and actors
- Consistent and accurate
- Provide real-time information to the appropriate persons and on the right devices
- Effectively represent information at various SC levels

- Foster proactive management instead of reactive
- Offer insights regarding new emerging patterns, challenges, and opportunities

While responding to the aforementioned challenges of SC performance measurement, various measurement approaches have been proposed: the logistics scoreboard, economic value analysis, SC operations reference model (SCOR), activity-based costing, and balanced scoreboard (Cai et al. 2009). Ka et al. (2019) note that most scholars have classified performance measuring systems for SCs into techniques, frameworks, approaches, and models. Researchers have categorized SCPMS as approaches and techniques that can be further segregated into hierarchical-based, perspective, and processed-based approaches. Meanwhile, Bullinger et al. (2002) joined top level and bottom level measures to create a performance model. Gunasekaran et al. (2004) established a model that considers four processes in SCs, including delivering, planning, sourcing, and manufacturing, while Thakkar and colleagues (2009) employed a process-oriented approach to measuring the performance of the SC among small and medium-scale sectors.

Other researchers have developed hierarchical models, including Askariazad and Wanous (2009), who prioritized performance measures within SCs. Other researchers presented the association between SC performance metrics and SC strategies (Mishra & Sharma 2014). The same researchers developed a performance model for evaluating the performance of the painting industry. Bagloee and colleagues (2015) suggested an integrated framework for measuring three echelons of SC performance, including distributors, suppliers, and manufacturers. Meanwhile, Govindan et al. (2017) established a hybrid approach for measuring the performance of SCs within the food sectors that considered green performance metrics. In another study, a utility-based approach was deployed to capture the interdependencies between various risks, performance

measures, and risk mitigation approaches within the SC network (Qazi et al. 2018). Other scholars have developed models that examine the social issues apply to the suppliers and measure the performance of SCs (Venkatesh et al. 2019).

Additionally, other scholars have proposed perspective-centric approaches for measuring SC performance. For instance, Otto and Kotzab (2003) considered various perspectives for evaluating SC performance. The approach brings together generic performance metrics by interconnecting the metrics. There are two key perspectives for SC performance measuring: balance scorecard and SC operation reference models. Many researchers have employed a balanced scorecard (BSC) model to assess the performance of SCs. For example, Kaplan and Norton (2005) established a BSC approach that selects and combines SC performance measures based on a balanced view. The approach underscores balancing four categories: innovations, consumers, internal process, and financial aspects. In yet another study, Anand et al. (2005) connected the SCM model to BSC to identify performance measures for various companies in different geographical locations.

Only leading-edge businesses used expanded PMSs that have been developed in-house or purchased and subsequently implemented to measure organizational performance and SC activities (Stefanovic 2014). Meanwhile, other firms remain in the internal or integrated phase of the maturity model depicted in the figure below by focusing on financial metrics for assessing enterprise and SC performances (Stefanovic & Stefanovic 2009).

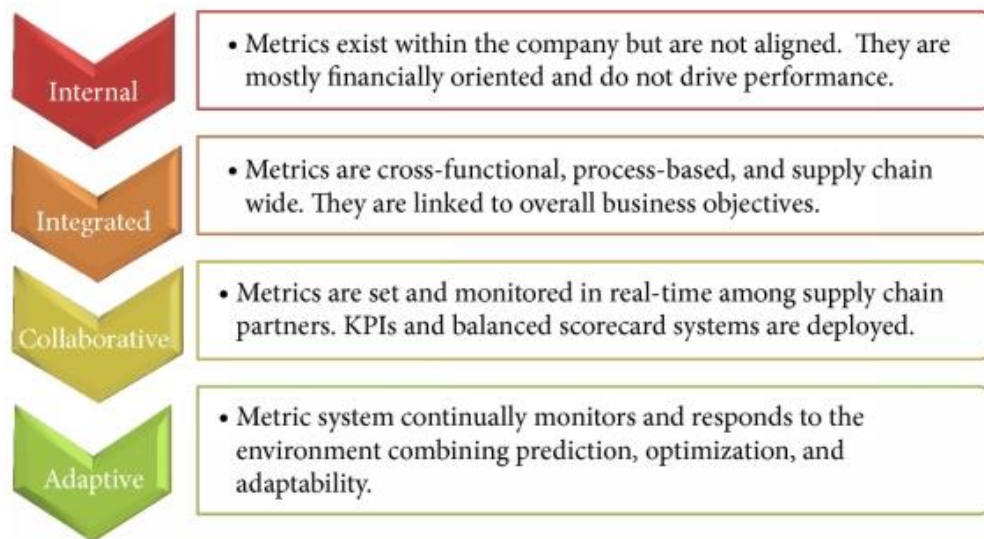


Figure 3.2: SC Performance Management/Measurement Maturity Model, adopted from Stefanovic (2014)

A major prerequisite for efficient SC PM involves initiatives geared towards standardizing SC metrics and processes (Zaridis et al. 2021). The standardized approaches enable integration and collaboration, offer best practices for process improvement, and benchmark for comparing performance to gain a competitive advantage. The standardization of the SC metrics and activities allows companies to compare their results against other leading organizations to gain visibility of SC operations (Elshaer 2020). Also, actors and partners within the SC network can effectively communicate and collaboratively measure, control, and manage their activities (McDonald 2002).

Meanwhile, the SC operations reference model (SCOR) has received considerable attention in scholarly work. The SCOR was established by the SC Council (SCC) and represents a global model for SCM that can be used in diverse business environments (Gupta et al. 2019). It combines benchmarking, best practices, and business process reengineering into one model. Such standardization enables a single SC model with KPIs and predictive analyses. SCOR comprises

performance features and metrics that consider five management processes (sourcing, planning, returning, manufacturing, and delivering (Ka et al. 2019)). Moreover, SCOR comprises 13 metrics that correspond to level 1 that fall into five classes: flexibility metrics, asset metrics, reliability measures, cost measures, and SC responsiveness metrics. Some metrics are associated with the consumers and are known as consumer-facing, while other measures focus on the internal operations of the SC (internal-facing (Ka et al. 2019)). Min and Zhou (2002) have developed a SCOR model to measure SC performance. It employs the analytical hierarchy process (AHP) and methods for order preference and links strategic goals to SC operations. The SCOR approach provides a layered metric system and is considered the first true step to pervasive SC performance measurement (Gupta et al. 2019). For businesses to implement SCOR, they need to extract, convert, and load all relevant information into a distinct and incorporated data source.

Other useful measures of assessing the performance of SCs include hierarchical-based measures that evaluate performances at different hierarchical levels (Ka et al. 2019). SC managers need the right metrics at the right time to make the right decisions at every level of SCs (operational, strategic, and tactical levels). Gunasekaran et al. (2001) created a model with strategic, operational, and tactical measures. The central idea of this model was to assign suitable metrics to the appropriate management levels. Nonetheless, managers and scholars might face challenges in choosing the right metric as the framework proposes several metrics. Similarly, Pramod and Banwet (2011) created a hierarchical model to assess SC performance in terms of health, safety, and risk. Meanwhile, Dey and Cheffi (2013) presented an empirical study that developed a hierarchical performance measuring system for green SCs.

SC integration is crucial to business operations and performance. Thus, to realize the full advantage of SC integration, businesses are called to deploy collaborative and intelligent web-based information systems that proactively manage process uncertainty (Stefanovic 2014). Most existing information systems that support SCM are repositories for voluminous transactional information. Such systems are only data-rich but lack decisive information that can be used in decision-making. The voluminous amount of data gathered and stored in massive and distributed databases by far surpasses the human capability of analysis and comprehension. Hence, it is essential to deploy analytic tools. Stefanovic (2014) approximates that 80% of data within transactional databases supporting SCM is irrelevant to decision-making processes. Therefore, there is a need for data aggregations and analyses that can convert it into resourceful information. An effective SC allows data management decisions to be made at any point of the SC. At each stage, there is a need to make the best decisions about the wishes of the customers and meeting cost-effectiveness (Boubekri 2001).

3.5 Supply Chain Effectiveness

Performance measurement is defined as a method for evaluating the efficacy and effectiveness of the operations undertaken by an organization (Leonczuk 2016). Effectiveness involves the point at which consumer expectations are satisfied, while efficiency is an indicator of the degree to which company assets are employed to offer a specific element of client gratification (Neely et al. 1995). Effectiveness is, by definition, a qualitative metric determined by an inspector. Effectiveness, according to Möller and Törrönen (2003), "refers to an actor's ability to create and produce solutions that bring more value to markets (customers) than existing alternatives"(p. 112). SCE is defined as the efficacy of fulfilling orders accurately as per the client's order and specifications

while achieving order completeness. It can be evaluated in relation to the fraction of the orders that are completed within the satisfactory time frame by clients (Okongwu et al. 2012).

Singh (2016) notes that achieving both efficiency and effectiveness has been an uphill task for many organizations. Within supply chain management studies, efficiency is a cost-related gain, while effectiveness is a value of customer response. This means that efficiency gains are realized through Just-in-Time manufacturing and logistic supplier networks, while effectiveness gains are realized through customer engagement (Möller and Törrönen 2003; Singh 2016). While the benefits of performance evaluation are well known, SC actors have not made full use of their abilities since they have not enhanced efficiency and effectiveness in SCM endeavours (Arzu et al. 2010). Table 2.1 outlines the fundamental implications of employing efficiency and effectiveness in the context of a supply chain. As objectives and evaluations of supply strategy, efficiency and effectiveness must be reviewed in relation to time, interdependence, and boundaries. While efficiency is the formalization of effectiveness, effectiveness is a representation of goals that was jointly created (Borgström 2005).

Table 3.1 Efficiency and effectiveness as value creation processes.

| | Efficiency | Effectiveness |
|-------------------------------|---|---|
| Value creation process | The value of exchange is determined by serial, pooling, and reciprocal interdependencies. | Utilization value determined by trade value and mutual interdependence. |
| Focus | Resource exchange. | The use of resources. |

| | | |
|-------------------|---|--|
| Activities | Purchasing/selling, manufacturing/using, communicating and coordinating. | Fit between newly acquired resources and those already in existence. |
| Boundary | Process between two parties (the user and the production coalition) to make the most use of each other's resources. | Process between two parties (the user and the producer group) to interpret the resources of a given exchange, i.e. the potential to combine resources. |
| Measures | Input-output relationship that should balance a negotiated value. | Perceived capacity to utilize service quality. |

Source: Borgström, 2005.

SCE can be measured using a variety of criteria, including market access, production speed, overall cost, efficiency in matching consumer needs, profitability, and ROI (Gunasekaran et al. 2001). The performance of the delivery can be combined with other indicators, like the time taken to process an order and request a delivery date. SCs must therefore have a certain degree of flexibility in the quantity and range of goods and services, which can be compensated to meet customer needs (Shepherd & Gunter 2006). A further indicator of effectiveness can be devised to include delivering services in the right quantities as established by consumers with optimum transactions amongst SC actors (Cho et al. 2012). Subsequently, the design of an efficient SC involves the following key steps:

- 1) Establish strategic and operational priorities as a roadmap to procedures.
- 2) Incorporate and organize work within the SC. Organize actions with vendors and consumers, including discussing problems associated with production and consumption.

- 3) Coordinate management and execution throughout the SC, which includes a mechanism for transmitting data around the SC that provides accessibility to details for those who use it in their activities.
- 4) Evaluate the likelihood of establishing strategic alliances.
- 5) Strategic alliances are beneficial and occur whenever two or more companies have merged their products or services as they can gain benefits from those that wish to participate (Leonczuk 2016).

To be successful, the SC needs a highly dedicated workforce (Alatrasta & Arrowsmith, 2004). The commitment may be fostered by implementing workforce support programs (Gardner & Schermerhorn 2004), creating reward mechanisms and policies to increase employees' commitment to SCE (Smilko & Van Neck 2004). The literature review demonstrates a lack of academic research investigating the antecedents of SCE. A significant number of explorations have been committed to assessing the execution of strategic aspects of SCE (Gunasekeran et al. 2001). Only limited research has considered the effect of the adopted PMS on SCE (Cai et al. 2009).

3.6 Dimensions of a Strategic Supply Chain and Supply Chain Effectiveness

Over the last decade, there has been a growing emphasis on supply chain management as a means for businesses to gain a competitive advantage in marketplaces (HUO 2009; Almatrooshi et al., 2021). Today, a company's ability to gain a competitive advantage depends on its capacity to use the performance management tools built into supply chain

networks to improve current business procedures (Horvarth 2001). Despite the well-known recognition of the possible positive effects of SCM on company effectiveness, there is substantial proof that there is a gap between theory and practice in perception and implementation (Soni & Kodali 2012). Several theories have been proposed in understanding SCM. These theories are summarized in the following dimensions. This study examines the major characteristics of a strategic supply chain that may have an impact on SCP in general and its effectiveness in particular. Three relevant dimensions have been identified—goal alignment, commitment to networking and decision-making.

3.6.1 Goal Alignment

The challenge for stakeholders, firms, and economies is to pursue goals alongside the objectives of sustainable SCs. The term "goal" is commonly used among researchers and academics to refer to the aims and objectives that organizations strive to attain. These are mirrored in an organization's investment decisions, performance standards, and action plans (Latham et al. 2005).

According to Elshaer (2021), for organizational goals to be successfully achieved, they must be congruent with the environment of that organization. According to the research, establishing SCP promotes consensus and alignment with supply chain objectives (Kaplan et al. 2010). Goal alignment may be one of the components of a strategic supply chain that affects SCE, according to Babbar et al. (2008), for a supply chain to be effective, its parties must be strategically aligned (Bowersox et al. 1999).

3.6.1.1 Effect of Goal Alignment on Supply Chain Effectiveness

Aligning goals makes ensuring that a company's efforts are all focused on achieving shared supply chain objectives. Therefore, regardless of the assigned work, each link in the chain needs to have the same vision (Elshaer 2021). It is more difficult for organizations to focus on and prioritize supply chain challenges while they are experiencing financial and operational problems, which prevents them from fulfilling SCE (Nollet et al. 1994). Supply chain operations, according to Bowersox et al. (1999), should be strategically aligned. According to the existing literature, it is critical for organizations to align their general business plans with their supply chain strategy in order to achieve both overall business and supply chain objectives (Sahay & Mohan 2003). They must also design basic organizational-wide benchmarks for evaluating SCP (Deshpande 2012). Measures such as delivery, cost, flexibility, and quality can be used to determine SCE (Kim et al. 2006; Sharma & Yu 2010).

Cost and risk reduction objectives are met in several ways. To invest, manage relationships, develop abilities for each, and achieve these goals, a distinct strategy is needed (Elshaer et al., 2022; El-Aidie et al., 2021). According to Simpson and Power (2013), SCs can increase performance more consistently on a value chain level by aligning their primary objectives. Plans and strategies can act as a basis for, as well as a guide for, various company operations regarding what must happen and be done in order to meet firm goals (Rodrigues et al. 2004). Baier et al. (2008) explained that a properly prepared strategy or plan informs employees of the firm's priorities and also aligns organizational departments and operations with the purpose of achieving the goals of the company (Baier et al. 2008), which increases organizational effectiveness and promotes company-wide efficiencies (Chan et al. 1997).

Firms need to align these goals and objectives effectively with SCM programs by using approaches from other performance-focused SCs. Leveraging can be done to facilitate more successful SCM for goal attainment. Aligning these mechanisms with appropriate SCM goals and seeking more feasible solutions to the challenges faced will lead to more sustainable, innovative, and productive SCM (Simpson & Damien 2013). As a result, Xu and Beamon (2006) proposed that there is a need for supply chain participants' actions to be coordinated in response to strategic challenges and in light of the ultimate goals of the organizations. According to Lee (2004), alignment is a critical component of a supply chain. This study put out the following hypothesis in light of the discussion of the preceding literature.

H1. Goal setting and alignment is positively related to supply chain effectiveness.

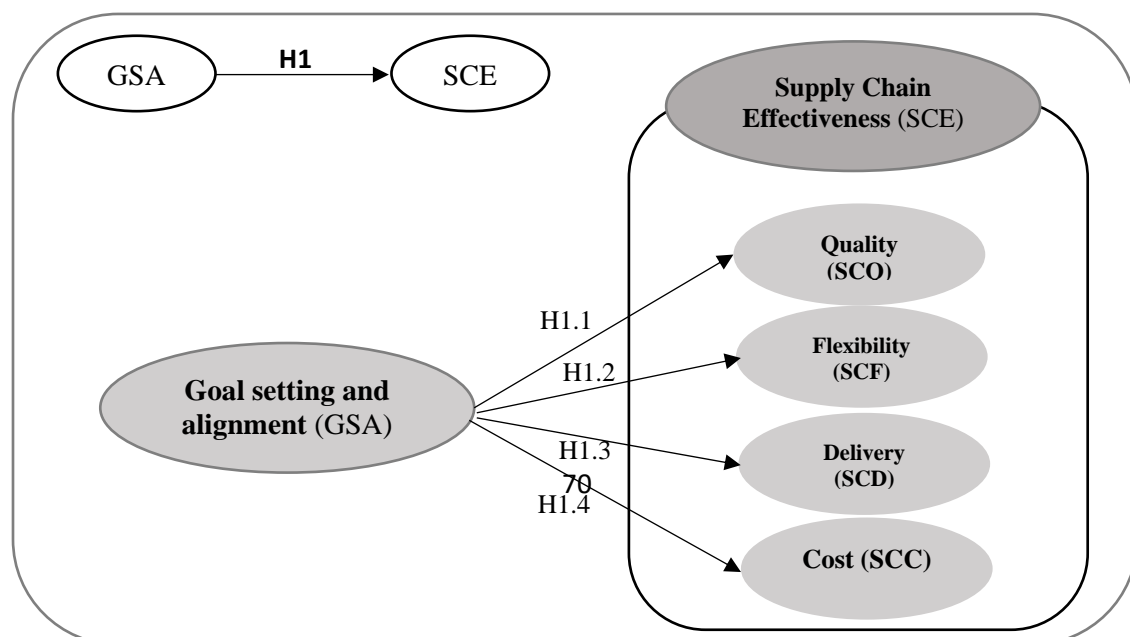
The following hypotheses were accordingly developed:

1.1 Goal alignment has a positive impact on SCF.

1.2 Goal alignment has a positive impact on SCQ.

1.3 Goal alignment has a positive impact on SCC.

1.4 Goal alignment has a positive impact on SCD.



3.6.2 Commitment to Networking

A wide term, commitment describes how organizations are committed to task effectiveness and how supply chain participants are committed to their work and to one another. Supply chain participants need to be sufficiently committed to networking, in addition to having their strategic interests aligned. Chan and Chan (2009) contend that understanding, communication, and information sharing are all essential components of networking commitment. Long-lasting, prosperous relationships depend on commitment and trust (Kumar 1996), which are the foundations of SCM (Morgan & Hunt 1994). According to Morgan and Hunt (1994), the degree of cooperation among supply chain participants is primarily determined by mutual trust and commitment. Researchers argued that certain practices, such as information sharing and decision synchronization, are frequently linked to cooperation and commitment between supply chain participants (Cao & Zhang 2011).

The implementation of staff support programs (Gardner & Schermerhorn 2004), creation of incentive plans (Smilko & Van Neck 2004), and creation of policies (Ketokivi & Castaner 2004) aimed to increase employee involvement can all inculcate commitment to SCE. Inter-organizational networks are necessary for supply chain participants to quickly adapt to changing customer needs, according to McAdam and McCormack (2001). Subsequently, networking commitment is a crucial component of a supply chain and is regarded by SCE as a crucial aspect of the strategic supply chain.

3.6.2.1 Effect of Commitment to Networking on Supply Chain Effectiveness

The key objective of SCM is to optimize the performance of the SC that adds as much value as possible for the least cost possible. Linking all SC agents to work together within the company is crucial to increase SC productivity and benefit all parties involved (Finch 2006). It is argued that senior management's support for stable stakeholders' relationship and performance metrics enhances performance efficacy (Elshaer & Marzouk 2019; Lei et al., 2021). Organizations perform better when their people are motivated (Adler & Corson 2003; Molleman 2000; Alghfeli et al., 2021; Almatrooshi et al., 2020), and mechanisms are put in place to boost commitment and motivation (Schermerhorn et al. 2003). According to Zsidisin and Ellram (2001), regular information flows should be used to build network relationships. In this regard, Mafini and Loury-Okoumba (2018) claimed that relationships within the supply chain, information exchange, and cooperation are key factors in supply chain performance, which increases the likelihood of supply chain effectiveness. Surana et al. (2005) state that coordination is necessary for a network of supply chains to be flexible, resilient, and consistent. This highlights the need for a proper network commitment to the practice of good SCM.

Supply chain members engage with one another to share resources (Fantazy et al. 2016), resulting in supply chain stakeholders' flexibility, cooperation, and solidarity (Kumar et al. 2006). According to Jongkuk and William (2010), supply chain cooperation and support often involve varying levels of informal and formal partnerships that evoke wider collaboration among numerous supply chain stakeholders as their attention converges as they strive to build shared benefit and results. These types of relationships usually have

medium to high levels of alignment (Stevenson & Spring 2007). According to Masudin et al. (2018), improved supply chain communication and decision alternatives contribute to improved supply chain performance. Further, Fantazy et al. (2016) claimed that higher trust among network members leads to stronger collaboration in which individuals share information, benchmark activities, and engage in more open discussions. A supply chain needs highly dedicated workers throughout its network to function effectively (Gardner & Schermerhorn 2004). In essence, Sahay and Mohan (2003) argued that supply chain participants must be committed to each other in order for their supply chains to be effective.

The degree of information exchange can affect performance, according to Fantazy et al. (2016). By reducing uncertainty, open information sharing facilitates decision-making that is successful (Ketchen & Ireland 2007). Successful firms and organizations encourage strategic communication and information sharing. Effective communication, according to Ketchen and Ireland (2007), is the primary essential component for an organization to succeed with strategic SCM. In the same line, in their studies, Clark and Lee (2000) and Min et al. (2005) discovered that cooperation in a supply chain boosts its efficiency. Overall SCE is determined by the degree of commitment throughout a supply chain (Wu et al. 2004). A supply chain's effectiveness is increased through commitment to collaboration, according to researchers like Clark and Lee (2000) and Min et al. (2005). Additionally, Soosay et al. (2008) emphasized that collaboration among supply chain participants enhances effectiveness. Commitment, in large part, assures that participants do not act in ways that would adversely affect the entire SCP.

Numerous studies have demonstrated the importance of networking commitment, including knowledge transfer, information exchange, and communication (Chan & Chan 2009), in achieving supply chain alignment with common goals. It is argued that teamwork and working together in a supply chain boost its effectiveness (Soosay et al. 2008). Taking into account the current discussion, this study offered the following hypothesis:

H2. Commitment to networking throughout a supply chain is positively related to supply chain effectiveness.

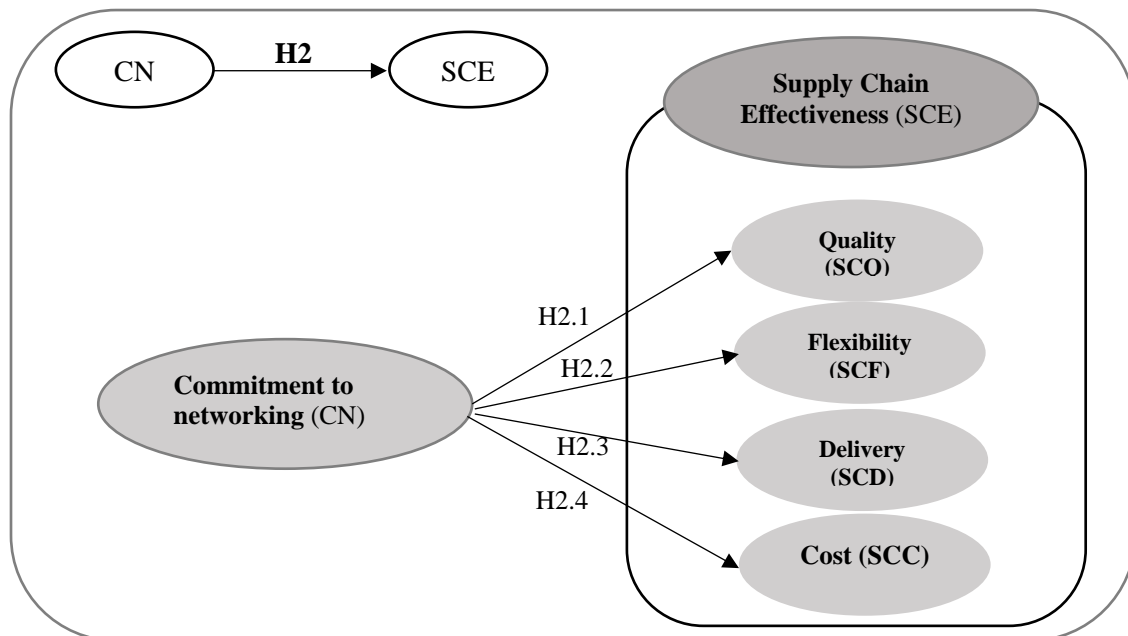
The following hypotheses were accordingly developed:

2.1 Networking commitment has a positive impact on SCF.

2.2 Networking commitment has a positive impact on SCQ.

2.3 Networking commitment has a positive impact on SCC.

2.4 Networking commitment has a positive impact on SCD.



3.6.3 Decision-Making

To preserve profit and growth, businesses constantly seek to improve the efficiency of their supply chains. Strategic thinking is recognized as a way to use certain forms of power in supply chains. The current competitive environment requires supply chain members to think and act strategically. Researchers have emphasized the importance of strategically operated organizations in which employees have the ability to realize their organization's strategic aim and actively contribute to the organization (Elshaer & Marzouk, 2019; Alharthi et al., 2019). According to Moberg et al. (2002), Thinking strategically must be realized in terms of both operational effectiveness and as a corporate strategy.

Organizational decision-making can be classified as either centralized or decentralized. Centralization of decision-making refers to the extent to which senior management has complete authority over decision-making. According to Chopra and Meindl (2009), as a dominating player in a supply chain, the management delegated critical decisions during this process.

SCM decisions can be broadly divided into two categories: strategic (i.e., long-term decisions linked to corporate strategies that affect an entire organization) and operational (i.e., short-term decisions with a focus on an organization's daily operations (Chopra & Meindl 2009)). Decision-making in SCM is subject to various criteria and multiple objectives as part of the decision process. There are multiple decision-making criteria for such decision-making methods that are appropriate for SC objectives. Most decision-making has been centred on distribution in the SCM context, SC risk management, strategy, and PM (Beck

& Hofmann, 2012). This indicates the criticality of decision-making for crucial situations in SCM and its successful implementation.

The role of senior management's participation in the supply chain has been significantly emphasized in the literature (Krause, 1999). Top management is aware of the organization's plan to maintain its competitiveness in the market, therefore they have a thorough awareness of SCM requirements (Hahn et al. 1990). Top management, according to Elshaer and Marzouk (2019), devotes the necessary time, personnel, and financial resources to assisting suppliers who are prepared to form long-term collaborations with an organization throughout the supplier development process. They further noted the importance of top management support for the adoption of innovative projects within an organization. For instance, the support of a company's senior managers could affect the success of a new program by encouraging staff involvement or promoting a cultural shift within the company (Daily & Huang 2001).

3.6.3.1 Effect of Decision-Making on Supply Chain Effectiveness

Long and complicated supply chains in a global setting might have a variety of possible scenarios. So, across a supply chain, effective decision making necessitates the movement of both information and materials. Decision-making at the strategic level is concentrated on the overall direction of an organization, and it is expected that such decisions should be centralized to allow for greater control (Chopra & Meindl 2009; Mohamed et al., 2018). To enable supply chain participants to make decisions quickly and effectively and to be able to deal with local uncertainties, operational decisions pertaining to daily operations must be

decentralized. Therefore, it is not surprising that organizations attempt to strike a balance between centralizing and decentralizing decision-making (Sabath & Autry 2001). According to Deshpande (2012), for supply chain participants to maximize the value, timely decision-making is essential.

At the organizational level, decision-making should involve a wide range of factors (Deshpande 2012), including:

- employee empowerment,**
- the level of participation in decision-making by individuals within an organization,**
and
- the level of encouragement given to staff members to critically evaluate and report on challenges and issues.**

To organize decision-making, Ketchen and Ireland (2007) advocated that supply chain parties should communicate routinely with one another. They added that employees must take decisions that support both their immediate needs and their chain of command as well as the overall long-term objectives of their organization. When using a traditional strategy for competition, each organization is required to make autonomous, quick decisions that are obviously intended to maximize the advantages for its own organization and have an impact on other organizations. According to Abdul-Jalbar et al. (2003), when there are more retailers, decentralization is more successful. Decentralized decision-making is also preferred at the operational level in supply chain networks (Deshpande 2012). Decision-making, then, is another strategic supply chain dimension that has a big impact on SCE (Babbar et al. 2008), as it affects not just employees of supply chains but also the whole

operations of the SCs (Deshpande 2012). This study put out the following hypothesis in light of the literature that was reviewed:

H3. Centralized decision-making process is positively related to supply chain effectiveness.

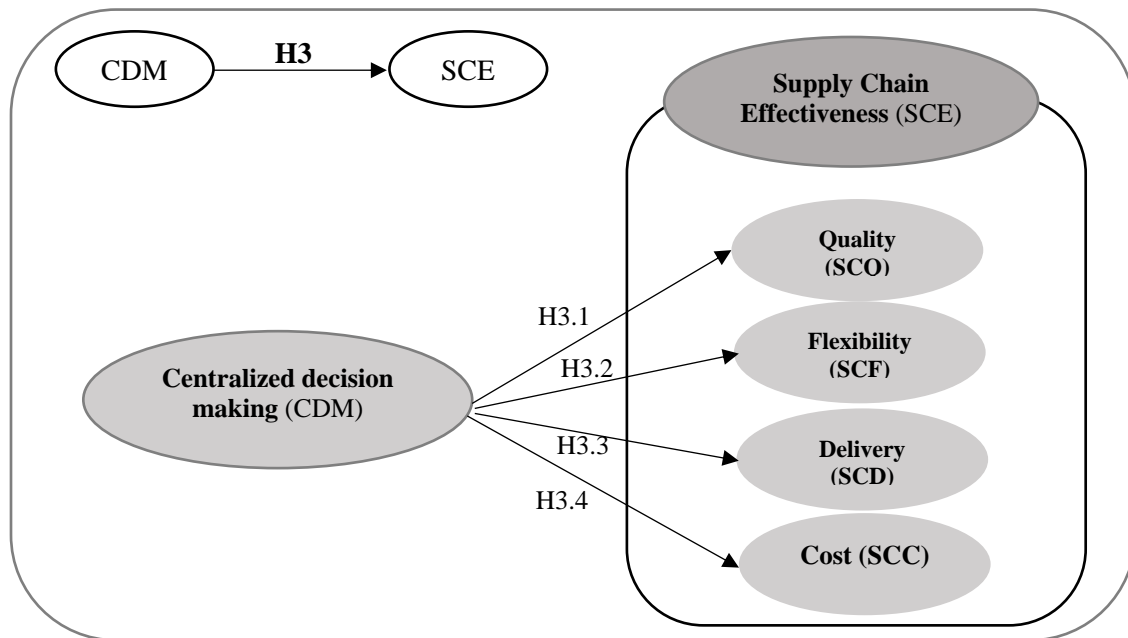
The following hypotheses were accordingly developed:

3.1 Centralized decision-making process has a positive impact on SCF.

3.2 Centralized decision-making process has a positive impact on SCQ.

3.3 Centralized decision-making process has a positive impact on SCC.

3.4 Centralized decision-making process has a positive impact on SCD.



As a result, the final conceptual framework describes the key concepts covered in the literature review. The framework suggests that goal alignment, commitment to networking,

decision-making centralization, and SCE are directly and positively correlated with four measurement metrics: cost, flexibility, delivery, and quality.

3.6.4 Determinants of differences in supply chains

Supply chain management is the process of aligning a supply chain's internal and external stream through member coordination and collaboration in an effort to manage resources, information, and investments as effectively and efficiently as possible in order to create value for the end user (Arantes et al. 2018). According to Heath (2009), whether the organization is seen from the inside or the outside, organizational effectiveness has a different approaches. It is critical to recognize some of the activities for the different approaches, including goal setting, and alignment, decision making process, commitment to networking, supply chain flexibility, supply chain quality, supply chain costs, and supply chain delivery.

Executives and leaders make a variety of decisions every day that involve exchanging information, analyzing data, developing fresh concepts, weighing alternative actions, and putting policies into practice (Obi & Agwu 2017). According to Christopher (2011), since competition now exists not between businesses but across supply networks, effective supply chain management has emerged as a potentially viable strategy for securing a competitive edge and enhancing organizational performance. As a result, consistency in all operating strategy decisions is crucial. Obi and Agwu (2017) assert that making good decisions plays a crucial role in the operation of any organization, whether it be a government agency or a for-profit corporation. In this context, the objective of this research is to identify the variations

among supply chain organizations in order to understand the unique characteristics of each of them in decision-making process. Hence, the researcher proposes the following hypothesis:

H13: CDM significantly differs across supply chain companies.

The era of supply chains and supply chain competition amongst businesses is currently in effect (Li, et al. 2006). Companies are forced to adapt to environmental changes in the today's dynamic business environment, which calls for new ways to develop their businesses (Kissimoto et al. 2014). Because of the fierce global competition, businesses foster cooperative and mutually beneficial relationships among supply chain partners (Wisner & Tan, 2003). Collaboration with other parties is now a highly effective strategy for reaching goals in a more flexible, comprehensive, and quick manner (Kissimoto et al. 2014). According to Huxham and Vangen (2005), collaboration is seen as "a major aspect of the strategy of many companies" as a result of the recognition of these changes and the requirement of competition. In fact, an expanding body of research indicates that having the ability to collaborate helps organizations work more effectively with citizens and other organizations to complete tasks and address complicated challenges (Krueathep et al. 2010). Others point out that having the capacity for collaboration gives practitioners a variety of approaches for addressing wicked problems, or unstructured challenges that cut beyond academic disciplines, policy domains, and administrative and political jurisdictions (Weber and Khademian 2008). Therefore, cooperation and information sharing between businesses are necessary for an efficient supply chain. As a result, here is a hypothesis:

H14: CN significantly differs across supply chain companies.

The term "goal" refers to a general idea that includes concepts such as "intention, task, deadline, purpose, aim, end, and objective" and is regarded as a "regulator of action." (Choon & Patrick 2016). With more than a thousand articles and reviews written on the subject in just over 30 years, Latham and Pinder (2005) claim that goal setting "is very simply the single most prominent theory in the area." According to Kotlar and De Massis (2013), the power of individual organizational members and organizational units may be reflected in organizational goals, according to scholars who follow the behavioral theory approach. Organizational goals are influenced by a variety of factors, including company resources, age, and size (Audia & Greve 2006). Organizations with different market positions, ownership structures, ownership types, industrial sectors, sizes, and other features pursue setting and aligning a variety of organizational goals (Kotlar et al. 2018; Alharthi & Khalifa, 2019). The theoretical framework created from these viewpoints emphasizes particular stages through which organizational objectives are influenced, including the creation of the organization's level action plan and strategic plans, institutionalization of specific goals at the micro scale, and mission and strategic goal development (Kotlar et al. 2018). Gagné (2017) claimed that organizational goals affect how organizations behave, specifically addressing the challenge of what processes allow businesses to translate corporate goals into set targets and behaviors. Hence, the following hypothesis is suggested:

H15: GSA significantly differs across supply chain companies.

Working culture has changed dramatically since the days of the industrial revolution. Environmental forces have altered and changed the entire world into a new period in which adaptability is required for survival (Ramendran et al. 2013). Flexibility has emerged as a critical success criterion in time-based competitiveness. This concept entails gaining a competitive edge by completing organizational operations in less time than the competition (Bogan & English, 2006). According to Toni and Tonchio (2005), Management flexibility is important at both the operational and strategic levels. Operating level flexibility is commonly associated with production flexibility when viewed through the lens of product variety and technical advancements (Toni & Tonchio, 2005). According to Krupski (2008), the development of an organizational system centered on flexible management should occur at the strategic level. Ramendran et al. (2013) claim that human resource management can change the flexibility practices, including functional flexibility. As a result, here's a hypothesis:

H16: SCF significantly differs across supply chain companies.

Organizations now have a way to create and improve their quality measures thanks to the requirement for a quality management strategy (Alsefri & Mugharbil 2021). In traditional supply chains, it is sufficient to quantify value-creating activities' added value in the form of physical metrics and process efficiency, however, expanding chain measurements and measures of contribution is necessary when integrating the supply chain to determine the extent to which each link and the chain's final consumers are benefiting from it (Bastas & Liyanage 2018). Therefore, quality management is the act of managing the firm's activities

so that it can compete with other businesses in the system (Sahoo & Yadav 2018). By offering high-quality services, businesses can boost consumer satisfaction and loyalty, which will lead to long-term prosperity (Zeithaml and Bitner, 2000). In order to increase service performance and quality, the cost-to-service relationship is continuously assessed and collaborative corrections are made (ACERO, 2006). Companies can put more of an emphasis on customer service with a focus on enhancing the quality. They can lessen waste and advance in speed and flexibility while keeping the highest standards of quality. Like this, they are often obtaining an advantage over the competitors, and they keep making improvements to maintain that position (Bizdevelopment 2011; Alharthi et al., 2019). Therefore, the study suggests that:

H17: SCQ significantly differs across supply chain companies.

Supply chain integration has been viewed as a means of reducing response times to the market and creating a competitive advantage from cost control (Sezen, 2008) allowing cost modifications will streamline operations and increase income (Chen et al. 2009). The basic goal of any company is to maximize profits, but the main obstacles they face are the increasing operating costs (Elshaer 2021). Due to this, the cost of production rises and may result in certain cost management and cost reduction measures, making it difficult for many firms to run efficiently given the knowledge-based cost constraint (Akeem 2017). Since the chain must constantly be aware of its financial liquidity for investment planning and unforeseen modifications, this area calls for very strong cultural work (ACERO 2006). According to Lockey (2002), cost control is concerned with a component of marginal cost

that entails determining unit cost, measuring, and improving the performance of subordinates in order to ensure that the enterprise's goals and the means to achieve them are achieved efficiently. In order for an organization to provide excellent goods and services with the resources that are now available, Akeem (2017) continued, costs must be controlled and reduced to an acceptable level with regard to waste management and loss prevention. According to ACERO (2006), some of the most important differences between supply chain companies are as follows: in a traditional supply chain, the flow of information focuses around demand and availability which are reflected in the cost offered and which are discreetly discussed in a one-to-one relationship. Therefore, the researcher suggests the following hypothesis:

H18: SCC significantly differs across supply chain companies.

The infrastructure (job responsibilities, skills, etc.), structure (facilities, machinery, etc.), and processes for providing a service are together referred to as the service delivery system in a services management environment (Goldstein et al. 2002). In this essence, Brabazon and MacCarthy (2017) defined the Order-to-Delivery process as the complete flow from the time an order is placed until the customer receives the good or service. In a developing service environment, service systems must respond to new requirements to provide personalized services with prompt delivery, high quality, and increased performance (Cui et al, 2003). Delivery accuracy, delivery dependability, or on-time delivery are all examples of delivery performance. According to Forslund et al. (2008), one of the most popular Order-to-Delivery performance measurements is on-time delivery, often known as

delivery precision. Some supply chain businesses lack the ability to respond quickly to client requests, have inconsistent product delivery rates, have limited insight into shipping information, and base effectiveness on functional tasks (Bizdevelopment 2011). Delivering services of high quality is a priority for supply chains that seek to create and add value to their customers (Grönroos and Ravald 2011). Notably, several academics have asserted that a service delivery system's primary goal is to close the gap between consumer expectations and experience (Ponsignon et al. 2011). In this regard, Abdelaal and Elshaer (2020) claimed that the quality of the information transferred across distribution channels, as well as the manner in which the information is presented, has a significant impact on delivery performance. Also, location, delivery channel, and vehicle timing are all essential elements in achieving good delivery performance (Sundström & Tollmar 2018). Based on the above discussion the following hypothesis is:

H19: SCD significantly differs across supply chain companies.

3.7 Conclusion

The preceding discussion of the previous literature review revealed that the primary purpose underlying SCs and PMS is to optimize business processes by observing and assessing important performance metrics. The critical discussion of the previous studies demonstrated several SC performance indicators while emphasizing their attributes and applications in various settings to enable SCE. This chapter critically review the literature concerning SC performance measurements. According to the researchers, performance measurement is still evolving and requires further studies. Particularly, Akyuz and Erkan (2010) refer to the need

for agility, framework development, cooperation, and flexibility. The review reveals that notwithstanding the significant evidence emerging from various scholarly works, there is still a need to comprehensively examine critical factors affecting SC performance measurement, specifically collaborative decision-making, benchmarking, and integration (Cai et al., 2009). Those metrics assist SC firms to match procedures and operations towards strategic goals (Cai et al., 2009). The discussion has heightened the significance of goal alignment, commitment to networking, decision-making centralization and their capability to influence the efficacy of the supply chains performance. Predictive metrics can enable an organization to forecast its future in SC operations by allowing proactive assessments to ensure improvements.

Chapter 4

RESEARCH METHOD

Chapter 4: RESEARCH METHOD

4.1 Introduction

The primary goal of this research is to explore supply chain effectiveness (SCE) using performance management systems (PMS). Furthermore, it investigates management perspectives of competency-based performance management, which is required for organizational effectiveness. The research design, sample selection, data collection tools and strategy are also covered. This is followed by the analytical design.

4.2 Background and Objectives

The supply chain as a phenomenon and interest in supply chain research has been increasing for the past few decades (Yap & Tan 2012). A typical organisations comprises distinct departments that manage different parts of its supply chain. When there is a lack of coordination between these departments, there are dramatic effects on the supply chain within and outside the organisation. Therefore, measuring supply chain performance (SCP) is the first step towards its strategic improvement (Leonczuk 2016).

Despite the increasing focus on SCM practices by experts and researchers (Malik et al. 2001; Tracey et al. 2005), there remain problems in efficiently and effectively implementing SCM practices (Handfield 1999; Handfield et al. 2000; Moberg & Speh 2003; Yap & Tan 2012). Many studies have clearly stated that there is a need to link dimensions of a strategic supply chain with organisational performance (Chen & Paulraj 2004; Donlon 1996; Li et al. 2005; Tan 2002). This study is primarily concerned with goal alignment, commitment to networking and decision-

making. Researchers proposed that dimensions of a strategic supply chain such as goal alignment, commitment to networking and decision-making can have a significant influence on SCE (Babbar et al. 2008). However, the supply chain literature has not adequately considered the significance of strategic supply chain dimensions and they have not been empirically tested within a SCE context. This study is motivated by the need to answer how these variables can affect SCE. Hence, the key research question was developed:

- **What specific internal and external dimensions of PMSs are directly related amongst each other and to SCE?**
- **What affects does PMS have on SCs?**
- **What are the key competencies and strategies of PMSs that SC executives value?**

Therefore, the proposed study's framework was created to analyse a network of expected relationships; that is, the influence of PMS upon SCE as reflected through centralized decision making (CDM) processes, degree of commitment to networking (CN), and goal setting, and alignment (GSA). In addition, the study expands on the quantitative study by conducting a qualitative interview analysis with twelve logistics and supply chain managers.

4.3 Justification of the Research Philosophy

Realizing the study's ultimate goal and developing an appropriate paradigm are critical. Research paradigms are a collection of shared assumptions and principles that researchers use to understand and solve problems (Kumatongo and Muzata 2021). Research paradigms are classified as positivism, interpretivism, constructivism, post positivism, critical theory, and/or pragmatism. This study was guided by the positivist paradigm that claims that the social

world is understood through objective strategies (Collins 2018). The researcher is considered the objective analyst who dissociates themselves from individual views and values to ensure research independence. The positivism paradigm is centred on the belief that factual information or knowledge can be obtained through observations to make sense and measurements. Within a positivist study, the function of the researcher is limited to data gathering and interpretation to ensure objectivity (Crossan 2003). Positivism relies on measurable observations that result in statistical analyses. As a paradigm, positivism abides by the empiricist perspective that acknowledges that knowledge originates from human experience. Knowledge comprises atomistic and ontological viewpoints of the world consisting of discrete and observable occurrences that interrelate in an observable and regular manner (Collins 2018).

Furthermore, for a positivist study, the investigator is independent of the study without any allowance for human interests. Additionally, positivism is associated with the perspective that an investigator must focus on facts instead of subjective meaning and the provision of human interest seen in phenomenology studies (Crossan 2003). Five key principles guide the positivism research paradigm: a) the study should try to explain and predict, b) there is no difference in the logic of inquiry in various sciences, c) science needs to be value-free and needs to be judged based on logic, d) a study should be empirically observable through human sense whereby inductive reasoning is employed to create hypotheses that are tested throughout the study, and e) science is not similar to common sense (Crossan, 2003). Therefore, common sense must not be allowed to bias the study findings.

According to Arbjrn and Halldórsson (2002), methodology plays a significant role in developing logistics knowledge, particularly in fostering an interaction between philosophy

of science, theoretical approaches, and practice. Mentzer & Kahn (1995) made the following observation, which serves as the fundamental justification for this paradigm: "Much of logistics research and literature remains essentially managerial in nature and needs a rigorous direction in theory formulation, testing, and application." In discussing the necessity for more proper research contributions to theory, Seaker et al. (1993) make the case that "...use of more academic research approaches" is to be preferred. In particular, it is advised that research on corporate logistics use both quantitative and qualitative methodology.

As evident in figure 4.1, an onion framework presents layers that offer detailed research process phases. Thus, the framework offers an effective progression via which the research method is designed. The framework's usefulness involves its adaptability to various research types and settings (Becker et al. 2012). According to Saunders et al. (2009), when deploying the research onion framework, a researcher will progress from the outer layer to the innermost layer, and when viewed from the outside, every layer offers a detailed phase of research progression.

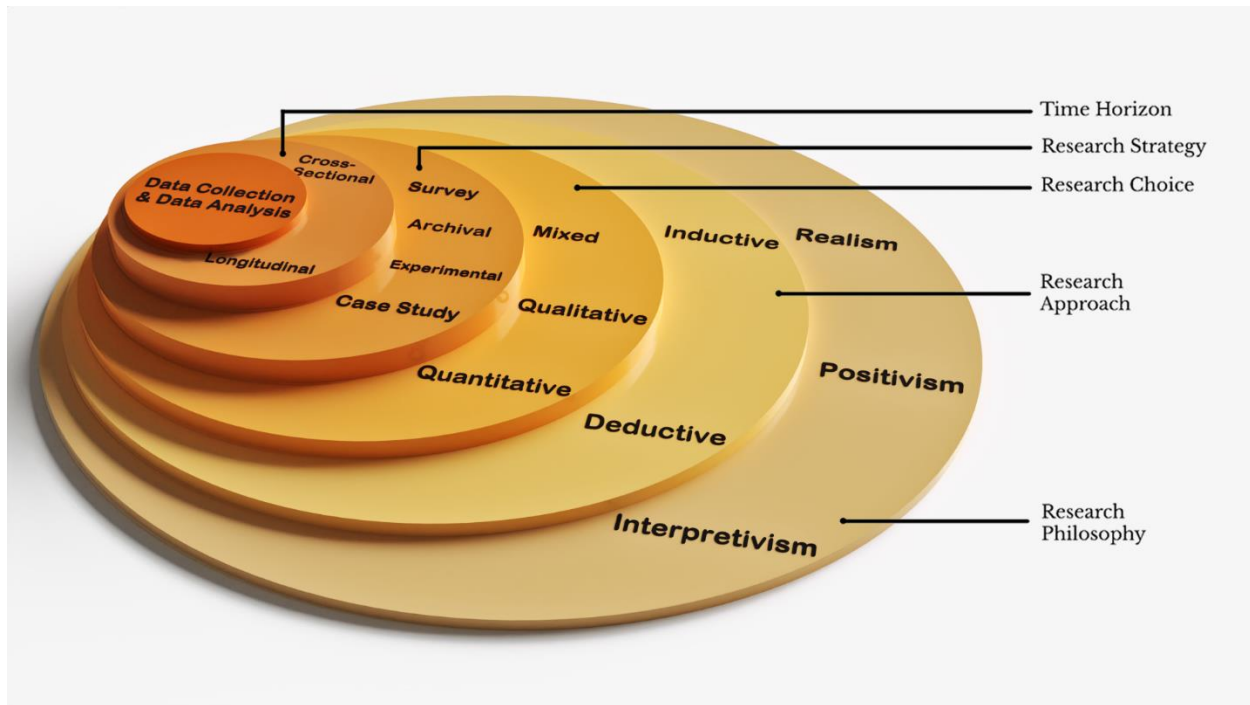


Figure 0.1: Onion Research Framework

The framework is based on the premise that the research process unwraps from outside to the inner layer of the onion (Becker et al. 2012). The framework is employed in this research to present a holistic research method.

4.4 Research Approach

According to Crowther and Lancaster (2008), the general rule of positivism is that it adopts a deductive approach, while inductive research is closely linked to the phenomenology paradigm. Therefore, this research adopted the deductive research approach. A deductive approach is usually associated with scientific investigations. According to Oaksford (2015), researchers employing a deductive approach begin by examining the theory found to be compelling and then test its implications by collecting data. The study, therefore, moves from general views to more specific

aspects. The researcher examines the work of previous scholars and investigates the existing theories concerning the phenomenon before undertaking statistical tests on the developed hypotheses centred on the theories examined (Oaksford 2015). Therefore, a deductive approach develops hypotheses using existing theory and then designs a relevant research strategy to test the hypotheses (Oaksford 2015). The following are the main hypotheses that will be investigated in this study:

- 1) Goal setting and alignment is positively related to supply chain effectiveness.
- 2) Commitment to networking throughout a supply chain is positively related to supply chain effectiveness.
- 3) Centralised decision-making process is positively related to supply chain effectiveness.
- 4) There is significant differences across supply chain companies in terms of CDM, CN, GSA, SCF, SCQ, SCC, and SCD.

The major benefits and justifications of deploying a deductive approach involve its ability to explain causal relationships between parameters, concepts, and variables (Oaksford 2015). It also enables researchers to measure variables statistically, and deductively obtained findings can be generalized to a certain level.

4.5 Research Methodology and Design

Research choice helps a researcher decide whether it is appropriate to use qualitative, quantitative, or a combination of the two methodologies. Saunders et al. (2009) outline three research choices: multi, mono, and mixed. Quantitative and qualitative approaches are seen to be complementary rather than competing.

Quantitative approaches include surveys, questionnaires, statistical approaches, and data processing, whereas qualitative approaches include action studies, case study investigations, and ethnographies (Flick, 2015). A quantitative study is a rigorous, objective method that seeks to generalize findings, while a qualitative study is subjective and descriptive. While it has been stated that quantitative investigations are the ideal method for scientific study as they employ statistical techniques (Neuman 2003), descriptive studies provide superior insight into and knowledge of the phenomena being examined (Perry 1998). Moreover, quantitative processing aids in the discovery of relationships among variables, whereas a descriptive qualitative strategy aids the explanation of quantitative data outputs.

A qualitative investigation provides sentences through which understanding may be created and therefore contributes to the acquired data, which would not transmit any sense to users on their own. Continuing the argument about the best study design (Mintzberg 1979), a qualitative method allows researchers to investigate the intricacies around the phenomena examined in more depth (Yin 1994). However, quantitative methods are ideal methods as they employ surveying, experimental designing, and statistical methods and are more scientifically accurate and unbiased.

Combining quantitative and qualitative data in a research project has six main arguments, including:

- **The growth of research is the primary justification for using mixed-methods research strategy. This indicates that an MMR method enables researchers to expand their investigation with adequate depth and breadth (Creswell, 2003).**
- **The notion that merging both types of research will be beneficial because they both have validity and are, in some ways, complementary (Maxwell, 2016).**

- **A mixed-methods research approach "provides a royal way to authentic knowledge by overcoming the epistemological discrepancies between the quantitative and qualitative perspectives." In fact, the two approaches can be effectively combined to help researchers gain a thorough grasp of a studied issue (Lund 2012).**
- **A mixed-methods research approach uses two methods in a way that balances the advantages of the qualitative and quantitative approaches, and vice versa, to produce conclusions that are more dependable (Ivankova & Plano Clark 2016).**
- **The triangulation element of an MMR strategy is another benefit. In a mixed-methods study, data triangulation is typically acknowledged as a method for confirming findings from each individual way (Bergman 2008).**
- **Using the findings from one method's (qualitative or quantitative) analysis to guide or shape the usage of a different method's (qualitative or quantitative) analysis in order to create more precise and effective conclusions (Ivankova & Clark Plano 2016).**

Therefore, the methodology for the study was a mixed-method approach, which resulted in an impactful and complete data analysis. A mixed-methodologies research design, as defined by Creswell and Plano Clark (2011), is a research design with its own philosophical presumptions and methods of investigation. As it incorporates post-positivism and interpretivism philosophical frameworks, interweaving qualitative and quantitative data in a way that research difficulties are effectively addressed, a mixed-methods design offers a variety of advantages to tackling complicated research issues (Fetters 2016).

Additionally, it provides a logical basis, methodological adaptability, and a comprehensive comprehension of smaller cases (Maxwell 2016).

From the nature of the study based on its research problem, contextualization, aim, objectives, and questions, a quantitative approach was found to be suitable as the study focuses on quantifying the collection and analysis of data formed from a deductive approach where the emphasis is associated with the natural, applied, formal, and social sciences. However, the features of the businesses engaged in the logistic sector were the subject of an analysis of qualitative data that was used to draw conclusions from the interview section. Semi-structured interviews were conducted with a cohort of supply chain managers in order to investigate certain areas and gain a better understanding of their methods geared toward effectiveness. The sample consists of a group of managers who work in the UAE's supply chain and logistics sector and may be easily accessible. Therefore, a purposeful sampling technique was used to collect the data of this qualitative section.

The major concepts in this section of the questionnaire include (the type of the firm, main competitors, strategies for the added value, skills of the successful SC manager, and competitiveness in logistic sector). While the main concern of the interview section is determining the effectiveness practices from the managers' views. The mixed methods approach delivers actual knowledge, which is valuable in the decision-making and situation-management processes (Creswell 2014).

An explanatory research design was employed in this study. Explanatory Sequential design happens in two different interactive phases, starting with the analysis and gathering of the quantitative data to expand the first phase's quantitative results, then the designing of

the second, qualitative phase based on the quantitative findings (Creswell & Plano Clark 2018). In this design, a researcher elaborates on a particular quantitative finding and justifies it using qualitative information (Wisdom & Creswell 2013). This design is advantageous in the following cases:

- more quantitative perspective drives both the study question and the researcher.
 - a measurable variable has already been chosen by the researcher,
 - participants can be accessed by the researcher to collect qualitative data,
 - the researcher has enough time to collect data in two phases, and
- the researcher is the only investigator, gathering and examining each piece of data separately.

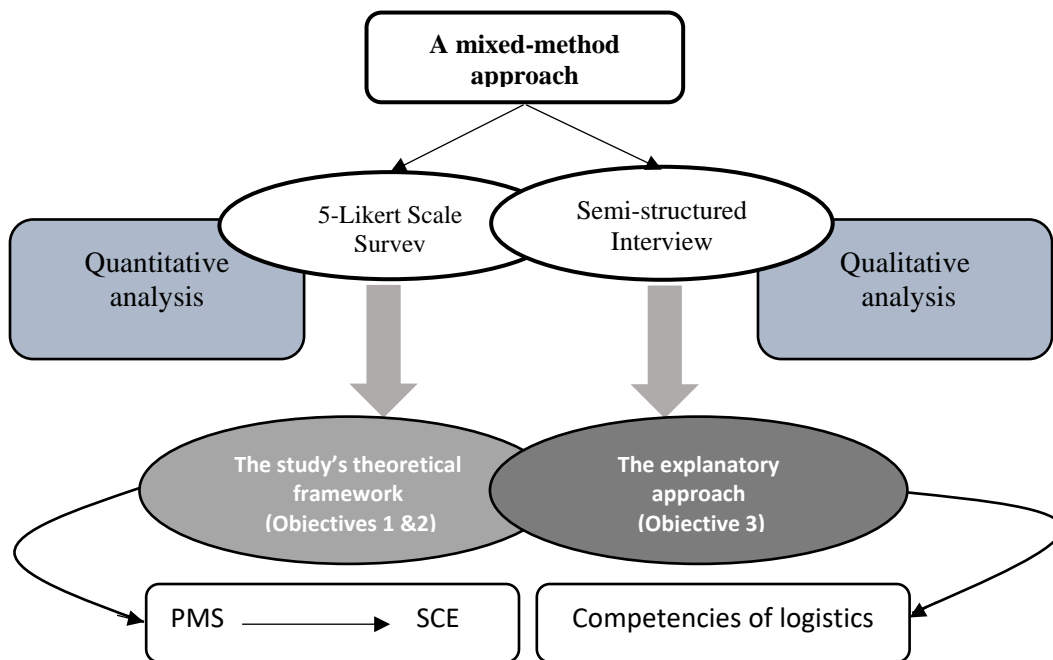


Figure 4.2. Research Choice and Design.

The study began with a quantitative method via a survey that focused on accomplishing the first and second study objectives by identify the existing aspects of PMSs (internal and external dimensions) that could help in boosting the SCE of selected firms in the UAE and exploring how PMS can boost the efficiency of logistics services across supply chains. This was followed by a qualitative research semi-structured interview, addressing the performance management competencies and approaches needed by logistics professionals to effectively manage logistic processes. Figure 4.2 shows the two basic steps for conducting explanatory approach: qualitative and quantitative.

The first step in ensuring that you ask good questions is to decide what you will measure. You must be aware of the necessary facts as well as the study population for your questions. Different respondents will have varying capacity to respond to different kinds of questions (Hyman & Sierra 2016). The study used two sorts of questions in the data collection approaches (questionnaire and the interview) to get comprehensive and trustworthy information from a wide population of respondents.

- A Likert scale question is one with a five- or seven-point scale. The options span from Strongly Agree to Strongly Disagree, allowing the survey developer to gain a comprehensive picture of people's thoughts.
- Open-ended questions allow responders to provide a variety of responses. They will recommend follow-up questions in person-to-person interviews because some of these replies will be surprising.

4.6 Research Strategy

Various research strategies have been developed, including experimental design, case studies, action research, archival research, surveys, ethnographies, and ground theory research (Saunders et al., 2009). **This study specifically employed a survey research strategy. Ponto (2015) defines a survey as the gathering of information from a sample of people by obtaining their responses to various questions. In comparison to experimental study designs, surveys and interviews are suitable, realistic, and cost-effective (Kerlinger 1992; Ponto 2015). In order to gather the needed data for the study, this technique was deemed suitable for gathering the necessary data for this study.**

4.7 Time Horizon

The time horizon depicts the time needed to complete a data collection. Two kinds of time horizons exist: longitudinal and cross-sectional (Bryman 2012). A cross-sectional time horizon is a well-established approach where data is collected at a specific point in time. Meanwhile, for a longitudinal time horizon, data are collected repeatedly over a long time and then employed to examine the change of a variable over a given time (Goddard & Melville, 2004).

A cross-sectional survey approach centred on a self-administered questionnaire has been used to collect a great deal of information. **According to Kerlinger's (1992) hypothesis, this strategy is advantageous when collecting a large amount of data and when there are no time constraints on data collection. As a result, this technique was considered to be a good choice for this research's data collection.**

4.8 Sampling Strategy

The sampling strategy utilized to identify the respondents and participants for each quantitative and qualitative component, as well as the methods for calculating the sample size for each section, are shown in Table 4.1.

Table 4.1 Sampling strategy and size

| | Quantitative Study | Qualitative Study |
|-------------------|--|---|
| Sampling Strategy | <p>This section used non-probability sampling with a judgmental or purposeful sampling technique. Purposive or judgmental sampling is a technique in which specific contexts, people, or events are chosen consciously in order to reveal crucial information that cannot be learned from other options (Maxwell 1996).</p> <p>The study's target population for the quantitative section is the senior personnel in charge of SCM practice and operations (those with the most understanding of SC operation and activities) in the two SC organizations in the UAE. Thus, it is prudent to choose a sample or a subset of the entire population and then employ it to estimate the responses of the entire population.</p> | <p>For the qualitative section, a purposeful sampling technique was utilized. Managers involved in the SCM process were consequently targeted for participation in the study. The interviewees were chosen based on their position and designation as managerial level with at least five years of responsible experience in areas such as decision making and strategizing. Managers of logistics, supply chains, operations, materials, purchasing, or sales and marketing, for example, were expected to be the most knowledgeable about supply chain operations and management in their respective firms.</p> |
| Sample Size | <p>This study followed the sample-to-variable ratio into account while determining sample size. A minimum observation-to-variable ratio of 5:1 is suggested by the sample-to-variable ratio, while values of 15:1 or 20:1 are recommended (Hair et al., 2018). This means that, while a minimum of</p> | <p>While for qualitative data, Guest et al. (2006) conducted an early and notable study that determined the level of saturation as it happened during a thematic analysis procedure. They recommend that future research could make use of the 14-interview threshold that was utilized to determine saturation. Similar to this, Francis et</p> |

| | | |
|--|--|---|
| | <p>five respondents must be taken into account for each independent variable in the model, 15 to 20 responses per independent variable are highly recommended. As a result, a sample size of 150 respondents from the two companies was targeted to fulfil the quantitative section. This is consistent with Tabachnick and Fidell's (1989) suggestion that the "basic minimum need" for regression analysis be five participants for each independent variable.</p> | <p>al. (2010) established a sample size for first analysis of 10 interviews and a "stopping criterion" for saturation of 3, where "stopping criterion" is defined as the number of subsequent interviews after which no new themes appear. They determined that 14 interviews were necessary to achieve saturation because the stopping requirement had not been reached. As a result, 14 interviews were done to determine the "qualitative informational isomorph," or the point at which additional data are no longer required due to information duplication, as defined by Francis et al. (2010).</p> |
|--|--|---|

Specifically, respondents were recruited from two leading companies in logistics services within the UAE – see Table 4.2. The companies were first chosen based on the following criteria:

- Their age (at least 15 years),
- size (big to medium),
- revenue size (small in comparison to its characteristics),
- number of employees, and
- type of activity.

Table 4.2. Organizations targeted - organizational characteristics and selection logic

| ORGANIZATION | MARKET FOCUS | RATIONALITY OF SELECTION | DESCRIBED STATUS |
|---|--|---|---|
| <p>Company A A national company that has been working in the UAE for about ten years.</p> | <p>Company A's responsibilities include managing the whole logistics operations for military hospitals, clinics, and medical stores throughout the UAE. It is a strategic outsourcing partner for the UAE Armed Forces, and its long-term cooperation with major healthcare sector firms help it retain a strong presence on the ground.</p> | <p>Although it is a national company, its services, products, and activities are not limited to the local markets. It focuses on both national and international markets.</p> | <p>The company faces high competition with several other companies such as GAC, Pharma link, City Pharmacy, MPC, Royal Pharma, Agility, Al-Mazrui, Med clinic, Gulf Drugs, EMITAC, and Pharma Trade, in addition to many other local SCs, suppliers, distributors, healthcare companies and those who are working in the same industry.</p> |
| <p>Company B An international company that has been working in the UAE for more than 20 years.</p> | <p>Company B is the global leader in services that increase Quality of Life, an important determinant in individual and organizational performance. Every day, it serves 100 million customers through its unique blend of On-site Food and Facilities Management Services, Benefits & Rewards Services, and Personal & Home Services.</p> | <p>The company focuses its activities and services on local markets within the UAE and international markets.</p> | <p>Because of the expansion of the company's products and services to several countries outside the UAE, they have extensive competition with many other companies working in the same areas. The competitors are national and international catering companies working in the same industry, including the ADNH Company, NCTH, EHS, and Armed Forces Catering.</p> |

Figure 4.3 depicts an overview of the study's research techniques based on the onion research framework and the aforementioned research philosophy, approaches, design, and strategy.

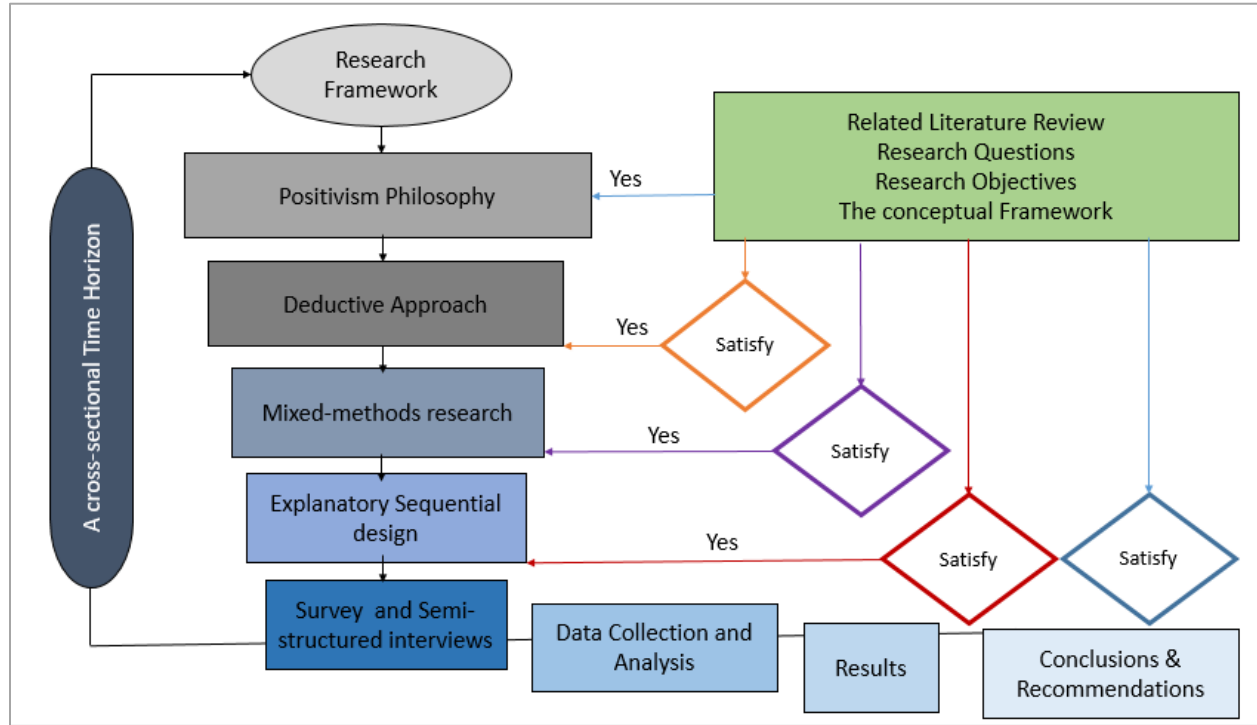


Figure 4.3. The study research flowchart

4.10 Data Collection and Analysis

As noted previously in chapters one and two, the pertinent literature was assessed and synthesized, and new concerns were identified and gathered to address the research objectives. In order to better understand the elements of SCE in specific enterprises, a questionnaire has been developed with this objective in mind and given to organizations in

various sectors around the UAE. Statistical analyses were used to provide a quantitative analysis of the data gathered from the questionnaire.

A questionnaire was used to collect the primary data. A questionnaire is a research tool comprising an array of questions (items) used to gather meaningful information from the respondents. There are several justifications for using surveys in this study, including comparability, practicality, speed, scalability, cost-efficiency, easy analysis, standardization, and respondents' comfort (Dalati & Gómez, 2018). Questionnaires allowed the researcher to strategically manage their targeted audience by formatting the questions to obtain data from a large population. Also, questionnaires are increasingly cost-effective as there is no need to hire surveyors to address the respondents. Instead, questionnaires can be sent via email or put on an online website at no cost, and the researcher can rapidly and easily collect data and obtain responses in a short time (Dalati & Gómez, 2018). Additionally, questionnaires are scalable and enable the researchers to distribute them across several nations on a global scale rapidly. Moreover, questionnaires frequently employ built-in tools that can automate the data analysis and make the process of interpreting the findings very fast and easy.

4.10.1 Questionnaire Design

The questionnaire was created to investigate the links between SCE and its antecedents. Goal alignment, networking commitment, and decision-making with SCE were among the constructs assessed. Table 4.3 gives a succinct explanation of why the constructs used for assessment were chosen.

Table 4.3 Justification of selecting the constructs assessed.

| Construct | Justifications |
|---------------------------------|---|
| Goal alignment | <p>SC is resource intensive, risky, and necessitates inter-firm coordination (Zhu and Sarkis, 2004; Kocabasoglu et al., 2007). Because of this, increasing a supply chain's performance encourages agreement and alignment with its goals (Kaplan et al., 2010), hence supply chain participants must be strategically aligned (Bowersox et al., 1999). However, the objectives of SCs and how they are actually implemented in practice for many businesses are far off (King et al., 2005; Delmas and Montes-Sancho, 2010).</p> |
| Commitment to networking | <p>A fundamental component of managing supply chain networks successfully is commitment to networking (Deshpande, 2012). In significant part, commitment guarantees that partners do not take actions that would adversely affect the SCP as a whole. Increased supply chain performance results from better communication among supply chain stakeholders and the identification of decision variables (Dubey, Gunasekaran, & Papadopoulos, 2017, Masudin et al. 2018).</p> |
| Decision-making | <p>The significance of top management has been heavily stressed in supply chain literature in terms of making decisions. To achieve SCE, supply chain participants must maintain contact with one another in order to coordinate decision-making (Ketchen & Ireland 2007). According to Babbar et al. (2008), decision-making is a key strategic supply chain component that has a substantial impact on SCE since it affects both individual supply chain participants and SCE as a whole (Deshpande 2012).</p> |

The questionnaire was constructed after reviewing the pertinent literature and then was gathered as a self-managed framework presented as a questionnaire. The questionnaire asked the

respondent to report a series of textual questions (Baumgartner et al. 2005). The questionnaire design was employed to assess the dependent and independent parameters. The questionnaire was developed using a scale development approach with a 5-point Likert scale containing five response options that consist of two extreme sides and a neutral option linked to the middle answer options. The measurements were fully agree, somewhat agree, neutral, somewhat disagree, and fully disagree. The scaling helps to obtain accuracy, consistency, and acceptability.

The respondents were asked to answer questions regarding SCE and the underlying factors of goal alignment, networking commitments, and decision-making (Frazer et al., 2000). Furthermore, depending on another proposal, the survey size was considered and developed to be six pages. All questions were preceded by clear instructions written in a Basic English (Dillman, 1978), and all inquiry groups were led by clear instructions written in a basic language (Frazer et al., 2000). According to Sudman et al. (1996), the beginning of the questionnaire comprised straight questions that required the least amount of time to complete, proceeded by large-item groupings throughout the centre of the questionnaire.

A questionnaire's structure is thought to impact the reply frequency, and its accuracy and relevance create an acceptable questionnaire with good reliability and relevance. Collis and Hussey (2013) recommendations were followed as below:

- Each question has to be meticulously developed and phrased.
- The questionnaire format has to be precisely created.
- Through an accompanying cover letter, the survey's aim is to be clearly defined.

The questionnaire comprises three main sections: section (A) that involves information related to the demographic parameters of the respondents and some work-related data, and then a

set of open questions related to the company characteristics; Section (B) involves a set of items related to PM, CDM, CN, and GSA; and section (C) involves the items and parameters related to SCE that was represented by cost, flexibility, delivery, and quality.

Five steps were taken in the creation of the instrument. During the first step, a comprehensive evaluation of the literature regarding key SC aspects that were predicted to affect SCE was undertaken in a directive to produce a group of elements that mirrored the study's concepts. A list was compiled to address all elements of these parameters. The tool used to assess SCE was adapted from prior valid and reliable investigations with minor changes. Throughout this study, the CDM processes, degree of CN, and GSA (in other words, the independent variables) were created for the first time. Consequently, a tool used to determine these components was created after carefully studying the related literature (Yim et al. 2012).

The literature research was used to design the questions regarding the theoretical structures. To guarantee substantial statistical diversity among the survey replies, they were assessed using a five-point rating scale with anchoring spanning from extremely low (1) to quite high (5) (Appendix A). The survey was constructed using existing surveys, a literature analysis, and a variety of current and previously defined scales and concentrated on several SCM concerns relevant to the SCE concept. In terms of the dependent parameter, the participants were requested to rate the relevance of the following performance indicators: cost, flexibility, delivery, and quality. These factors were assessed using a five-point rating scale, with those anchors spanning from (1) to (5) (Mitchell et al., 2004; Miguel et al., 2011).

4.10.2 Control Variables

To explore other extraneous elements, the research additionally gathered information on other parameters that could potentially affect the variables getting evaluated. Three additional variables were incorporated in the analytical structure regarding control parameters: company size, company age, and the manufacturing sector. These control variables were used because they might influence the links between SC management characteristics and SCE (Hult et al. 2007).

4.10.3 Cover Letter

A covering letter was added to all surveys to define the purpose of the study, maintain confidentiality and privacy, and motivate the participants to reply. The following letter was sent to the participants:

You are being invited to participate in research examining the role of PMSs in ensuring supply chain effectiveness (SCE). Participation in the research is voluntarily, and therefore, it is your choice to participate in the research or not. The main purpose of this study involves reaching out to various players involved in manufacturing, trading, and logistics activities in the UAE to gather data on the role of performance management systems (PMS) in the efficiency of the supply chain (SC). The study findings offer knowledge concerning how PMS is employed in the contemporary shifting SC environment among businesses in the UAE. The objectives of the research are as follows:

- To identify the existing aspects of PMSs (internal and external dimensions) that could help in boosting the SCE of selected firms in the UAE.

- To explore how PMS can boost the efficiency of logistics services across supply chains.
- To identify the performance management competencies and techniques needed by logistics professionals to effectively manage logistic processes.

Your role in the study is to complete an online survey by answering questions related to the above-mentioned objectives. Your privacy and confidentiality are safeguarded throughout the study. The researcher will not collect personally identifying data such as your address, location, names, telephone number, and ID. Furthermore, your data will specifically be used to complete this research and will not be shared with any third party. Electronic data will be safeguarded using password-protected computers.

4.10.4 Measurement Scales

Assessment standards are measures used to examine the relationship between variables and evaluate the questionnaire's consistency and relevance. Numerous scales, such as dichotomous, mathematical, categorical, and Likert scales, are commonly employed throughout social science studies (Cavana et al., 2001). The Likert measure was the best selection for this study as it produces interval data, which allows meaningful statistical analyses to examine the replies to such questions. For both respondents and investigators, using the Likert scale allows them to compare their replies to queries. Throughout our research, a five-grade Likert scale was used with a spectrum of strongly agree, agree, neutral, disagree, and strongly disagree (Babbie 2007).

4.11 Evaluation Methods

The research methods have considered reliability and validity to improve the accuracy of the measures and the original study conclusions. For a measurement to become valid and reliable, it should have both content and structural validity and reliability. Additionally, the evaluation instruments employed to evaluate the research questions must be accurate and legitimate; alternatively, the researcher may behave improperly in confirming or dismissing the study hypothesis (Salkind 2008).

4.11.1 Validity

A measurement's accuracy may be evaluated in three ways: face, material, and structural validity. By guaranteeing that the constructing domain is represented, content validity may be increased. Content validity is determined by completing a thorough examination of the current literature to identify the structures and variables, and therefore by developing a preliminary list of requirements to ensure that the structure domain was fully represented. Before the data collection, gathering the validity of the content for this study's questionnaire was verified by firmly basing it on current research and completing the pre-tests. Throughout the pilot research, the validity was also evaluated (Cavana et al., 2001).

4.11.2 Reliability

An accepted measurements approach was employed to validate the instrument's dependability throughout the study to determine the reliability. As this study used reliable metrics from earlier studies regarding SCE construction, the survey was based on prior publications. Cronbach's α was

used to assess the items' dependability, wherein a Cronbach's α of better than .70 would be regarded as an adequate indicator of dependability (Nunnally 1978).

4.11.3 Pilot Study

The goal of pilot research is to improve the readability of every question. A pilot study can lead to significant improvements to a questionnaire and boost the effectiveness of the investigation. Pilot research identifies and emphasizes possible flaws with the questionnaire's readability and phrasing and the survey administration procedure. A pilot investigation was carried out to establish the instrument's interior dependability and assure its simplicity and readability (Forza, 2002).

A questionnaire that has been pilot tested is simpler to accomplish and more suited for the respondents' spectrum of responsibilities and expertise. The response from pilot research verifies the validity and reliability of the measurements. The pilot study used ten respondents who were asked to complete the questionnaire. The intent was to determine the validity and reliability of the questionnaire. **Their feedback revealed that some of the statements were ambiguous, while others were too lengthy or complex. They also recommended adding questions to gather details on the company's characteristics (e.g. what are the differences between supply chain in your company and that of governmental one? what are company's plans to improve competitiveness in logistics sector?). In accordance with this, the appropriate adjustments were made, and the control variables were also included. The researcher subsequently adjusted the questionnaire based on the input from the respondents to ensure accuracy and validity. The back-translation approach was used in this study to identify and correct discrepancies among the English and Arabic editions of the survey. The survey was written in English, converted into Arabic, and back into English (Forza 2002).**

In order to identify survey flaws, formatting, and design difficulties, get recommendations, test the suggested time limit for filling out the questionnaire, and assess respondents' level of knowledge of the generated questionnaire, the questions were given back to the respondents. Respondents for the pilot study were recruited from the two selected companies at which the primary investigator had previously established some working relationships.

4.11.3.1 Validity

The questionnaire was assessed for consistency and reliability, including content validity, in two rounds. During the first step, three qualified investigators were asked to review the questionnaire regarding confusion, simplicity, and the suitability of the questions used to conceptualize each concept. The specialists assisted throughout the instrument's pre-testing, which was accomplished by expert judgment. Other investigators with an aptitude along with the same comparable field of discussion were asked for their expert opinions. Representatives from academia and industry assessed the draft questionnaire to verify the content relevance and accessibility of the indicators (Cavana et al., 2001). These specialists were tasked with determining how well the indicators handled the topic matter. Based on input from the reviewers, the questionnaire was updated to improve the readability and applicability of the measurements. Consequently, the questionnaire was changed to increase its face and material validity. When Cronbach's α was larger than .70, the constructions were approved (Dillman, 1978).

In terms of constructing validity, discriminant and convergent accuracy were assessed, and the necessary revisions were implemented. The independence among variables that assess one

structure is referred to as discriminant validity, while the amount to which observed variables converged into a theoretical structure is referred to as convergent validity. Confirmatory component testing is the usual method for determining construct validity (Bagozzi et al., 1982).

4.12 Final Measurements

4.12.1 Distribution Process and Data Collection

The questionnaires were delivered through both online and print formats. The questionnaires, along with a cover note and participant information page, were distributed to a representative from each company for distribution to the intended respondents. **Respondents were recruited from two largest logistics service providers in the UAE, while personnel participating in the SCM process were accordingly targeted for involvement in the study.**

The cover note specified the method for participants to submit their responses, and the participants had to complete and submit the online survey immediately using a web link to the online edition of the survey. Due to COVID-19 limitations, online surveys were used (Elshaer, 2021). The email contained a declaration guaranteeing the confidentiality, voluntary involvement, and privacy of the findings. It also included information on the study objectives and goals. Many academics believe that whenever an investigator is engaged in disseminating a survey, the frequency of responses rises to guarantee a greater response frequency from the volunteers when a follow-up message is sent (Cavana et al., 2001).

The software programs used in the data gathering and analysis are shown in Figure 4.4.

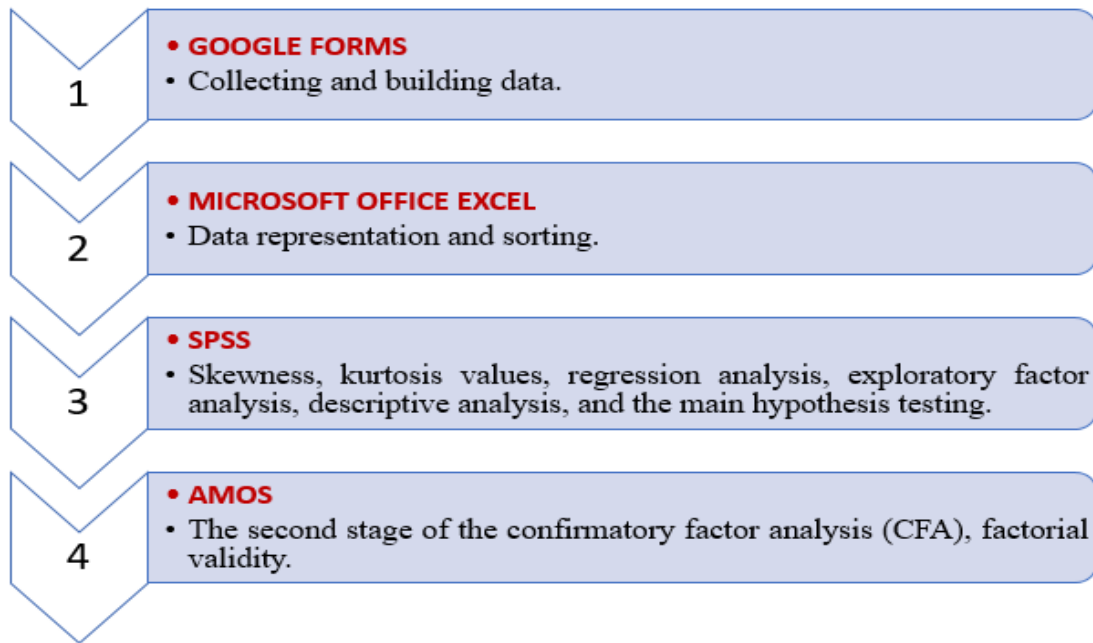


Figure 4.4. The software programs used in the data gathering and analysis.

Whether used for data gathering, analysis, or interpretation, these solutions were incredibly effective. The questionnaire began with broad questions and evolved to specialized and targeted questions in a later section based on certain recommendations (Sekran, 2000). The pre-testing of the survey revealed no obvious difficulties with order discrimination. It took between 20 and 30 minutes to complete the questionnaire. Table 4.4 presents the research objectives related to the research questions for which the survey responses were used to address the objectives and answer the respective questions.

Table 0.4: Research aims, research questions, and literature connections to survey constructs.

| Research objectives | Research questions | Literature linkage | Survey data was collected to address objectives and answer questions |
|--|---|---|---|
| <p>1) To identify the existing aspects of PMSs (internal and external dimensions and techniques) that could help in boosting the SCE of selected firms in the UAE.</p> | <p>What specific internal and external dimensions of PMSs are directly related amongst each other and to SCE?</p> | <p>McCue and Pitzer (2005) considered private sector SCM defined in terms of strategic direction. Lambert (2004) studied the private sector's SCM as the integration of eight business processes: (1) customer relationship management, (2) customer service management, (3) demand management, (4) order fulfilment, (5) manufacturing flow management, (6) supplier relationship management, (7) product development and commercialization, and (8) returns management.</p> <p>SC and logistics competitiveness is the ability of the firm to design, produce superior to those offered by competitors (Bravo et al., 2007). Supply Chain Competitiveness (SCC) refers to gaining competitive advantages by one supply chain on the other through the elements of supplier's competitiveness,</p> | <p><u>Part A</u></p> <p>Characteristics of the company, type of company, activities conducted, value-addition, type of operations focused, SCM and related skills set required, SCM in company structure, differentiating private and governmental, competition, and initiatives to improve SC.</p> <p><u>Part B</u></p> <p>(1) Performance management – degrees of authority and power, decision making, corporate strategy, personnel involvement, effectiveness,</p> <p>(2) Commitment to Networking - collaborating partners, cooperative relationship, length of association, frequency of contacts,</p> |

| | | | |
|--|------------------------------------|---|---|
| | | manufacturer's competitiveness and distributor's competitiveness (Mentzer, 2008). | influencing factors, performance evaluation criteria, negotiation between partners, information sharing, information exchange between internal and external entities, commitment, |
| 2) To explore how PMS can boost the efficiency of logistics services across supply chains. | What affects does PMS have on SCs? | Carvalho et al. (2010) considered the confluence of performance and supply chain for better management. According to Lambert and Pohlen (2001), the lack of appropriate SC metrics compromise customer satisfaction, sub-optimisation of the organisation performance, missed opportunities to outperform the competition and conflicts within the SC. Performance measurement is therefore crucial to better SCM (Wong, 2009). | (3) Goals setting and alignment - goal sharing, collaborative working, success factors and measures, resources mobilization and allocation, short term and long term period goals, strategic goal attainment, goal alignment, prioritization of goals, effectiveness, networking, procurement, outsourcing, |

| | | | |
|---|---|---|--|
| <p>3) To identify the performance management competencies and techniques needed by logistics professionals to effectively manage logistic processes</p> | <p>What are the key competencies and strategies of PMSs that SC executives value?</p> | <p>Supply chain management skills and competencies are required for managing complex logistics operations and relationships (Mangan & Christopher 2005; Murphy & Poist 2007). Supply chain skills research provides a large list of SCM skills, including SCM technical skills, business administration skills such as marketing, finance and human resource management, behavioural skills such as interpersonal skills, and management skills that are related to planning, organisation and control (Murphy & Poist, 2007). They argued that logistics skills required for senior managers are expected to enable them to coordinate cross-functional activities with future skills should have a supplier relationship management orientation and a focus on customer relationship management (Thai, 2012).</p> | <p><u>Part C</u> Supply chain effectiveness - Service flexibility, product & process flexibility, level of customization, agility, use of technology, government rules & regulations, quality, product/ Service performance, compliance, conformity, customer complaints resolution, cost, inventory turnover, capacity utilization, productivity, government incentives, delivery performance, timing, access to market, order processing time.</p> |
|---|---|---|--|

4.12.2 Key Informants

The quality of respondents has a significant impact on the value of empirical studies. The key informant approach is an efficient strategy through which significant informants are chosen throughout responding organizations to gather data via surveys (John et al., 1982). The key informant approach is a strategy wherein a limited number of experienced volunteers are requested to operate through an informant position that entails reporting on themes of behaviour and thinking by the organization. This method is commonly employed in social science studies (John et al., 1982). However, this method has limitations as it may add key informant prejudice. To address this prejudice, it was proposed that identifying possible sources of prejudice might improve the contextual factors when employing key informants from a company. Informant-associated prejudice encompasses, for example, the informant's status and qualities (Hughes & Preski, 1997). By inviting only highly knowledgeable volunteer informants to complete the survey, key informants' prejudice was reduced (Phillips, 1981). It was also proposed that informants collaborate with other informed persons to conduct the questionnaire. Choosing informants with caution and using intrinsically consistent measures might result in accurate and legitimate data (John et al., 1982).

4.13 Ethical Considerations

Ethical considerations are pivotal aspects of a study as many ethical concerns arise when collecting, analysing, and reporting data (Hammer, 2017). Therefore, ethical principles were the central facet of this study. Before conducting the study, the researcher obtained consent from the participants by making them aware of the research purpose. They were informed that their involvement in the study was voluntary. Respondents were allowed to freely withdraw from active

participation and data collection processes. Additionally, the study was designed to avoid inflicting any physical and emotional harm on the subjects. The researcher was unbiased and neutral by not allowing personal preconceptions and views to affect the data-gathering processes. Appropriate procedures were implemented to foster privacy, confidentiality, and anonymity. The researcher did not collect any personally identifying information such as ID, address, employee names, email, or contacts (Hammer, 2017). Data was stored in password-protected computers to preserve privacy and confidentiality, and the data was not shared with any third party without receiving consent from the respondents. The researcher was respectful of the rights and freedom of the participants.

4.14 Summary and Personal Reflection

4.14.1 Summary

To investigate the influence of the PMS on the SCE as reflected through CDM, CN, and GSA, the present study adopted both quantitative and quantitative techniques. The qualitative aspects were used to explore and discover the relationship among the variables, and the descriptive strategy aids in explaining quantitative data outputs. This would help to understand the relationship among the variables of the PMS and their effects on the SCE. Although there might be some qualitative elements in the data, they are only used to explore the quantified explanation for the relationships.

4.14.2 Personal Reflection

This study intends to examine the role of PMS in enhancing the effectiveness of the SC. This was examined based on how PMSs enhance CDM, CN, and GSA. While reading about research methods, I learned about Saunders's onion framework that was very informative in developing the

method chapters. This framework was very resourceful, particularly in articulating the research paradigm, approach, design, choice, strategy, data collection, and analysis aspects of research. Also, after extensive reading about research methods, I was drawn to quantitative research as numerical values make a lot of sense, and the design seemed logical and convenient. Statistical data collection can reduce human views and experiences into datasets of numerical values that can be interpreted to offer a meaningful explanation concerning the role of PMS in fostering efficient SC. Nonetheless, it also became clear that qualitative data can be meaningful, especially in complementing quantitative data to deliver rich insights about a given phenomenon. Qualitative data offers the researchers sufficient knowledge instead of relying on numbers to explain complex aspects that cannot be quantified. Qualitative approaches offer respondents the ability to freely relay their experiences and views, resulting in the emergence of novel knowledge. Therefore, I eventually used mixed methods whereby both open and closed-ended questions were amalgamated into the questionnaires to obtain a more holistic picture.

Chapter 5

DATA ANALYSIS AND RESULTS

Chapter 5: DATA ANALYSIS AND RESULTS

5.1 Introduction

The chapter provides full details of the statistical methods and techniques used for analysing the primary data collected for the current research. Analyses of the data were conducted in four steps. Firstly, data screening was performed to assess the suitability of the data for the required examinations. Secondly, a series of confirmatory factor analyses (CFA) were performed to evaluate the reliability and validity of the employed measures. Thirdly, demographic analyses were performed for reporting the descriptive statistics of the research sample of the current study. Lastly, a series of hierarchical regression analyses were performed to test the hypothesized relationships. These steps were performed via SPSS version 25 (IBM Corp, 2017) and AMOS version 23 (Arbuckle, 2014) software.

5.2 Study Objectives

The study's intent was to examine the significance of PMS improving the effectiveness of the SCs and logistics services within UAE companies. The objectives of the research are as follows:

- **To identify the existing aspects of PMSs (internal and external dimensions) that could help in boosting the SCE of selected firms in the UAE.**
- **To explore how PMS can boost the efficiency of logistics services across supply chains.**
- **To identify the performance management competencies and techniques needed by logistics professionals to effectively manage logistic processes.**

In light of the aforementioned objectives, the following hypotheses were developed:

- **Goal setting and alignment is positively related to supply chain effectiveness.**

- **Commitment to networking throughout a supply chain is positively related to supply chain effectiveness.**
- **Centralised decision-making process is positively related to supply chain effectiveness.**
- **There is significant differences across supply chain companies in terms of CDM, CN, GSA, SCF, SCQ, SCC, and SCD.**

5.3 Quantitative Section Analysis

5.3.1 Descriptive Analysis

Dataset of the current study consisted of not only the main variables of the study but also of demographic information about the participants that could provide useful insight into the nature of the sample of this study. Thus, in the demographic analysis, frequency analysis of the following seven demographic variables was conducted in SPSS. For the sample's overall descriptive statistics, see Table 5.10. For the descriptive statistics across the two selected group of companies, i.e., Company A and Company B, see Table 5.11.

1. Gender
2. Age
3. Designation
4. Total employees
5. SC employees
6. Organization's nature

7. Organization's market focus

5.3.1.1 Gender

Analysis of descriptive statistics of demographic variables was started with the frequency analysis of participants' gender. Figure 5.1 shows that of the final research sample of 148 participants, 88.5% were males, and the remaining 11.49% were females.

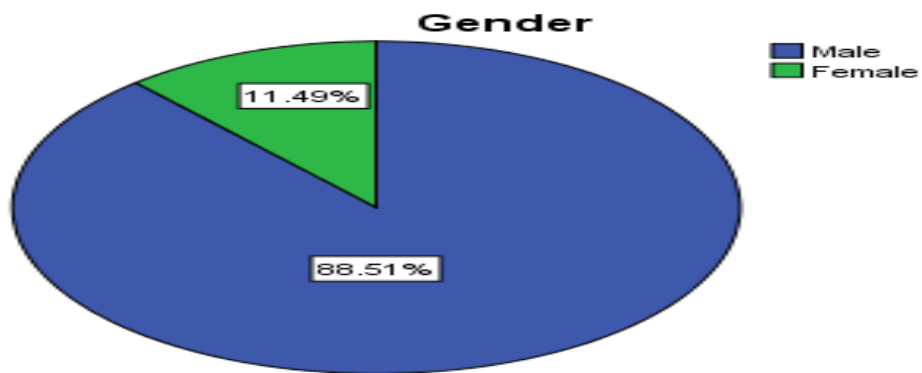


Figure 0.1: Participants' Gender

5.3.1.2 Age

Analysis of descriptive statistics of participants' age highlighted that the majority of the participants were in the age group of 31 to 40 years. Specifically, Figure 5.2 shows that 39.2% participants were in the age group of 31 to 40 years, 30.4% were in the age group of 41-50 years, 15.5% were in the age group of 26-30, 10.1% were in the age group of above 51-60 years, the remaining 4.7% were in the age group of 20-25 years.

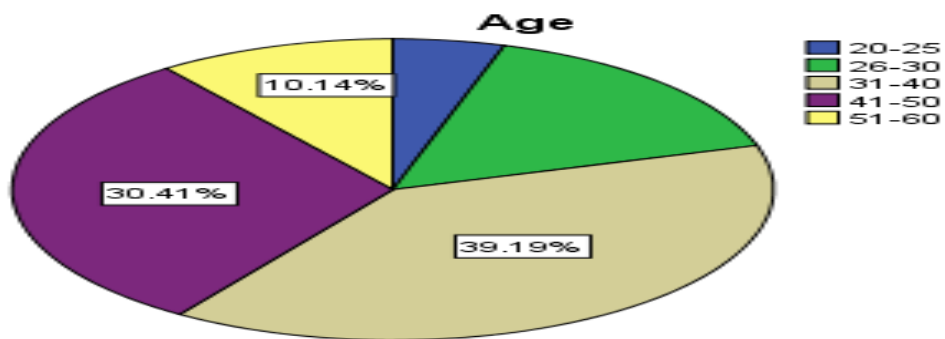


Figure 0.2: Participants' Age

5.3.1.3 Designation

Analysis of descriptive statistics of participant's designation indicated that the majority of the participants were first-line supervisors. Specifically, Figure 5.3 shows that 44.6% participants were first-line supervisors, 25% were employees (i.e., without supervisory position), 22.3% were middle-level managers, and the remaining 8.1% were upper-level managers.

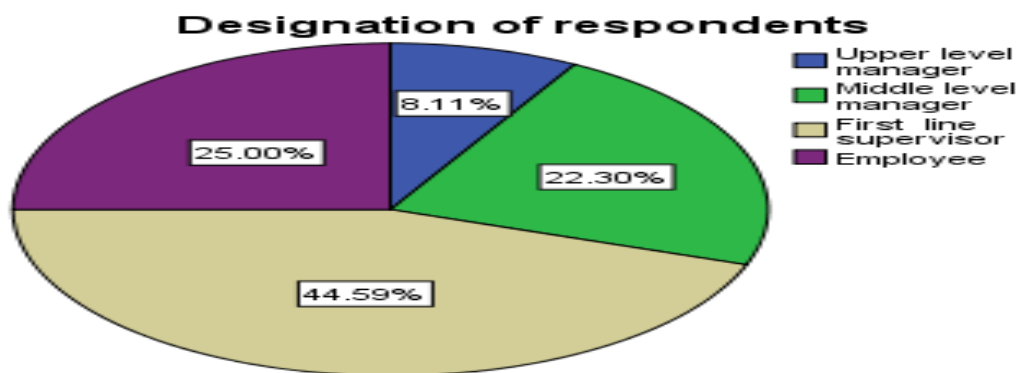


Figure 0.3: Participants' Designation

5.3.1.4 Total Employees

Analysis of descriptive statistics of the total number of employees indicated that the majority of the participating organizations had a labour force between 5001 and 10000. Specifically, Figure 5.4 shows that the total number of employees in 29.7% of the participating organizations were 5001-10000, 28.4% were in the category of 1001-5000, 23% were in the category of 101-500, 12.2% were in the category of 501-1000, and the remaining 6.8 were in the category of 1-100.

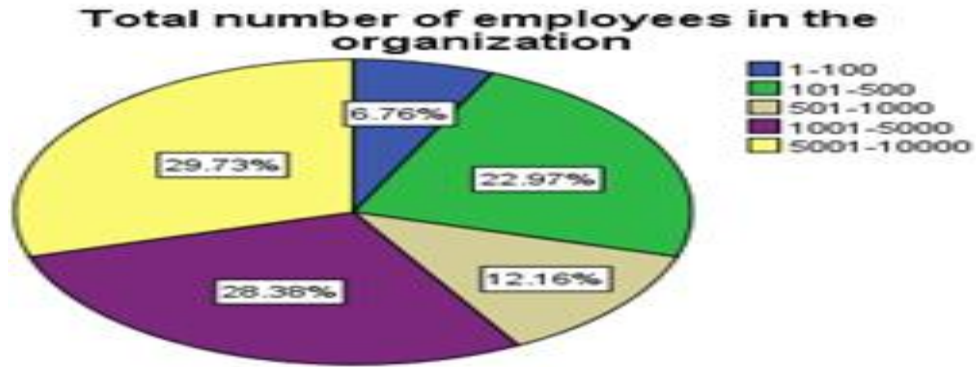


Figure 0.4: Total Employees

5.3.1.5 Supply Chain Employees

Analysis of descriptive statistics of employees in the SC Department of the participating organizations indicated that a majority of the participating organizations had SC departments comprised of 1-10 employees. Specifically, Figure 5.5 shows that 26.4% of the participating organizations' SC departments were comprised of 1-10 employees, 20.9% were comprised of 11-50 employees, 23.3 were comprised of 51-100 employees, 23.3% were comprised of 101-200 employees, 6.1% were comprised of 201-500 employees, and the remaining 6.1% were comprised of more than 500 employees.



Figure 0.2: Supply Chain Employees

5.3.1.6 Organizational Nature

Analysis of descriptive statistics of the participating organizations' nature, i.e., national versus international, indicated that the majority of the organizations were international. Specifically, Figure 5.6 shows that 52% of the participating organizations were international, while the remaining 48% were national.

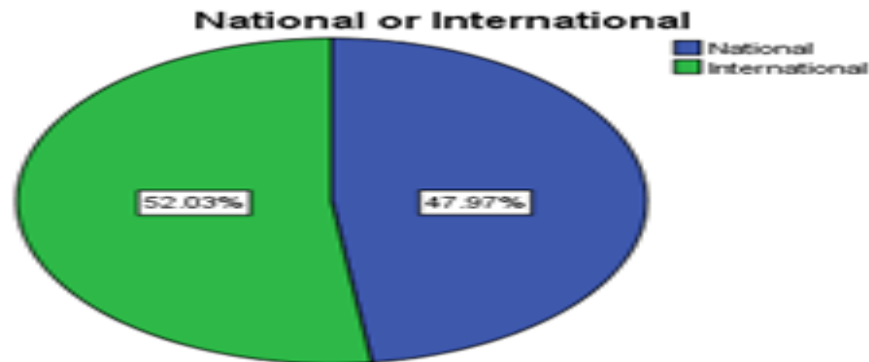


Figure 0.6: Organization's Nature

5.3.1.7 Organizational Market Focus

Analysis of descriptive statistics of the participating organizations' market focus, i.e., national/international/both national and international, indicated that the majority of the organizations were focusing on both national and international markets. Specifically, Figure 5.7 shows that 68.2% of the participating organizations were focusing on both national and international markets, 30.4% were focusing on the national market only, and the remaining 1.4% were focusing on the international market only.

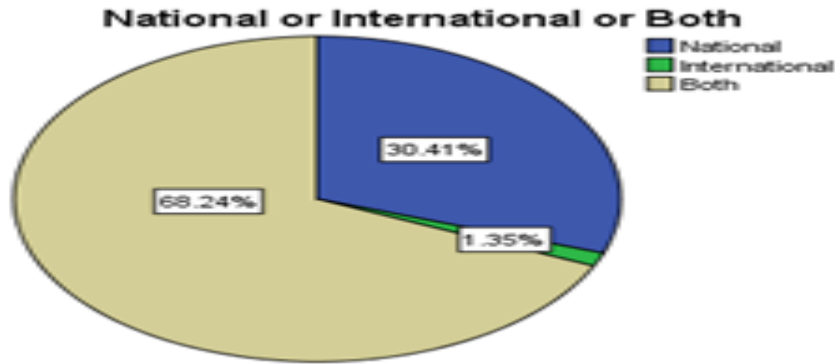


Figure 0.7: Organization's Market Focus

Table 0.1: Sample Descriptive Statistics (N=148)

| Demographic | Description | Frequency | % |
|---------------|-------------|-----------|------|
| Gender | Male | 131 | 88.5 |
| | Female | 17 | 11.5 |
| Age | 20-25 | 7 | 4.7 |
| | 26-30 | 23 | 15.5 |
| | 31-40 | 58 | 39.2 |
| | 41-50 | 45 | 30.4 |
| | 51-60 | 15 | 10.1 |

Table 0.2: Descriptive Statistics across the Selected Two Group of Companies

| Demographic | Description | Frequency | % |
|--------------------|-----------------------|-----------|------|
| Designation | Upper Level Managers | 12 | 8.1 |
| | Middle level Managers | 33 | 22.3 |

| | | | |
|------------------------------------|----------------------------|-----|------|
| | First line supervisors | 66 | 44.6 |
| | Employees | 37 | 25.0 |
| Total Employees | | | |
| Total Employees | 101-500 employees | 34 | 23.0 |
| | 501-1000 | 18 | 12.2 |
| | 1001-5000 | 42 | 28.4 |
| | 5001-10000 | 44 | 29.7 |
| Supply Chain Employees | | | |
| Supply Chain Employees | 1-10 employees | 39 | 26.4 |
| | 11-50 employees | 31 | 20.9 |
| | 51-100 employees | 30 | 20.3 |
| | 101-200 employees | 30 | 20.3 |
| | 201-500 employees | 9 | 6.1 |
| | Over 500 employees | 9 | 6.1 |
| Organization's Nature | | | |
| Organization's Nature | National | 71 | 48.0 |
| | International | 77 | 52.0 |
| Organization's Market Focus | | | |
| Organization's Market Focus | Domestic/national | 45 | 30.4 |
| | Domestic and international | 101 | 68.2 |

Company A

5.3.2 Data Screening

We started data analysis with the data screening step to ensure that our dataset satisfied the basic statistical assumptions of the statistical analysis required for the current study (Tabachnick & Fidell, 2007). Specifically, we conducted the following assessments in the data screening stage.

1. Data input accuracy assessment
2. Missing value assessment
3. Data normality assessment
4. Multivariate outliers assessment
5. Multicollinearity assessment
6. Common method bias assessment

5.3.2.1 Data Input Accuracy Assessment

Data were collected using an online survey prepared and shared through a Google Documents online link. The online survey consisted of forty-four questions on the primary constructs of PMS and SCE. Precisely, PMS consisted of five questions on the cen decision making (CDM), ten questions on the commitment to networking (CN), and seven questions on goal setting and alignment (GSA). At the same time, SCE consisted of seven questions on SC flexibility (SCF), five questions on SC quality (SCQ), five questions on SC cost (SCC), and five questions on SC delivery (SCD). These were closed-ended questions ranging from 1 (strongly disagree) to 5 (strongly agree). Additionally, there were some open and closed-ended questions on the demographics and organization-related information.

Once the required data were collected through the stated source, the data were exported to SPSS (IBM Corp, 2017) software for the required analyses. Every entry was carefully assessed via descriptive statistical analysis to evaluate whether abnormality was presented in the dataset. However, no abnormal entry was noticed in the dataset. Moreover, each question was carefully reviewed to assess whether it needed reverse coding or not. This step ensured that all the questions

measuring the same construct were in the same direction. For example, a question related to CDM, i.e., “All staff in our organization are involved in the strategy process to some degree,” was reverse-coded to align it with the other items of the same construct.

5.3.2.2 Missing Value Assessment

The occurrence of cases with missing values in a dataset is one of the most frequently noticed problems in quantitative data analysis (Hair et al. 2010). And it is critical first to treat missing values, i.e., removing cases with missing values or replacing them with mean values (Tabachnick & Fidell 2007), before proceeding to the primary analysis because most statistical techniques are affected by the presence of missing values in the dataset. Given that it was mandatory in our online survey that the respondents answer all questions before moving to the final submission option, no missing value was found in the collected dataset.

5.3.2.3 Data Normality Assessment

After assessing and ensuring the absence of missing values in our dataset, we proceeded to the data normality assessment, which refers to the collected data’s “bell-shaped” curve, defined by their mean and standard deviation. This is an essential step in the data screening process for multivariate analysis (Tabachnick & Fidell, 2007). Thus, we assessed each variable’s skewness and kurtosis values in SPSS version 25 (IBM Corp, 2017). Prior literature suggests three different threshold ranges of kurtosis and skewness values to establish the dataset’s normality. For example,

according to Pallant (2011), the sternest threshold range is +/- 2.2, the modest threshold range is +/- 7, and the most lenient and recent threshold range is +/- 10.

The results of the data normality assessment (Table 5.3) suggested that the statistical values of skewness and kurtosis were well below the modest threshold range of +/- 7. Thus, our dataset fulfilled the statistical assumption of data normality, and we proceeded to the following analysis. **Also, according to the study's findings, Cronbach Alpha values are greater than the suggested value of 0.7 (Kline, 2010), demonstrating that these scales have a high level of internal consistency.**

Table 0.3: Data Normality Descriptive Statistics

| Constructs | Items | N=150 | | | | | | |
|------------|--------|-------|------|------|------|----------|----------|-----------------------------|
| | | Min | Max | Mean | STD | Skewness | Kurtosis | Cronbach's α >0.7 |
| CDM | CDM1 | 2.00 | 5.00 | 4.20 | 0.64 | -0.35 | 0.12 | 0.894 |
| | CDM2 | 1.00 | 5.00 | 4.18 | 0.64 | -0.96 | 3.94 | |
| | CDM3 | 1.00 | 5.00 | 4.18 | 0.67 | -0.91 | 2.98 | |
| | CDM4_R | 1.00 | 5.00 | 4.01 | 0.63 | -1.19 | 4.70 | |
| | CDM5_R | 1.00 | 5.00 | 3.73 | 0.80 | -1.08 | 1.48 | |
| CN | CN1 | 2.00 | 5.00 | 4.28 | 0.58 | -0.33 | 0.63 | 0.887 |
| | CN2 | 3.00 | 5.00 | 4.23 | 0.58 | -0.07 | -0.37 | |
| | CN3 | 3.00 | 5.00 | 4.26 | 0.62 | -0.21 | -0.57 | |
| | CN4 | 2.00 | 5.00 | 4.02 | 0.61 | -0.74 | 2.33 | |
| | CN5 | 2.00 | 5.00 | 4.03 | 0.62 | -0.37 | 0.97 | |
| | CN6 | 2.00 | 5.00 | 4.17 | 0.63 | -0.47 | 0.90 | |

| | | | | | | | | |
|------------|-------|------|------|------|------|-------|-------|-------|
| | CN10 | 3.00 | 5.00 | 4.11 | 0.62 | -0.06 | -0.37 | |
| | CN8 | 3.00 | 5.00 | 4.24 | 0.56 | 0.01 | -0.31 | |
| | CN9_R | 1.00 | 5.00 | 3.62 | 0.91 | -1.04 | 1.23 | |
| | CN7_R | 1.00 | 5.00 | 3.53 | 1.04 | -1.00 | 0.45 | |
| GSA | GSA1 | 2.00 | 5.00 | 4.07 | 0.62 | -0.39 | 0.56 | 0.930 |
| | GSA3 | 2.00 | 5.00 | 4.14 | 0.57 | -0.16 | 0.26 | |
| | GSA4 | 2.00 | 5.00 | 3.99 | 0.61 | -0.42 | 1.72 | |
| | GSA5 | 2.00 | 5.00 | 4.05 | 0.58 | 0.07 | 0.28 | |
| | GSA6 | 3.00 | 5.00 | 4.11 | 0.54 | 0.00 | -0.09 | |
| | GSA7 | 3.00 | 5.00 | 4.15 | 0.59 | -0.22 | 0.35 | |
| | GSA2 | 3.00 | 5.00 | 4.08 | 0.59 | -0.25 | 0.83 | |
| SCF | SCF1 | 2.00 | 5.00 | 4.18 | 0.67 | -0.48 | 0.98 | 0.948 |
| | SCF2 | 1.00 | 5.00 | 4.01 | 0.72 | -0.50 | 0.49 | |
| | SCF3 | 2.00 | 5.00 | 4.07 | 0.64 | -0.42 | 0.61 | |
| | SCF4 | 1.00 | 5.00 | 4.09 | 0.88 | -0.45 | 1.25 | |
| | SCF5 | 1.00 | 5.00 | 4.20 | 0.80 | -0.45 | 1.32 | |
| | SCF6 | 2.00 | 5.00 | 4.20 | 0.62 | -0.26 | -0.32 | |
| | SCF7 | 2.00 | 5.00 | 4.19 | 0.66 | -0.44 | 0.24 | |
| SCQ | SCQ1 | 2.00 | 5.00 | 4.12 | 0.65 | -0.08 | -0.36 | 0.906 |
| | SCQ2 | 2.00 | 5.00 | 4.15 | 0.61 | -0.20 | -0.01 | |
| | SCQ3 | 2.00 | 5.00 | 4.18 | 0.60 | 0.00 | -0.02 | |
| | SCQ4 | 2.00 | 5.00 | 4.11 | 0.68 | -1.30 | 2.36 | |
| | SCQ5 | 2.00 | 5.00 | 4.28 | 0.63 | -1.35 | 3.12 | |
| SCC | SCC1 | 2.00 | 5.00 | 4.28 | 0.58 | -0.79 | 2.65 | 0.942 |
| | SCC2 | 2.00 | 5.00 | 4.30 | 0.61 | -0.88 | 3.50 | |
| | SCC3 | 3.00 | 5.00 | 4.22 | 0.62 | -0.28 | -0.38 | |

| | | | | | | | | |
|------------|--------|------|------|------|------|-------|------|-------|
| | SCC4 | 2.00 | 5.00 | 4.11 | 0.64 | -0.47 | 0.64 | |
| | SCC5 | 3.00 | 5.00 | 4.25 | 0.58 | -0.37 | 0.52 | |
| SCD | SCD1 | 1.00 | 5.00 | 4.07 | 0.69 | -0.58 | 1.16 | 0.907 |
| | SCD2 | 1.00 | 5.00 | 4.11 | 0.64 | -1.19 | 3.77 | |
| | SCD3_R | 2.00 | 5.00 | 4.11 | 0.70 | -0.53 | 0.53 | |
| | SCD4 | 2.00 | 5.00 | 4.16 | 0.65 | -0.38 | 0.24 | |
| | SCD5 | 2.00 | 5.00 | 4.08 | 0.64 | -0.54 | 0.89 | |

N=Sample size; STD=Standard deviation; CDM=Centralized decision making; CN=Commitment to networking; GSA=Goal setting and alignment; SCF=Supply chain flexibility; SCQ=Supply chain quality; SCC=Supply chain cost; SCD=Supply chain delivery; _R=Reverse-coded

In terms of SCE, the delivery variable was deemed the most powerful, having a mean value 4.16 and a standard deviation (SD) value 0.78, which followed by quality, having a mean score 4.15 and a (SD) score 0.72. On the other hand, flexibility was the second most powerful variable, having a mean value 3.94 and a (SD) equal 0.67. Lastly, the mean for the cost variable was 3.93, with a (SD) equal 0.82. Respondents described greater rates of delivery and quality as contrasted to cost and flexibility, according to the findings.

Moreover, the other group of variables namely, decision-making, goal alignment, and commitment to networking was examined. Where, the mean value for commitment towards networking was 3.81 and having (SD) score 0.76. The goal alignment variable with mean value 3.66 and (SD) equal to 0.79 followed this. Lastly, the decision-making variable having a mean value of 3.13 and (SD) score 0.96.

5.3.2.4 Multivariate Outliers Assessment

According to Hair et al. (2010), outliers are values distinctly different from other dataset values. Outliers can be univariate outliers and multivariate outliers. Univariate outliers refer to abnormal

or extreme values within the same variable. In contrast, multivariate outliers refer to abnormal or extreme values between two or more variables. The presence of these outliers in a dataset can distort statistical analysis results (Tabachnick & Fidell, 2007).

Given in the previous step, we have already ensured the absence of univariate outliers in our dataset; we proceeded to assess the multivariate outliers using the Mahalanobis distance measure method and critical chi-square values. Mahalanobis distance measure method determines each value across the other variables in a multidimensional space from the mean centre of all values. For this purpose, we first computed Mahalanobis distance scores using regression analysis in SPSS. We then looked for the multivariate outliers, i.e., the cases with chi-square probability value less than .001 (Tabachnick & Fidell, 2007).

Following this two-step approach, only 2 cases (Table 5.4) were identified as the multivariate outliers. These cases were then removed from the study's dataset, and the forthcoming analyses were conducted with the remaining sample of 148 participants.

Table 0.4: Multivariate Outliers Assessment

| No. | Cases | Mahalanobis d-squared | P |
|-----|-------|-----------------------|-------|
| 2 | 25 | 189.56189 | .0000 |
| 3 | 2 | 168.77862 | .0000 |

5.3.2.5 Multicollinearity Assessment

According to Pallant (2011), multicollinearity refers to an undesirable statistical situation in which multiple independent variables of any dependent variable are highly correlated, i.e., $r = 0.9$ or above. As argued by Hair et al. (2010), the presence of multicollinearity affects the estimation of

regression coefficients and their statistical significance tests. Therefore, its presence in the regression models can seriously affect the reliability of the regression models to predict the outcome variable (Hair et al., 2010). Considering our research model comprised three main independent variables, i.e., CDM, CM, and GSA, it was essential to do the multicollinearity assessment before proceeding to the central hypothesis testing for these independent variables.

According to Pallant (2011), multicollinearity can be examined using tolerance and variance inflation factor (VIF) values. Tolerance refers to the variability in the specified independent variable that the other correlate in the regression model does not explain. The tolerance value can be assessed using the formula $1 - R^2$ for each variable (Pallant, 2011). A small tolerance value (i.e., $< .10$) suggests the possibility of multicollinearity. On the other hand, the Variance inflation factor (VIF) inverse tolerance (i.e., one divided by tolerance value). A VIF value greater than 10 indicates the possibility of multicollinearity (Hair et al., 2010)

The tolerance and VIF values presented in Table 5.5 depict that all the independent variables have tolerance values above .10 and the VIF values below 10. Thus, no evidence of multicollinearity was found in our dataset.

Table 0.5: Multicollinearity Analysis

| No. | Predictors | Collinearity Statistics | |
|-----|------------|-------------------------|-------|
| | | Tolerance | VIF |
| 1 | CDM | .829 | 1.207 |

| No. | Predictors | Collinearity Statistics | |
|-----|------------|-------------------------|-------|
| | | Tolerance | VIF |
| 2 | CN | .326 | 3.072 |
| 3 | GSA | .348 | 2.871 |

N=150; CDM=Centralized decision making; CN=Commitment to networking; GSA=Goal setting and alignment; VIF = Variance inflation factor.

5.3.2.6 Common Method Bias Assessment

According to Podsakoff, MacKenzie, Lee, and Podsakoff (2003), common method bias (CMB) refers to an incorrect variance attributed to the method employed for data collection rather than the variance explained by the primary measures of the study. Given the presence of CMB can inflate or deflate the inter-correlations among the primary relationships, it is crucial to assess and minimize its effect on the primary relationships. Therefore, Podsakoff et al. (2003) recommended conducting Harman's single factor test to determine the presence of CMB.

Harman's single factor examines whether a single factor explains the majority of the variance. For instance, if a single factor explains more than 50% of the total variance, it indicates the presence of CMB in the dataset (Podsakoff et al., 2003). We conducted Harman's single factor through exploratory factor analysis in SPSS to assess CMB's presence in the current study's dataset. The results (Table 5.4) highlighted that of the 7-factor solution, i.e., CDM, CN, GSA, SCF, SCQ, SCC, and SCD, first-factor explained less than 50% (i.e., 42%) of the total variance explained by the 7-factor solution. Thus, no evidence of CMB was found in Harman's Single-Factor Test. **This is verified by Levene's test of equality (Table 5.6), which demonstrates that**

the variances in the populations for the pre- and post-data were similar at p-value 0.000, which is less than the statistical significance level of 0.05.

Table 0.6: Common Method Bias Assessment Results

| Total Variance Explained | | | | | | | | |
|---------------------------------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|--------|
| Component | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Homogeneity of Variances (Levene) | |
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | F | Sig |
| 1 (CDM) | 18.287 | 41.562 | 41.562 | 18.287 | 41.562 | 41.562 | 5.567 | <0.001 |
| 2 (CN) | 3.619 | 8.224 | 49.786 | | | | 4.958 | <0.001 |
| 3 (GSA) | 2.916 | 6.626 | 56.413 | | | | 4.527 | <0.001 |
| 4 (SCF) | 2.063 | 4.688 | 61.101 | | | | 2.019 | <0.001 |
| 5 (SCQ) | 1.894 | 4.305 | 65.406 | | | | 2.852 | <0.001 |
| 6 (SCC) | 1.503 | 3.417 | 68.823 | | | | 1.412 | <0.001 |
| 7 (SCD) | 1.310 | 2.977 | 71.800 | | | | 1.351 | <0.001 |

CDM=Centralized decision making; CN=Commitment to networking; GSA=Goal setting and alignment; SCF=Supply chain flexibility; SCQ=Supply chain quality; SCC=Supply chain cost; SCD=Supply chain delivery

5.3.3 Confirmatory Factor Analysis

After completing the data screening and ensuring that our dataset fully met the basic statistical assumptions, we assessed the factorial structure and reliability of the employed measures in the next step. According to Kline (2011), a factor structure, also known as a measurement model, of employed measures can be assessed either through exploratory factor analysis (EFA) or confirmatory factor analysis (CFA). EFA is mainly used for a newly developed measure/scale or

the one that has been translated into another language. In contrast, CFA is used for confirming the factor structure established through EFA. In other words, CFA is used primarily for pre-existing measures/scales developed and tested in other studies (Kline, 2011).

Considering all variables of the current study are measured using existing measures/scales that have been tested and validated across a broad range of research settings and contexts, EFA was not required for the dataset of the current study (Kline, 2011). Thus, the measurement structure and reliability employed measures/scales of the present study were assessed through CFA in AMOS version 23 (Arbuckle, 2014). For this purpose, the following threshold values (Table 5.7) were used to determine CFA’s various goodness of fit indices and the reliability of the measurement models developed in the current study.

Table 0.7: Threshold Values Used for CFA and Reliability

| Purpose | Name of Index | Threshold Value |
|---|---|---|
| Confirmatory Factor Analysis (CFA) | Comparative Fit Index (CFI) | > .95 Excellent > .90 Good |
| | Tucker-Lewis Index (TLI) | > .95 Excellent > .90 Good |
| | Normed Chi-square (CMIN/df) | < 2 Excellent < 3 Good |
| | Root Mean Square Error of Approximation (RMSEA) | < .05 Excellent < .08 Good |
| Reliability | Cronbach’s Alpha | > .90 Excellent > .80 Good > .70 Satisfactory |

5.3.3.1 Baseline Measurement Models

First, two baseline measurement models were assessed for independent and dependent variables separately. Both baseline measurement models showed poor fit to the data. Specifically, the baseline measure model for the three latent independent variables, i.e., CDM, CN, and GSA (Figure 5.1 and Table 5.7) showed a poor fit to the data (i.e., CFI = .833, TLI = .812, RMSEA = .105, & CMIN/Df = 2.62). While the second baseline measure model for the four latent dependent variables, i.e., SCF, SCQ, SCC, and SCD (Figure 5.4-B and Table 5.8-B) also showed a marginally poor fit to the data (i.e., CFI = .895, TLI = .880, RMSEA = .107, & CMIN/Df = 2.69).

Table 0.8: Baseline CFA Factor Loadings for Latent Independent Variables

| Latent Factor | Item | Factor Loading |
|---------------|--------|----------------|
| CDM | CDM5_R | 0.156 |
| | CDM4_R | 0.745 |
| | CDM3 | 0.764 |
| | CDM2 | 0.945 |
| | CDM1 | 0.837 |
| CN | CN10 | 0.752 |
| | CN9_R | 0.065 |
| | CN8 | 0.767 |
| | CN7_R | 0.009 |
| | CN6 | 0.731 |
| | CN5 | 0.587 |
| | CN4 | 0.689 |
| | CN3 | 0.647 |

| | | |
|-----|------|-------|
| | CN2 | 0.725 |
| | CN1 | 0.728 |
| GSA | GSA7 | 0.828 |
| | GSA6 | 0.842 |
| | GSA5 | 0.765 |
| | GSA4 | 0.777 |
| | GSA3 | 0.834 |
| | GSA2 | 0.800 |
| | GSA1 | 0.824 |

CDM=Centralized decision making; CN=Commitment to networking; GSA=Goal setting and alignment

Table 0.9: Baseline CFA Factor Loadings for Latent Dependent Variables

| Latent Factor | Item | Factor Loading |
|---------------|------|----------------|
| SCF | SCF7 | 0.793 |
| | SCF6 | 0.811 |
| | SCF5 | 0.819 |
| | SCF4 | 0.887 |
| | SCF3 | 0.844 |
| | SCF2 | 0.875 |
| | SCF1 | 0.935 |
| SCC | SCC5 | 0.855 |
| | SCC4 | 0.934 |
| | SCC3 | 0.879 |
| | SCC2 | 0.916 |
| | SCC1 | 0.81 |
| | SCQ5 | 0.857 |

| | | | |
|-----|--------|-------|-------|
| SCQ | | SCQ4 | 0.708 |
| | | SCQ3 | 0.857 |
| | | SCQ2 | 0.788 |
| | | SCQ1 | 0.899 |
| SCD | SCD5 | 0.808 | |
| | SCD4 | 0.657 | |
| | SCD3_R | 0.741 | |
| | SCD2 | 0.934 | |
| | SCD1 | 0.928 | |

SCF=Supply chain flexibility; SCQ=Supply chain quality; SCC=Supply chain cost; SCD=Supply chain delivery

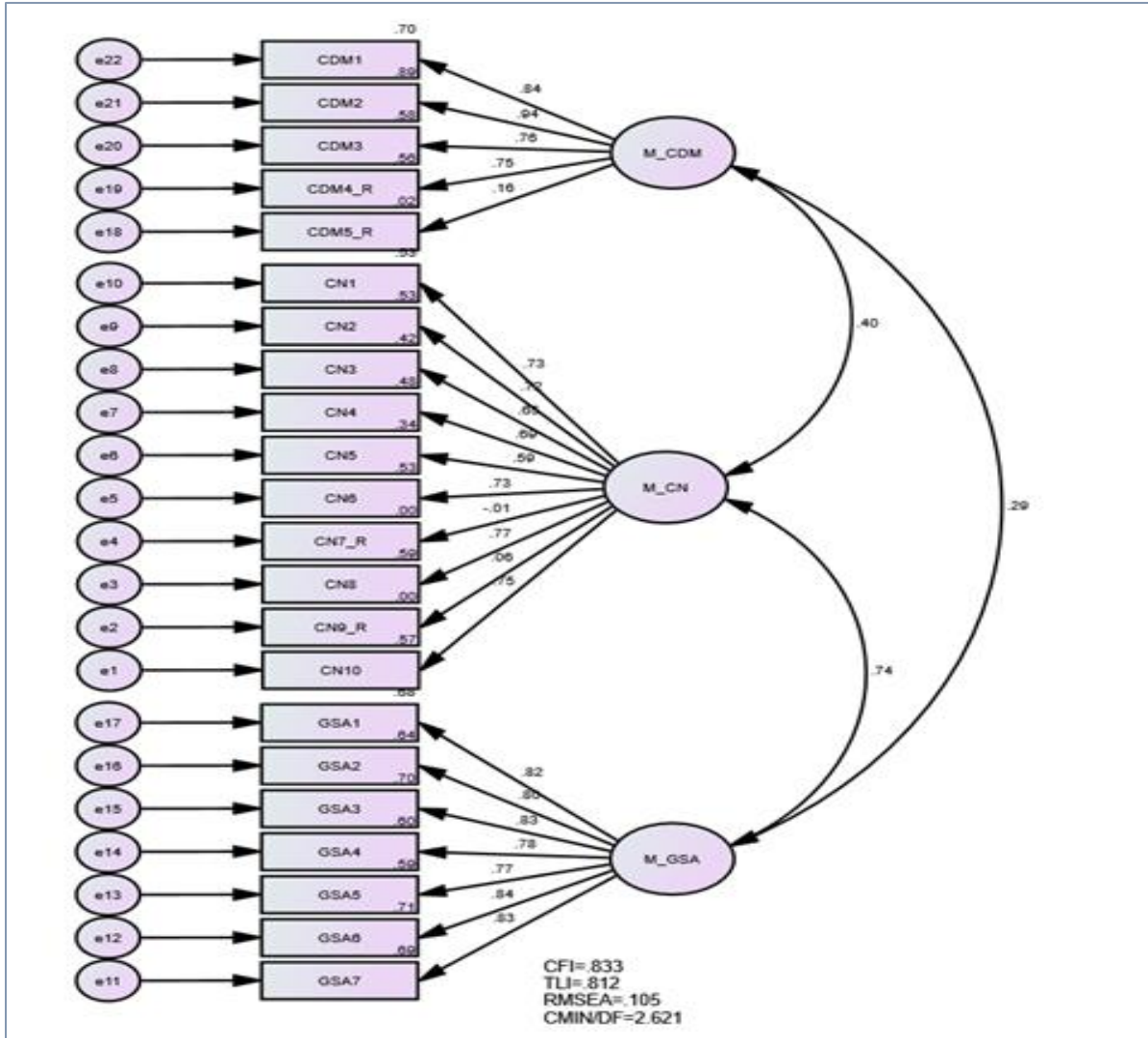


Figure 0.8: Baseline CFA Diagram for Latent Independent Variables

CDM=Centralized decision making; CN=Commitment to networking; GSA=Goal setting and alignment; CFI=Comparative fit index; TLI=Tucker-Lewis's index; RMSEA= Root mean square error of approximation; CMIN=Normed chi-square; DF=Degree of freedom.

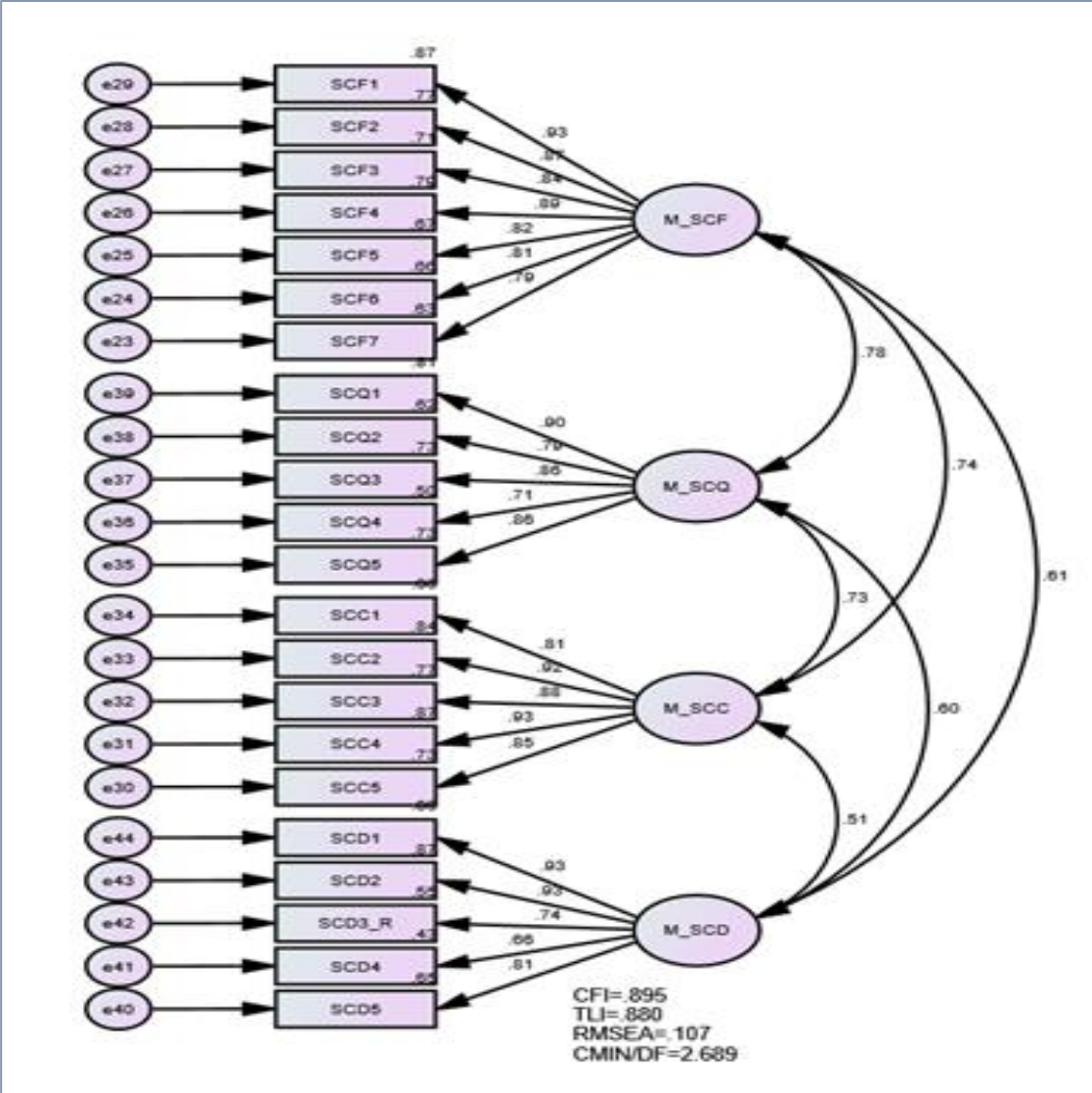


Figure 0.9: Baseline CFA Diagram for Latent Dependent Variables

SCF=Supply chain flexibility; SCQ=Supply chain quality; SCC=Supply chain cost; SCD=Supply chain delivery CFI=Comparative fit index; TLI=Tucker-Lewis’s index; RMSEA= Root mean square error of approximation; CMIN=Normed chi-square; DF=Degree of freedom.

5.3.3.2 Optimized Measurement Models

Following the CFA results of the two baseline measurement models for independent and dependent latent variables, several iterations of CFA were conducted to optimize these baseline measurement models. For this purpose, firstly, the indicators with less than 0.50 loadings (Hair et al., 2010; Kline, 2011) were one by one removed from their respective latent factors. Secondly, the modification indices of AMOS output were reviewed, and some of the suggested changes, i.e., adding covariates with few error terms, were made in the baseline measurement models. Finally, the CFA of the optimized measurement models showed an excellent fit to the data. Specifically, the revised CFA of the latent independent variables (Figure 5.8 and Table 5.8) showed excellent fit to the data (i.e., CFI = .916, TLI = .902, RMSEA = .085, & CMIN/Df = 2.06). Similarly, the revised CFA of the latent dependent variables (Figure 5.4 and Table 5.9) also reached to the excellent fit to the data (i.e., CFI = .915, TLI = .901, RMSEA = .097, & CMIN/Df = 2.39). Thus, these optimized measurement models were retained for the next step of the data analysis.

Table 0.1: Optimized CFA Factor Loadings for Latent Independent Variables

| Latent Factor | Item | Factor Loading |
|--|--------|----------------|
| Centralized Decision Making (CDM) (Original items = 5; Dropped items = 1) | CDM4_R | 0.742 |
| | CDM3 | 0.764 |
| | CDM2 | 0.946 |
| | CDM1 | 0.837 |
| Commitment to Networking (CN) | CN10 | 0.765 |
| | CN8 | 0.771 |
| | CN6 | 0.736 |
| | CN5 | 0.605 |

| | | |
|---|------|-------|
| (Original items = 10; Dropped items = 2) | CN4 | 0.693 |
| | CN3 | 0.649 |
| | CN2 | 0.677 |
| | CN1 | 0.679 |
| Goal Setting and Alignment (GSA) (Original items = 7; Dropped items = 0) | GSA7 | 0.801 |
| | GSA6 | 0.816 |
| | GSA5 | 0.765 |
| | GSA4 | 0.782 |
| | GSA3 | 0.836 |
| | GSA2 | 0.808 |
| | GSA1 | 0.832 |

Table 0.2: Optimized CFA Factor Loadings for Latent Dependent Variables

| Latent Factor | Item | Factor Loading |
|---|------|----------------|
| Supply Chain Flexibility (SCF) (Original items = 7; Dropped items = 0) | SCF7 | 0.79 |
| | SCF6 | 0.798 |
| | SCF5 | 0.778 |
| | SCF4 | 0.881 |
| | SCF3 | 0.847 |
| | SCF2 | 0.882 |
| | SCF1 | 0.924 |
| Supply Chain Cost (SCC) (Original items = 5; Dropped items = 0) | SCC5 | 0.813 |
| | SCC4 | 0.934 |
| | SCC3 | 0.88 |
| | SCC2 | 0.908 |

| | | |
|---|--------|-------|
| | SCC1 | 0.77 |
| <p>Supply Chain Quality (SCQ)</p> <p>(Original items = 5; Dropped items = 0)</p> | SCQ5 | 0.691 |
| | SCQ4 | 0.571 |
| | SCQ3 | 0.829 |
| | SCQ2 | 0.753 |
| | SCQ1 | 0.87 |
| <p>Supply Chain Delivery (SCD)</p> <p>(Original items = 5; Dropped items = 0)</p> | SCD5 | 0.869 |
| | SCD4 | 0.715 |
| | SCD3_R | 0.783 |
| | SCD2 | 0.925 |
| | SCD1 | 0.939 |

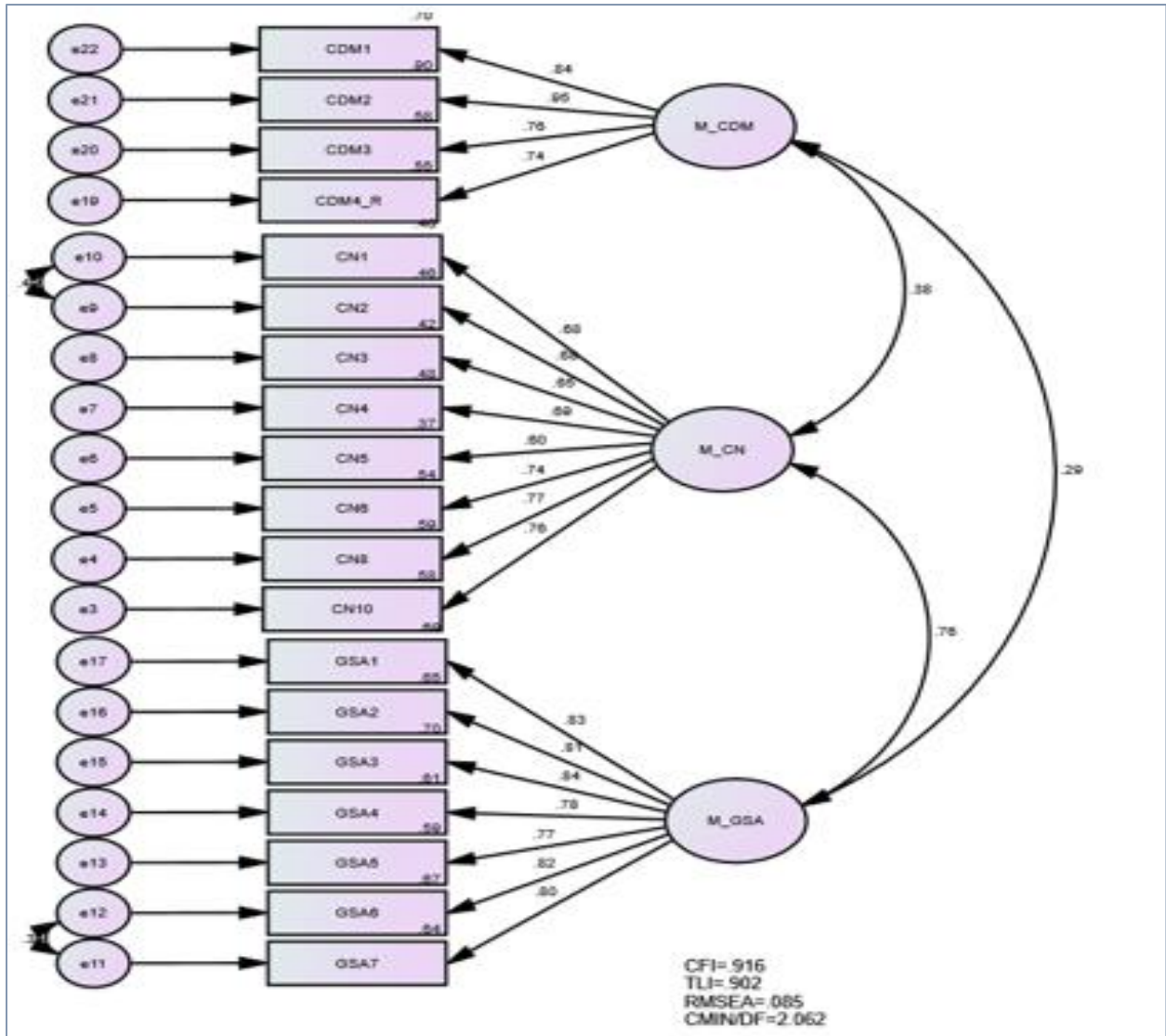


Figure 0.10: Optimized CFA Diagram for Latent Independent Variables

CDM=Centralized decision making; CN=Commitment to networking; GSA=Goal setting and alignment; CFI=Comparative fit index; TLI=Tucker-Lewis's index; RMSEA= Root mean square error of approximation; CMIN=Normed chi-square; DF=Degree of freedom.

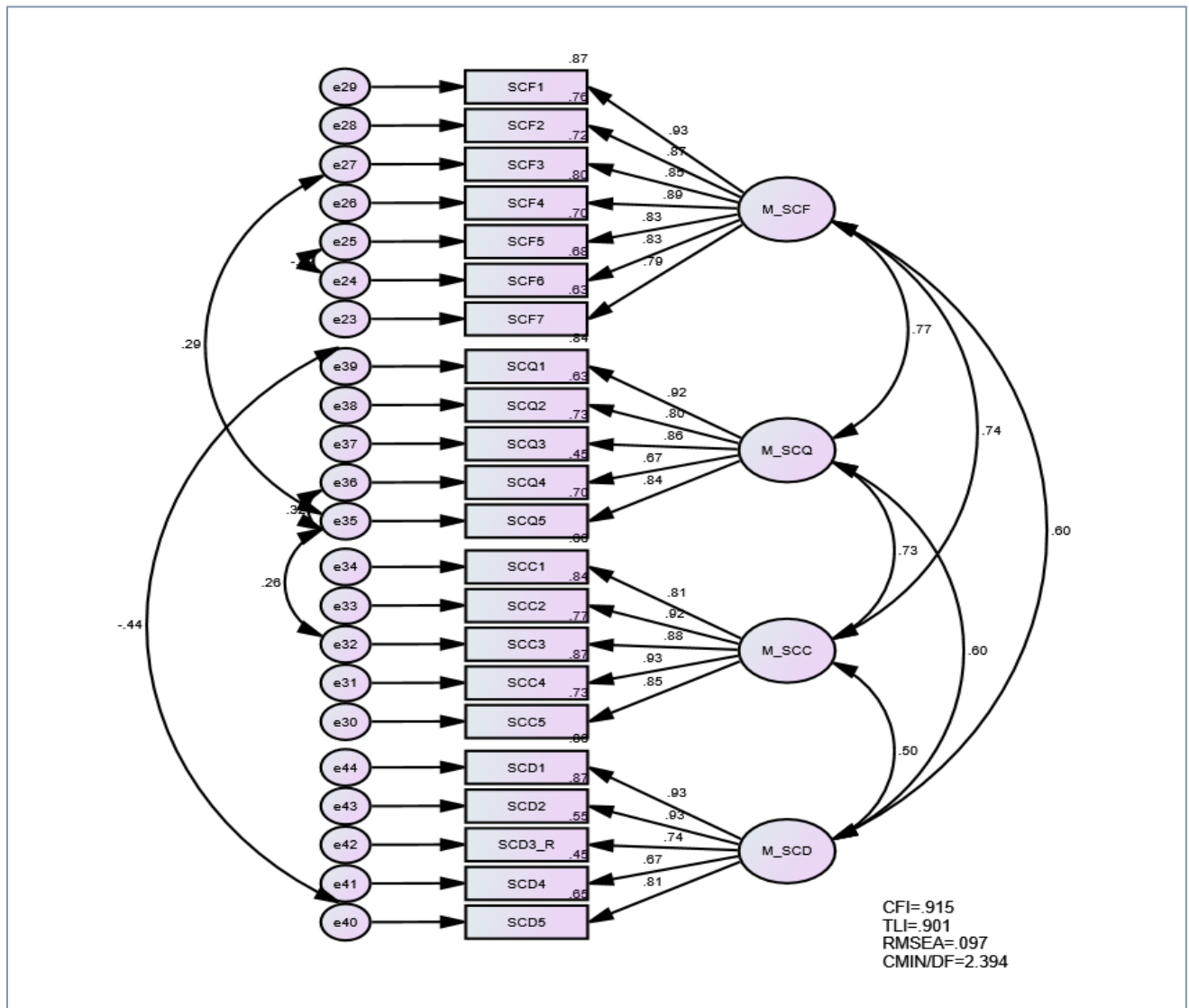


Figure 0.11: Optimized CFA Diagram for Latent Dependent Variables

SCF=Supply chain flexibility; SCQ=Supply chain quality; SCC=Supply chain cost; SCD=Supply chain delivery CFI=Comparative fit index; TLI=Tucker-Lewis's index; RMSEA= Root mean square error of approximation; CMIN=Normed chi-square; DF=Degree of freedom.

5.3.3.3 Reliability of the Retained Measurement Models

Reliability of any employed measure/scale refers to the internal consistency of the items of that measure. The reliability of a measure is computed by assessing the internal consistency of its items, known as Cronbach's alpha. All the latent constructs of the retained measurement models showed excellent Cronbach's alpha values. Specifically, Cronbach's alpha of CDM was 0.894, CN was 0.887, GSA was 0.930, SCF was 0.948, SCQ was 0.906, SCC was 0.942, and SCD was 0.907.

Following these excellent reliability values of the retained measurement models, we imputed data for all the seven latent constructs to the SPSS file to proceed to descriptive analysis and the main hypothesis testing in SPSS.

5.3.4 Hypothesis Testing

Hypotheses of the current study were tested in hierarchical multiple regression analysis in SPSS version 25 (IBM Corp, 2017). The goal of a hypothesis is to either describe a phenomenon or to suggest a possible association between several phenomena (Gravetter & Wallnau 2007). Three hypotheses were developed for this study (see Chapter 2) and examined using a variety of statistical approaches at a 95% and 99% confidence level ($=.05^*$ and $.01^{**}$).

5.3.4.1 Descriptive Statistics and Inter-correlation Analysis

In the first step toward hypothesis testing, descriptive statistics, and inter-correlation analysis of the variables of the study were carried out. Specifically, the mean, standard deviation, and inter-correlation of main variables were analysed. In line with the hypothesized relationships, all the main variables were significantly correlated with each other in the predicted direction, see Table 5.12.

Table 0.3: Descriptive Statistics & Inter-correlation Analysis

| Variable | Mean | STD | 1 | 2 | 3 | 4 | 5 | 6 |
|----------|------|-----|-------|-------|-------|-------|-------|-------|
| CDM | 4.14 | .56 | | | | | | |
| CN | 4.16 | .45 | .31** | | | | | |
| GSA | 4.08 | .49 | .23** | .67** | | | | |
| SCF | 4.17 | .55 | .40** | .63** | .69** | | | |
| SCQ | 4.10 | .63 | .25** | .48** | .58** | .71** | | |
| SCC | 4.10 | .60 | .19** | .51** | .73** | .72** | .68** | |
| SCD | 4.23 | .51 | .42** | .38** | .41** | .57** | .56** | .51** |

N=148; STD=Standard deviation; CDM=Centralized decision making; CN=Commitment to networking; GSA=Goal setting and alignment; SCF=Supply chain flexibility; SCQ=Supply chain quality; SCC=Supply chain cost; SCD=Supply chain delivery; ; * = p<.05; ** = p<.01.

Specifically, all three organizational independent variables (i.e., CDM, CN, and GSA) showed significant and positive correlations with the four dependent variables (i.e., SCF, SCQ, SCC, and SCD) in the predicted direction.

5.3.4.2 Hypothesis Testing for Direct Relationships

Three operational hypotheses that were developed from the literature study are established and tested as part of the data analysis process. Following a description of the statistical method used to evaluate each of the three hypotheses, the test results are presented. The current study has a series of direct relationships between the main independent and

dependent variables. Thus, hypothesis testing was started first with a series of direct relationships.

Before examining the effects of the main independent variables on the selected dependent variables, we first tested for the effects of demographic variables on the dependent variables. Results of hierarchical multiple regression analyses revealed that except for the number of employees in SC departments (i.e., SC employees) none of the other control variables had any significant effect on any of the dependent variables. Specifically, the number of employees was found to have a significant effect on SCF (.078, $p < .05$), SCQ (.086, $p < .05$), and SCD (.073, $p < .05$), but not with SCC (.056, $p > .05$). These findings showed that the greater the SC department's employee number, the more positive an impact it has on SCF, SCQ, and SCD, but no impact on SCC. Table 5.13 provides a summary of the results of these direct hypotheses and highlights that, after controlling for the effects of demographic variables (i.e., gender, age, designation, total employees, SC employees, organization nature, and organization market focus).

To test the hypothesis, non-parametric regression (NPR) is used. NPR allows for more flexibility and reduces the risk of misspecification issues by alleviating researchers of the necessity to put a priori specifications on functional forms. The non-parametric regression method represents the overall and real relationship between two variables without imposition of a functional form in advance. The study's non-parametric findings actually appear to be more in line with previous research (Lu and Beamish, 2004), which, for the most part, clearly shows a non-linear association between PMS and company performance. The researcher was aware that using linear regression would be unsuitable in advance

because the literature suggests that performance management systems and firm performance are associated in a nonlinear way (Mammen et al., 2012). Seven hypotheses were supported, and five were rejected. Specifically, the results showed that CDM had significant and positive associations with SCF (.195, $p < .01$) and SCD (.290, $p < .001$). On the other hand, contrary to our prediction, CDM did not show significant relationships with SCQ (.090, $p > .05$) and SCC (.030, $p > .05$). Thus, H1 and H4 were supported, while H2 and H3 were rejected. The results showed that CN had a significant and positive relations with SCF (.219, $p < .05$) only. Whereas, contrary to our prediction, CN did not show significant relationships with SCQ (.102, $p > .05$), SCC (.001, $p > .05$), and SCD (.009, $p > .05$). Thus, H5 was supported, but H6, H7, and H8 were rejected by these results. Lastly, the results showed that GSA had significant and positive relations with all the four dependent variables, i.e., SCF (.603, $p < .001$), SCQ (.660, $p < .001$), SCF (.887, $p < .001$), and SCD (.341, $p < .01$). Thus, H9, H10, H11, and H12 all are supported by these results.

Table 0.4: Direct Relationship Hypotheses Results

| No | Hypothesis | Independent Variable | | Dependent Variable | Un-Std. Beta | SE | Sig. (p) | Result |
|----|------------|----------------------|---|--------------------|--------------|------|--------------|--------------|
| 1 | H1 | CDM | → | SCF | .195 | .059 | .001 | Supported** |
| 2 | H2 | CDM | → | SCQ | .090 | .083 | .286 | Rejected |
| 3 | H3 | CDM | → | SCC | .013 | .068 | .854 | Rejected |
| 4 | H4 | CDM | → | SCD | .290 | .072 | .000 | Supported*** |
| 5 | H5 | CN | → | SCF | .219 | .094 | .021 | Supported* |

| | | | | | | | | |
|----|-----|-----|---|-----|------|------|------|--------------|
| 6 | H6 | CN | → | SCQ | .102 | .133 | .444 | Rejected |
| 7 | H7 | CN | → | SCC | .001 | .108 | .997 | Rejected |
| 8 | H8 | CN | → | SCD | .009 | .115 | .939 | Rejected |
| 9 | H9 | GSA | → | SCF | .603 | .084 | .000 | Supported*** |
| 10 | H10 | GSA | → | SCQ | .660 | .120 | .000 | Supported*** |
| 11 | H11 | GSA | → | SCC | .887 | .097 | .000 | Supported*** |
| 12 | H12 | GSA | → | SCD | .341 | .103 | .001 | Supported*** |

Note: N=148; CDM=Centralized decision making; CN=Commitment to networking; GSA=Goal setting and alignment; SCF=Supply chain flexibility; SCQ=Supply chain quality; SCC=Supply chain cost; SCD=Supply chain delivery; Un-Std. Beta=Unstandardized regression beta; SE=Standard error; * = p<.05; ** = p<.01; *** = p<.001.

5.3.4.3 Hypothesis Testing for Group Difference

After testing the direct relationship hypotheses, we proceeded to further test for the potential difference in main seven constructs, i.e., CDM, CN, GSA, SCF, SCQ, SCC, and SDM, across organizations belonging to Company A and Company B. Specifically, we used the T-Test statistical technique to test the following seven group difference-related hypotheses.

1. **H13:** CDM significantly differs across supply chain companies.
2. **H14:** CN significantly differs across supply chain companies.
3. **H15:** GSA significantly differs across supply chain companies.
4. **H16:** SCF significantly differs across supply chain companies.
5. **H17:** SCQ significantly differs across supply chain companies.
6. **H18:** SCC significantly differs across supply chain companies.
7. **H19:** SCD significantly differs across supply chain companies.

Table 5.14 provides a summary of the results of the group difference related these hypotheses. The result of independent-sample T-test statistical analysis indicated that, except for CDM and SCC, the mean scores of other constructs were statistically significant across the selected grouping variables. Specifically, the mean score of CN was significantly higher for B ($M = 4.31$, $t = -4.19$, $p < .001$) group of companies than their counterparts. The mean score of A was significantly higher for B ($M = 4.19$, $t = -2.77$, $p < .01$) group of companies than their counterpart. The mean score of SCF was significantly higher for B ($M = 4.31$, $t = -3.20$, $p < .01$) group of companies than their counterparts. The mean score of SCQ was significantly higher for B ($M = 4.24$, $t = -2.61$, $p < .01$) group of companies than their counterparts. Lastly, the mean score of SCD was significantly higher for B ($M = 4.32$, $t = -2.09$, $p < .05$) group of companies than their counterparts. Thus, hypotheses 13 and 18 are rejected, while the remaining were supported by the data.

Table 0.5: Group Difference Hypotheses Results

| No | Hypothesis | Relation | | | | Mean | T | P | Result |
|----|------------|-----------|---|---|-----|------|-------|------|--------------|
| 1 | H13 | Org Group | A | → | CDM | 4.18 | .710 | .482 | Rejected |
| | | | B | → | CDM | 4.11 | | | |
| 2 | H14 | Org Group | A | → | CN | 4.02 | -4.19 | .000 | Supported*** |
| | | | B | → | CN | 4.31 | | | |
| 3 | H15 | Org Group | A | → | GSA | 3.97 | -2.77 | .006 | Supported** |
| | | | B | → | GSA | 4.19 | | | |
| 4 | H16 | Org Group | A | → | SCF | 4.03 | -3.20 | .002 | Supported** |
| | | | B | → | SCF | 4.31 | | | |

| | | | | | | | | | |
|---|-----|-----------|---|---|-----|------|-------|------|-------------|
| 5 | H17 | Org Group | A | → | SCQ | 3.97 | -2.61 | .010 | Supported** |
| | | | B | → | SCQ | 4.24 | | | |
| 6 | H18 | Org Group | A | → | SCC | 4.02 | -1.87 | .063 | Rejected |
| | | | B | → | SCC | 4.20 | | | |
| 7 | H19 | Org Group | A | → | SCD | 4.14 | -2.09 | .039 | Supported* |
| | | | B | → | SCD | 4.32 | | | |

Note: N=148; CDM=Centralized decision making; CN=Commitment to networking; GSA=Goal setting and alignment; SCF=Supply chain flexibility; SCQ=Supply chain quality; SCC=Supply chain cost; SCD=Supply chain delivery; SD=Standard deviation, t=t-statistics; * = p<.05; ** = p<.01; *** = p<.001.

In order to discover the PM competences and knowledge that logistics’ professionals value to manage logistic processes effectively, the perceived relevance of the variables (CN, GSA, SCF, SCQ, and SCD) was examined based on the evidence supporting hypotheses 14 to 17 as well as hypothesis 19 – see Table 5.15.

Table 5.15. Importance and Performance Analysis (IPA) of the competences and knowledge.

| Attribute Code | | Mean Importance Rating ¹ | | Mean Performance Rating ² | | T | P |
|----------------|-----------|-------------------------------------|------|--------------------------------------|------|------|------|
| | | Mean | SD | Mean | SD | | |
| CN1 | Company A | 4.35 | 1.61 | 3.78 | 0.78 | 5.92 | 0.00 |
| | Company B | 4.41 | 0.97 | 3.86 | 0.94 | | |
| CN2 | Company A | 4.66 | 1.01 | 4.06 | 1.14 | 6.87 | 0.00 |
| | Company B | 4.52 | 0.87 | 4.01 | 1.98 | | |
| CN3 | Company A | 4.39 | 1.33 | 2.86 | 0.78 | 3.48 | 0.00 |
| | Company B | 4.43 | 0.79 | 2.94 | 0.68 | | |
| CN4 | Company A | 4.25 | 1.36 | 3.83 | 0.96 | 5.75 | 0.00 |
| | Company B | 4.55 | 1.41 | 3.82 | 0.87 | | |
| CN5 | Company A | 4.78 | 0.99 | 2.16 | 1.06 | 3.27 | 0.00 |
| | Company B | 4.28 | 0.84 | 2.11 | 0.71 | | |
| CN6 | Company A | 4.13 | 0.76 | 3.96 | 1.25 | 7.11 | 0.00 |
| | Company B | 4.11 | 1.32 | 4.12 | 0.89 | | |
| CN7 | Company A | 2.44 | 1.43 | 3.00 | 1.13 | 4.34 | 0.00 |

| | | | | | | | |
|-------|-----------|------|------|------|------|------|------|
| | Company B | 2.81 | 1.36 | 3.11 | 1.02 | | |
| CN8 | Company A | 4.00 | 0.86 | 4.27 | 0.88 | 3.80 | 0.00 |
| | Company B | 4.05 | 0.83 | 4.09 | 1.06 | | |
| CN9 | Company A | 2.44 | 1.51 | 3.00 | 0.77 | 6.71 | 0.00 |
| | Company B | 2.81 | 0.84 | 3.11 | 0.45 | | |
| CN10 | Company A | 4.00 | 1.79 | 4.33 | 1.35 | 5.66 | 0.00 |
| | Company B | 4.00 | 1.02 | 3.21 | 0.99 | | |
| GSA1 | Company A | 3.42 | 1.39 | 3.45 | 1.22 | 4.92 | 0.00 |
| | Company B | 3.64 | 1.36 | 3.38 | 0.75 | | |
| GSA2 | Company A | 4.33 | 1.17 | 3.65 | 1.06 | 5.83 | 0.00 |
| | Company B | 4.34 | 0.31 | 3.85 | 1.01 | | |
| GSA3 | Company A | 4.33 | 1.26 | 3.17 | 1.11 | 5.71 | 0.00 |
| | Company B | 4.39 | 1.02 | 3.51 | 0.94 | | |
| GSA4 | Company A | 4.72 | 1.20 | 3.86 | 1.17 | 4.57 | 0.00 |
| | Company B | 4.64 | 1.19 | 3.96 | 0.93 | | |
| GSA5 | Company A | 4.23 | 1.62 | 4.01 | 1.09 | 4.33 | 0.00 |
| | Company B | 4.63 | 0.93 | 4.22 | 0.88 | | |
| GSA6 | Company A | 3.99 | 1.48 | 3.98 | 1.12 | 3.96 | 0.00 |
| | Company B | 4.02 | 0.96 | 4.00 | 0.07 | | |
| GSA7 | Company A | 4.52 | 0.77 | 4.22 | 0.32 | 3.88 | 0.00 |
| | Company B | 4.22 | 1.33 | 4.19 | 0.77 | | |
| SCF 1 | Company A | 4.23 | 1.42 | 2.88 | 0.87 | 3.58 | 0.00 |
| | Company B | 4.26 | 1.30 | 2.94 | 0.71 | | |
| SCF 2 | Company A | 3.67 | 1.41 | 2.88 | 1.22 | 3.38 | 0.00 |
| | Company B | 3.78 | 0.88 | 2.95 | 0.89 | | |
| SCF 3 | Company A | 3.89 | 1.33 | 2.72 | 1.09 | 3.79 | 0.00 |
| | Company B | 3.91 | 0.85 | 2.78 | 0.76 | | |
| SCF 4 | Company A | 3.41 | 1.37 | 2.68 | 0.85 | 3.13 | 0.00 |
| | Company B | 3.43 | 1.05 | 2.72 | 0.74 | | |
| SCF 5 | Company A | 4.22 | 3.85 | 4.03 | 0.98 | 4.16 | 0.00 |
| | Company B | 4.26 | 3.17 | 4.11 | 1.52 | | |
| SCF 6 | Company A | 4.18 | 3.51 | 4.09 | 2.42 | 6.62 | 0.00 |
| | Company B | 4.25 | 3.86 | 4.07 | 1.05 | | |
| SCF 7 | Company A | 4.56 | 3.96 | 4.15 | 1.19 | 5.30 | 0.00 |
| | Company B | 4.45 | 3.75 | 4.13 | 1.25 | | |
| SCQ1 | Company A | 4.05 | 1.72 | 2.09 | 0.91 | 3.46 | 0.00 |
| | Company B | 4.08 | 0.93 | 2.65 | 0.72 | | |
| SCQ2 | Company A | 4.16 | 1.28 | 3.41 | 1.48 | 4.08 | 0.00 |
| | Company B | 4.20 | 0.86 | 3.64 | 0.84 | | |
| SCQ3 | Company A | 4.46 | 1.42 | 2.77 | 0.99 | 3.62 | 0.00 |
| | Company B | 4.58 | 1.03 | 2.87 | 0.75 | | |
| SCQ4 | Company A | 4.42 | 0.36 | 2.92 | 0.68 | 3.17 | 0.00 |
| | Company B | 4.55 | 0.89 | 2.98 | 0.67 | | |
| SCQ5 | Company A | 4.60 | 0.77 | 3.37 | 0.57 | 7.26 | 0.00 |
| | Company B | 4.43 | 0.74 | 3.40 | 0.55 | | |
| SCD1 | Company A | 4.11 | 1.39 | 2.88 | 0.53 | 3.26 | 0.00 |
| | Company B | 4.16 | 0.92 | 3.99 | 0.51 | | |
| SCD2 | Company A | 4.35 | 1.35 | 4.00 | 0.84 | 3.89 | 0.00 |

| | | | | | | | |
|--|-----------|------|------|------|------|------|------|
| | Company B | 4.38 | 0.87 | 4.11 | 0.79 | | |
| SCD3 | Company A | 4.10 | 1.37 | 4.11 | 1.02 | 3.79 | 0.00 |
| | Company B | 4.14 | 1.07 | 4.17 | 0.92 | | |
| SCD4 | Company A | 4.00 | 0.89 | 3.87 | 1.01 | 4.11 | 0.00 |
| | Company B | 4.02 | 0.69 | 4.05 | 0.75 | | |
| SCD5 | Company A | 4.16 | 0.99 | 4.04 | 0.63 | 5.12 | 0.00 |
| | Company B | 4.12 | 0.85 | 4.09 | 0.77 | | |
| Note: N=148; CN=Commitment to networking; GSA=Goal setting and alignment; SCF=Supply chain flexibility; SCQ=Supply chain quality; SCC=Supply chain cost; SCD=Supply chain delivery; t=t-statistics; * = p<.05; ** = p<.01; *** = p<.001. | | | | | | | |

As shown in Table 5.15, the findings also indicate higher importance to each of the items under analysis, with a mean ranging from 4.18 and 4.66. For logistics professionals to manage logistic operations successfully, the following competencies and knowledge are highlighted as being of utmost importance based on the perceived importance analysis of the investigated PM competences and knowledge:

1. **Commitment to Networking:** “Our organization have a cooperative relationship with the supply chain partners,” and “Our organization and supply chain partners share criteria to evaluate performance.”

2. **Goals setting and alignment:** “Our organization’s top management gives the time and resources to support suppliers who are willing to stay with long term partnership with the company”.

3. **Supply Chain Flexibility:** “Use of technology and Government rules & regulations”

4. **Supply Chain Quality:** “Conformance to design specification, addressing customer complaints, and time to solve customer complaints.”

5. **Supply Chain Delivery:** On-time delivery.

IPA results demonstrated a negative actual performance gap for all the items since the mean scores were significantly lower at the actual performance level for each item compared

to its high importance. The lowest performance scores were examined in order to identify the competences and methods of performance management required by logistics professionals to efficiently manage logistic processes. Table 5.15 shows that there was poor performance in some areas, as follows:

In terms of commitment to networking, the findings showed that organization and supply chain partners do not have frequent contacts on a regular basis. This can be due to the market's intense competition and requirement for frequent change. This viewpoint is consistent with Elshaer's (2021) assertion that corporate relationships are strongly influenced by high-stakes rivalry and an unpredictable global economy. Also, organization and supply chain partners need to have the same criteria when evaluating performance. To achieve this, both parties must share the same goals and be motivated to increase their market share. In terms of flexibility, the findings revealed that supply chain companies need to have more flexibility in terms of provided service, process, and product. Such flexibility encourages market-based reforms and continuously upholds the organization performance stream. Also, according to the findings, firms must be dedicated to creating conformance criteria and successfully handling customer complaints in order to ensure the quality of the supply chain.

5.4 Qualitative Section Analysis

5.4.1 Techniques and competencies of logistics: professionals' perspectives.

This study continues to develop a deeper understanding of the assumptions and drivers that underpin businesses' participation in the SC and logistics sectors. So, the next logical step would be to investigate the characteristics of the businesses engaged in this line of activity after further creating and refining the scales to gauge the impact of performance management systems on the SCE. Semi-structured interviews were conducted to identify the competencies and techniques of logistics.

The objective of this part is to define the effective performance components in terms of approaches, trends, practices and competencies required to achieve effectiveness from the viewpoint of managers working in the UAE supply chains and logistics industry. An explanatory research using a qualitative approach was used to get a comprehension of SCM practices in the UAE context. This method helps in explaining quantitative study hypotheses, uncovering trends in thought and opinion, and delving deeper into the subject. There were 14 interviews in total. Qualitative approaches offer the advantage of allowing participants to express themselves in their own words about what is important to them.

The majority of mode choice research involves researcher-selected variables, therefore it tends to focus on only a few aspects. In this essence, the interview questions used in this study were adapted from Demir and Kocaoglu (2019) in order to identify, methodologies, trends, practices, and skills of supply chain management in order to attain

effectiveness (Appendix B). The first section highlighted the personal information of the participants' group. The generic description of the business, its scope of operations, and its manpower capacity were covered in the second half of the interview. The third section was intended to detail the general approaches, practices and competencies that are implemented and needed to manage the supply chain. According to qualitative approaches might be useful for allowing respondents to indicate which factors are significant to them (Hammarberg 2016).

According to Elshaer et al. (2022), the following measures are taken to assure the effectiveness of this explanatory study:

- Sample selection, development of the interview guide, and**
- Interviewing technique and analysis**

5.4.1.1 Sampling and interview guide

The sample was stratified to ensure a broader view of the UAE setting, encompassing companies that operate in different fields of operation (e.g., foodservice and medical supplies) and employing a spectrum of supply chain strategies. This section is based on 14 in-depth interviews with company representatives at the managerial level from two cases of private companies functioning in logistics and SCs in the UAE – see Table 5.16.

Table 5.16. The interviewees' affiliation.

| Participants' Affiliation & Positions | | | | | | | | | |
|---|----------------------|--|-------------------------|-------------------|--------------------------------|----------------------|---------------------------|--------------------|-------------------|
| Regional (Healthcare Facilities - Medical Clinics and Pharmacy Chains) | | | | | National (Food service) | | | | |
| General manager | Supply chain manager | Medical equipment & disposable manager | Pharmaceuticals Manager | Operation manager | General manager | Supply chain manager | Sales & Marketing manager | Purchasing manager | Operation manager |
| 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 |

The choice of these companies was made based on the following reasons:

- **In line with UAE Economic Vision 2030, such investigation is conducted to guarantee that investments made in the Emirates' efforts to diversify their economy are consistent with Abu Dhabi's Economic Vision 2030.**
- **One of the main manufacturing sub-sectors of the UAE logistics sector is food service (Gopal 2017). Consequently, companies that operate in this sector were chosen for the study in order to increase non-oil GDP contribution and SME contribution to non-oil industries – see Table 5.17.**
- **It is possible to identify and choose cases that will efficiently use the limited research resources available (Palinkas et al., 2015) by using purposeful sampling from the managerial level of the two cases of private companies engaged in logistics, which is used to select participants that are most likely to yield appropriate and valuable information that explain the study's hypotheses (Kelly, 2010).**

Table 5.17. The characteristics of the study's community

| ORGANIZATION | SCOPE OF OPERATIONS | WORKFORCE CAPACITY |
|---|--|--|
| <p>Company A Healthcare Facilities - Medical Clinics and Pharmacy Chains.</p> | <p>The company operates in the healthcare, pharmaceutical, medical supplies, and medical SC sectors.</p> | <p>About 5,000–10,000 employees occupy different positions within the company, and about 200+ medical supply specialists work in the SC department.</p> |
| <p>Company B Food service & catering.</p> | <p>The company operates in the food service sector.</p> | <p>About 5,000–10,000 employees (the participants stated this range), and the respondents stated that more than 500 individuals are working in the SC department within the company.</p> |

According to Table 5.18, interviewees hold the following positions: logistic manager, supply chain manager, buying manager, operation manager, and general manager. Because all of our participants are corporate executives with sufficient experience with their company's supply chain activities (5 to 20 years of experience), it is reasonable to expect the respondents to have a thorough understanding of the supply chain activities and be knowledgeable about the subject matter of the inquiry. Table 5.18 provides an overview of the personal information of this group's participants, including their managerial level, experience, and the market focus of their organization.

Table 5.18. An overview of the participants' profiles

| N | Participant | Demographic information (Qualifications) | Work experience |
|-----------|---|---|----------------------------|
| 1 | Pharmaceuticals Manager | Man Age range: 51–60 (Graduate) | 25+ |
| 2 | General manager | Man Age range: 41–50 (Postgraduate) | 15-20 |
| 3 | Operation manager | Man Age range: 31–50 (Master) | 20-25 |
| 4 | Supply chain manager | Man Age range: 26–30 (Postgraduate) | 5 |
| 5 | Sales and marketing manager | Man Age range: 41–50 (Graduate) | 10-15 |
| 6 | General manager | Man Age range: 31–40 (Graduate) | 5 |
| 7 | Supply chain manager | Man Age range: 41–50 (Graduate) | 10-15 |
| 8 | Medical equipment & disposable manager | Man Age range: 31–40 (Ph.D.) | 0-5 |
| 9 | General manager | Man Age range: 51–60 (Graduate) | 15-20 |
| 10 | Purchasing manager | Man Age range: 31–40 (Graduate) | 5 |
| 11 | Purchasing manager | Man Age range: 31–40 (Postgraduate) | 10-15 |
| 12 | Operation manager | Man Age range: 26–30 (Postgraduate) | 5 |
| 13 | Sales and marketing manager | Man Age range: 31–40 (Graduate) | 10-15 |
| 14 | General manager | Man Age range: 41–50 (Graduate) | 15-20 |

The interviews were semi-structured and took 30 to 45 minutes on average, based on a specified interview guide (Appendix B). The interview guide was created to collect the most up-to-date and correct information about the various supply chain management strategies. Indeed, the questionnaire was primarily based on Demir and Kocaoglu (2019) and included closed questions. According to Haddouch et al. (2022), two criteria for subjective data reliability and validity are: (a) questions that do not need recollection from the far past,

and (b) informants who are motivated to supply accurate information. We promised data confidentiality and emphasized the project's utility.

5.4.1.2 Interviewing Procedure and Results Analysis

The respondents were asked about the organizational structure and their plan characteristics and features that they value and may enable them to manage and achieve the company's goals efficiently. In this regard, their responses were classified into three groups: organizational strategy, organizational structure, and systems. This shows that the participants value the structuring process and the strategic planning. Another aspect that was captured about these groups as they can be classified as hard elements.

In order to investigate these hard elements practices related to their management process, the participants were brought to address questions related to this area. They asserted that they established a plan to meet the needs of their principal customers by enhancing the flow and storage of products, services, and information from the point of origin to the place of consumption. They further explained their plans focus on cost effectiveness, delivery speed, flexibility, dependability, and sustainability in order to gain a competitive advantage. They all have a strategic plan, as indicated in Table 5.19, to satisfy the requirements and desires of their customers while giving equal priority to the interest of the company. They prioritize offering customers a variety of cost-effective, fully customized supply chain solutions and services while simplifying the exchange of materials, information, and money across supply chain partners. A successful strategic plan, according to an operational manager, should address the four main supply chain pain points of facility

locations, customer relations expectations, inventory tracking, and transportation choice-making. He continued by asserting that the main goal of any logistics plan is to get the products to the right clients at the right time and for the lowest possible cost. In this regard, Harrison and Hoek (2008) argued that long-term objectives (customer satisfaction) as well as the means (delivering value and customer service) and process (anticipating and managing change) for accomplishing them are three of the main components of strategic logistics planning.

The interviewees asserted that they used cutting-edge technology to monitor and manage logistics operations and enhance supply chain visibility and control. Additionally, they stated that the main objective of their logistics strategy is to develop a streamlined and effective system for delivering goods and services to clients in a way that fulfills their requirements and expectations while also assisting the firm in achieving its goals. In many development scenarios, strategy means for them a primary worry to preserve and build competitive advantage and to attain maximum aim. In order to offer our consumers the most affordable goods and services possible, they said, it is important for us to build relationships with all of our suppliers and to be aware of and linked to as many principal firms and suppliers as we can. "We don't rely on a single supplier of products since we can't afford any delays. This will give us an advantage over our rivals.

Table 5.19 Management hard competencies and techniques needed by logistics professionals to effectively manage logistic processes.

| 3 Hard Ss | | |
|---|---|---|
| STRATEGY | STRUCTURE | SYSTEMS |
| <ul style="list-style-type: none"> ▪ Service delivery accountability. ▪ Focused budget. ▪ Stakeholders' incorporation. ▪ Cost and profit. ▪ Competitive prices. ▪ Automation. ▪ Personnel motivation. ▪ Continuous process improvement. ▪ Partnerships with suppliers. ▪ Improved financial resources ▪ Advanced technology. ▪ Regulations compliance. ▪ Committed leadership. | <ul style="list-style-type: none"> ▪ The organization sometimes resembles a pyramid. ▪ The responsibilities are well defined. | <ul style="list-style-type: none"> ▪ Meetings, Intranet, conferences, presentations, emails, speeches, organizational blogs, phone call which may be horizontal, downward or diagonal communications. ▪ Informal communication. |

The structure of an organization relates to how it is organized and how its sections are related to each other. Their organization is organized in hierarchical layers of authority and responsibility. There are often numerous levels of administration in a hierarchical organization, with each level responsible for a certain set of activities or functions. The top management is in charge of determining the general direction of the organization and making strategic choices, which are delegated to a board of directors to coordinate and manage the implementation of business plans and the company's complete group policies. While, the middle management (executives and supervisors) is in charge of managing and directing the work of front-line staff. Lastly, the lower levels of management (operatives) are in charge of carrying out the top management's plans and procedures, as well as managing the organization's day-to-day operations. However, depending on the size and

complexity of the project and its development, the company structure may include extra hierarchical layers or distinct titles for different management levels for a given business unit. They indicated that “decision-making process is often structured and flows from the top down”. This results in an organizational structure with distinct lines of responsibility and control at each level of management. As the organization grows, so does the number of levels and the height of the structure.

Also, in addressing the interview questions that discuss the capabilities and competences the employees have to perform well, the systems of employees’ recruitment and retaining, style of interactions among hierarchical structure of the organization, and their organizational values and standards. The researcher grasped four soft skills from the interviewees’ response coding process, as follows:

- An organization's core beliefs and attitudes: Shared values
- The number and quality of individuals employed by the company: Workforce
- How top managers act in order to achieve the organization's goals: Style
- The genuine abilities and competences of the employees: Skills

Accordingly, four Soft Ss including shared values, skills, workforce, and style are also obtained from respondent responses that reflect many practices and aspects, as shown in table 5.20.

Table 5.20 Management soft competencies and techniques needed by logistics professionals to effectively manage logistic processes.

| 4 Soft Ss | | | |
|---|--|---|---|
| VALUES | SKILLS | WORKFORCE | STYLE |
| <ul style="list-style-type: none"> ▪ Integrity ▪ Respect ▪ Respect for people ▪ Fairness and justice ▪ Entrepreneurship ▪ Customer Focused ▪ Citizenship ▪ Hungary for success ▪ Trustworthiness ▪ Responsibility ▪ Caring | <ul style="list-style-type: none"> ▪ Analytical abilities ▪ Communication skills ▪ Digital literacy ▪ Problem-solving ▪ Decision-making ▪ Interpersonal/relationship-building skills ▪ Cultural competency ▪ Business acumen ▪ Team work ▪ Communication skills ▪ Management skills ▪ Teamwork skills ▪ Adaptability ▪ Leadership skills ▪ Problem solving skills ▪ Communications skills ▪ Critical and analytical thinking ▪ Self-Confidence ▪ Goal Setting for himself and others ▪ Business maturity ▪ High-level integrity ▪ Task planning and time management ▪ Initiative, resourcefulness and professionalism ▪ Technical knowledge. | <ul style="list-style-type: none"> ▪ A system for employees' recruitment, training, motivation, and rewarding. | <ul style="list-style-type: none"> ▪ Employees' empowerment. ▪ Setting strategic goals ▪ Making decisions. |

The managers of supply chain companies use both formal and informal techniques to carry out their operations, processes, and communication. Formal methods of operation, procedures, and communication flows relate to the predefined processes and systems passed down from the major business corporate office to influence how work is done and decisions are made. They claimed that employees may be informed about a new employee's arrival at our organization through written materials or training programs as part of the orientation

program. Formal communication is regarded as being effective since it involves a timely and organized flow of information. Meetings, presentations, and notice boards are just a few examples of formal procedures. On the other hand, informal methods of operation, processes, and communication channels relate to the informal, unwritten, or unofficial ways that tasks are completed and decisions are made inside our organization. Informal ways of working and communicating can be helpful in facilitating the flow of information and ideas inside a company as well as helping staff complete their work. However, most of the interviewees claimed that such informal systems can lead to confusion or inconsistency if they are not aligned with the organization's formal methods of operation and communication. In this regard, an operations manager (company B) asserted that their organization often combines formal and informal ways of operation, procedures, and communication channels to guarantee that work is completed successfully and efficiently. To ensure that everyone knows what is expected of them, it is crucial to establish clear channels of communication with staff and to explain expectations and processes in detail. A Supply chain manager clarified that “For every category and subcategory we track, there are SOPs in place. Emails should be used to carefully record any crucial communications. If necessary, verbal instructions and permission are also employed, but they must also be followed immediately by written documentation”.

With regard the main capabilities and competencies that employees should have to function well can vary depending on the exact job or task they are performing. However, our participants indicated several general competencies that most employees should have. They are always searching for individuals who are accountable to their work and committed

to the company's goals in this field of work. They also require quick learners due to the nature of the industry. Another important attribute for any employee is the ability to manage time well, as they are constantly working with deadlines. They also emphasized the importance of communication skills, stressing how vital it is for various jobs to be able to communicate well with coworkers, superiors, and consumers. This includes speaking plainly, attentively listening, and writing clearly. In addition, other interviewees claimed that managerial skills, teamwork skills, and adaptability are some examples of the key qualities and competencies that employees must possess. However, the particular abilities and skills necessary will vary according to the profession or role that a person does.

In terms of their practices for recruiting, training, motivating, and rewarding their employees, respondents stated that it is critical to select the correct recruitment strategy for your firm and to use different methods to discover the talented candidates, train, encourage, and reward them. A purchasing manager stated that “For the recruitment, we always try to find candidates with necessary experience and knowledge to any particular open position.” He further added that “Aside from that, training is provided right after orientation to any new hire that will help them to be on track with the operation.” They all agreed that their recruitment and training processes strive to raise their employees' morale so that they can operate more efficiently and effectively. Furthermore, they stated that they established a rewarding system that includes monetary, non-monetary, and psychological payments that a firm delivers to its employees in exchange for the work they do. According to them, "there is a performance evaluation wherein deserving personnel are awarded gratitude based on their performance in enabling the organization to reach its target."

Importantly, they emphasized how crucial employee training is to the development and success of a company. An effective staff can contribute significantly to a business since they are more productive and efficient in their jobs. Effective methods for recruiting, training, motivating, and rewarding employees can help organizations attract and retain top talent, raise employee morale and motivation, and significantly improve performance and productivity.

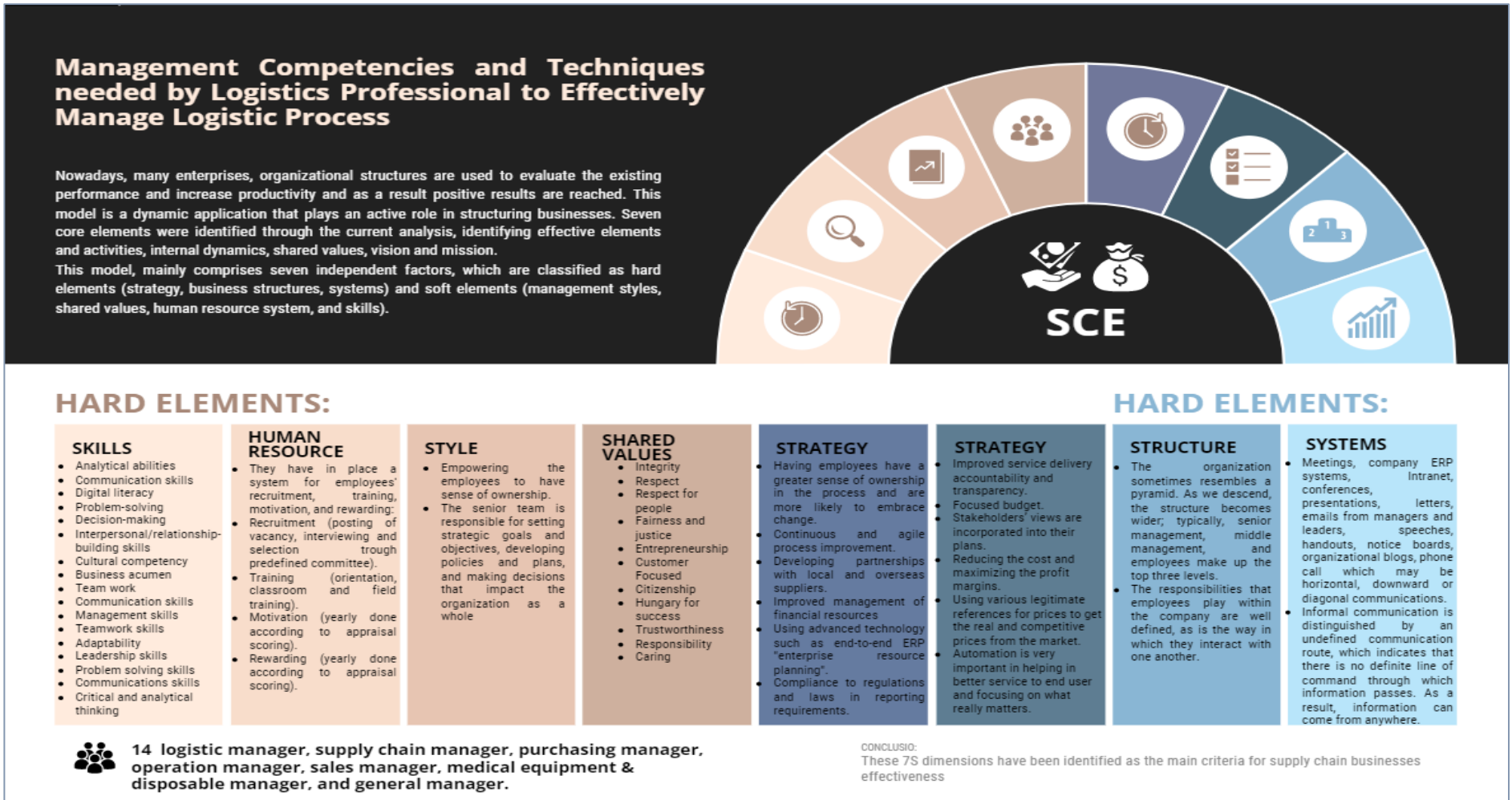
Their management style was being investigated, and they were asked "How the business is managed by the top team, how they communicate, what actions they take, and what value they add?" Their replies included giving individuals a feeling of ownership and focusing on what they can manage. Additionally, they made it clear that senior management is leading the team by demonstrating how to solve problems and empowering them to come up with original solutions while adhering to the team's principles and work framework. The majority of them highlighted that the leadership group is in charge of overseeing the organization's overall performance and direction. They stated that the particular actions taken by the leadership team will depend on the organization's aims and objectives as well as the market conditions at the time. Setting strategic direction, making decisions, interacting with stakeholders, and managing the company are some typical activities that the senior team might carry out.

Through investigating the driving principles, attitudes, and beliefs that inform the company's decisions and activities, their values were also discovered. A company's culture or its employees' personal values are examples of informal values, along with formal standards like professional or ethical standards. The term "ethics" refers to the values that

guide someone or something's behavior, and it might encompass ideas like honesty, justice, responsibility, and respect. According to the interviewers, in their companies, they have explicit codes of ethics that explain required behaviors and offer advice on how to manage ethical challenges. Respect, according to a general manager, "is always given top importance in my department. We must all respect the work, its requirements, and each member of the team. We encourage initiative-taking and lending a helpful hand to any fellow employee in need. The culture of the company, its reputation, as well as the conduct and output of its personnel, can all be significantly impacted by standards, values, and other forms of ethics. By upholding strong ethical standards, one can foster a productive and encouraging workplace atmosphere as well as gain the respect and credibility of stakeholders including clients, staff, and business partners. On the other side, failure to meet ethical standards may have negative effects on the company's reputation as well as legal or regulatory repercussions.

"Hard" aspects, such as strategy statements, organizational structure, communication systems, etc., are simpler to describe or identify and management can have a direct impact on them. On the other side, "soft" features can be harder to define, less concrete, and more culturally affected. The model, as shown in Figure 5.5, summarizes the interdependence of the components that are highly valued by the corporate supply chains and may enable them to effectively manage and achieve the company's goals.

Figure 5.12 Hard and Soft aspects of the supply chain management effectiveness.



As an output of this part, the most important criteria categories have been stated as “Strategy”, “Shared Values”, “Structure”, “Skills”, “Still”, “Systems”, “Staff” in an descending order. This approach enables the organization to identify value-relevant activities, then assess how these activities will contribute to overall effectiveness, and finally prioritize these activities based on their causal interrelationships to allocate management effort for overall readiness improvement.

5.8 Chapter Summary

This chapter provided details of the statistical procedures and content analysis used to analyse the data derived from both the quantitative and qualitative data collection methods (self-administrated questionnaire and semi-structured interviews). The quantitative data analysis of the dataset of the current study was carried out in four stages. In the first stage of data screening, assessments like data input accuracy, missing values, normality, multivariate outliers, and common method bias analyses were carried out using SPSS. In the second stage of confirmatory factor analysis, assessments like establishing factorial validity through baseline and optimized models and establishing the reliability of the retained measurement models were carried out in AMOS. In the third stage of demographic analyses, frequency analysis of the sample’s characteristics, e.g., gender, age, experience, marital status, job status, industry, etc., were carried out in SPSS. Lastly, in stage four of hypothesis testing, assessments of the descriptive statistics, inter-correlations, direct relationship, and group difference-related hypotheses were tested in SPSS. Table 5.21 presents a summary of the hypothesis testing part.

Table 0.21: Hypothesis Testing Results Summary

| Hypothesis Description | Result |
|--|--------------|
| H1: CDM has a positive impact on SCF | Supported** |
| H2: CDM has a positive impact on SCQ | Rejected |
| H3: CDM has a positive impact on SCC | Rejected |
| H4: CDM has a positive impact on SCD | Supported*** |
| H5: CN has a positive impact on SCF | Supported* |
| H6: CN has a positive impact on SCQ | Rejected |
| H7: CN has a positive impact on SCC | Rejected |
| H8: CN has a positive impact on SCD | Rejected |
| H9: GSA has a positive impact on SCF | Supported*** |
| H10: GSA has a positive impact on SCQ | Supported*** |
| H11: GSA has a positive impact on SCC | Supported*** |
| H12: GSA has a positive impact on SCD | Supported*** |
| H13: CDM significantly differs across supply chain companies. | Rejected |
| H14: CN significantly differs across supply chain companies. | Supported*** |
| H15: GSA significantly differs across supply chain companies. | Supported** |
| H16: SCF significantly differs across supply chain companies. | Supported** |
| H17: SCQ significantly differs across supply chain companies. | Supported** |
| H18: SCC significantly differs across supply chain companies. | Rejected |
| H19: SCD significantly differs across supply chain companies. | Supported* |

Note: N=148; CDM=Centralized decision making; CN=Commitment to networking; GSA=Goal setting and alignment; SCF=Supply chain flexibility; SCQ=Supply chain quality; SCC=Supply chain cost; SCD=Supply chain delivery; SD=Standard deviation, t=t-statistics; * = $p < .05$; ** = $p < .01$; *** = $p < .001$.

Chapter 6

DISCUSSION

Chapter 6: DISCUSSION

6.1. Introduction

The present chapter presents a detailed discussion of the obtained results and collected data from both the self-administrated questionnaire and the semi-structured interviews that were conducted to collect data from the two case companies representing the private logistics and SCs within the UAE. The reasons for choosing the two specific private companies included: long-established in SCs and logistics, locally based in the UAE, managing national and international operations, considered as leading in almost every area of SCs and logistics, having a large employee force that is highly skilled to manage the operations, highly competitive, and serve the government. The data generated from the questionnaires applied to the relevant staff members of the two companies were analysed narratively and descriptively (open-ended questions of the survey) and quantitatively to find the possible relationships between the adopted PM parameters and the degree of effectiveness of the SCs of the logistic services within the two companies.

To determine the role of PM in SCE across the private sector companies in the UAE, the study established three objectives to be achieved by conducting a mixed method approach. The study started with a quantitative approach using a survey that was focused on achieving the first and second study objectives by identifying the current PMS aspects (internal and external dimensions) that could help in boosting the SCE of chosen firms in the UAE and investigating how PMS can boost the efficiency of logistics services throughout supply chains. A qualitative research semi-structured interview that focused on the

performance management methodologies and competences required by logistics professionals to manage logistical processes came next.

The data collection and analyses employed several software applications. The first is Google forms for building and analysing data, and the second is Microsoft office Excel that was used for the data analysis and representation. SPSS was used to compute the variable's skewness, kurtosis values, regression analysis (Mahalanobis distance scores), exploratory factor analysis (Harman's single factor), descriptive analysis, and the main hypothesis testing (hierarchical multiple regression analysis). Meanwhile, AMOS software was employed for the second stage of confirmatory factor analysis, assessments like establishing factorial validity through baseline and optimized models and establishing the reliability of the retained measurement models. These tools were found to be highly effective, whether for data collection or data analysis and interpretation (for more details, see the method chapter).

Ethical concerns are crucial in the present study, and the participants were told that the data and details they presented were deemed extremely confidential and used for scholarly research but would not be used for any additional use without breaching their confidentiality. Descriptions regarding the empirical findings were provided throughout the results and discussion chapters. In this study, the researcher attempted to detect multiple indicators and parameters about the chosen logistic service suppliers functioning in the UAE, and the main data of the respondents, whether demographic or work-related, were collected. The two selected companies were Company A and Company B, and the discussion is guided by the various research questions that were developed.

6.2 Hypotheses Review

The data evaluation technique progresses with developing and testing three practical hypotheses adopted in this research. The statistical approach used to examine the three hypotheses was discussed, and the findings of the tests are presented. These hypotheses were formulated to examine the influence of decision-making, commitment towards networking, and goal alignment on SCE.

The first hypothesis assumed that efficient decision-making (CDM) affects SCE positively. To establish the relationship between the two variables, CDM was studied against SCE indicators (SCD, SCC, SCF and SCQ). The relationships between CDM and SCF and SCD were statistically significant and positive. Nonetheless, the relationship between CDM and SCC and SCQ were rejected as they were not positive. Therefore, decision making is somewhat positively associated with SCE through SCF and SCD but is not related when considering quality and cost indicators of SCE. According to Beck and Hofmann (2012), most decisions are based on the use of logistics and SCE, and PMS is critical in decision-making processes. However, there is a need to decentralize SCD to ensure decision-making occurs rapidly and promptly. The negative relationship between SCE and SCC can be associated with CDM, which might make SCs ineffective.

According to the second hypothesis, it was assumed that the alignment of administrative goals (GSA) with SCs needs could impact SCE positively. To examine how goal setting alignment GSA impacts SCE, GSA as an independent variable was studied against various indicators of SCE, including SCF, SCQ, SCD, and SCC. The study found that the relationship between GSA to be statistically significant and positively related to SCF, SCQ, SCD, and SCC. Therefore, it can be

deduced that the alignment of administrative goals with SC affects SCE positively. GSA is perceived as an enabler of SCE as it assists various chains in evading inconsistencies in shared visions and operational goals and will create common strategic goals, consistent procedures, and policies. The extant literature demonstrates that for businesses to realize their overall business and SC goals, they need to align strategic business objectives with SC strategies (Albishri, 2018).

The third hypothesis indicated that commitment to network (CN) could positively impact SCE. CN was studied against various predictors of SCE, including SCF, SCQ, SCD, and SCC. The findings demonstrated a statistically significant and positive correlation between CN and SCF but no relationship with SCC, SCD, and SCQ. Therefore, CN only affects a single indicator of SCE. According to Albishri (2018), SC relationships, collaboration, and information sharing are key determinants of SC performance and effectiveness. Therefore, CN is vital due to the interdependence that exists among various actors in the SC. By demonstrating a genuine commitment to other SC actors, an SC member is ready to dedicate energy and resources to improve and sustain SC relationships. Commitment implies that members of the SC network will not act in a manner that is likely to affect SCE and performance negatively (Dubey et al., 2017). Commitment ensures that SC actors share information and have incorporated customer processes that are closely aligned with SCE.

6.2.1 The Role of Performance Management.

The role of a PMS introduced in the two organizations, as well as its relationship with SC effectiveness, were evaluated using three primary parameters or performance indicators:

CDM, CN, and GSA. Multiple studies have demonstrated that CN is important for aligning an SC with common objectives and increasing its efficacy (Chandra et al., 2007; Chan & Chan, 2009; Clark & Lee, 2000; Min et al., 2005; Soosay et al., 2008). The literature supports the existence of a positive link between CN and SCE (Deshpande, 2012; Prahinski & Benton, 2004; Sahay & Mohan, 2003; Wu et al., 2004). Additionally, the literature has revealed a positive link between GSA and SCE (Deshpande, 2012; Laihonen & Pekkola, 2016; Miles & Snow, 1978). Consequently, the present study adopted these three parameters to investigate the impact of PMS on the effectiveness of SC in the selected companies.

6.2.1.1 Decision-making and its Impact on Supply Chain Effectiveness

Researchers have demonstrated that in emerging countries, a centralized system makes meeting SC targets a major organizational obstacle (Sahay et al., 2003; Deshpande 2012). When entities and SCs continue customizing their infrastructure globally, collaboration should be cautiously coordinated. Organizational decision-making can be defined as centralized or decentralized, and entities can align decision-making amongst centralized and decentralized institutions. Nevertheless, when the process of making decisions is not distributed in an entity wherein lesser and middle managers are allowed to bring on tasks and render decisions, SCP would suffer (Babbar et al., 2008).

When upper executives retain decision-making authority, decision-making becomes centralized. Nevertheless, organizational SCM decisions become linked to everyday operations, but SC participants would be unable to quickly and accurately deal with local instabilities when such decisions became concentrated. The literature suggests that there is a connection between

good decision-making and SCE. As a result, this study hypothesized that decision-making might become favourably linked to SCE, which would be consistent with the previous findings (Chicksand et al., 2012; Sahay et al., 2003; Deshpande 2012).

The process of making decisions was demonstrated to impact SCE throughout this study. According to the current study conclusions based mainly on the statistical analysis of the collected data, there is an important positive association regarding the process of making decisions and SCE as seen through the scope of game theory, which is consistent with Chicksand et al.'s (2021) and Elshaer's (2021) findings. As previously stated, a game theory can explain such a connection. However, that is not surprising when it is claimed that a centralized system is a major obstacle to activities in emerging economies. The centralisation of decision-making gives top management the power and authority to make choices, which does not foster employee empowerment (Chopra & Meindl 2010). As a result, individuals in an organization do not participate in decision-making and are not encouraged in critically assessing and reporting difficulties and matters (Deshpande 2012). This may be because centralization through the process of making such decisions provides upper administrators with the strength and influence to make these decisions, which would not promote employee control (Chopra et al., 2010). Therefore, people in an organization do not partake in making decisions and are not encouraged to assess and report problems and concerns in a sensitive way.

SC members need to make decisions in a timely fashion to reap the advantages of decentralized choices at the organizational level. The position of decision formulation for SCE

was experimentally validated, which is specific to this research and confirms preceding studies and adds methodological evidence of this relationship.

6.2.1.2 Goal Setting and Alignment

The literature suggests that goal alignment and SCE have a good correlation. It was recommended that organizations coordinate their broader enterprise and SC plans to guarantee that their total enterprise and SC priorities are met (Laihonen & Pekkola 2016). According to the findings of this study that examine the relationship between goal alignment and its influence on SCE in the two companies of interest, goal alignment appears positively linked to SCE. This study's findings are compatible with the studies supporting a proven positive association between target alignment and SCE. The present study's findings indicate that target orientation is favorably linked to SCE (Comighud 2019; Deshpande 2012; Laihonen & Pekkola 2016).

The main objective of alignment influences SCE, suggesting that aligning corporate priorities towards SC objectives has a beneficial impact on SCE. Throughout this study, the findings for target alignment were associated with the viewpoints of either network or partnership market orientation (Jraisat, 2011). Goal alignment was demonstrated to have an important impact on the organizational performance in terms of the top management decisions and the employees' functions in their daily roles (Elshaer, 2021), and goal coordination was discovered to be the most influential SC method.

The capacity to stay aligned in this highly competitive environment is the foundation of performance effectiveness (Hanson & Calantone 2010). It has been discovered that certain

components of performance evaluation and management must be deemphasized at all times. The role of an SC highlights the primary problem among SC stakeholders, which is remedied by SC coordination and incorporation (Kaplan et al. 2010; Flynn et al. 2010). According to partnership market orientation, explaining the different aspects of a competitive SC, such as aligning the objectives of engagement and coordination, can be crucial for investigating the interactions among SC participants. To put it another way, companies that collaborate and coordinate their priorities towards different SC participants would have a higher SCE. This is compatible with earlier studies, such as Laihonon et al. (2016), who presented a strategic perspective toward a commitment to common priorities and a deeper perception of the relationship between specific goals and network-level techniques. This demonstrates the importance of target alignment across SCs and how it efficiently contributes to SC. It was also proposed that SC partners maintain strategic coordination (Comighud 2019). This demonstrates the necessity of the supply chain participants' strategic alignment with the objectives of the company.

This study provides experimental confirmation of the function that target alignment serves in SCE. It supports earlier findings and offers scientific proof of this connection. Therefore, for companies to guarantee that their market and SC goals are met, strategic goals must be aligned. It has been argued that in order for corporate goals to become adequately achieved, they must be compatible with the context of the institution (Sahay et al. 2003). Also, the study's findings may be attributable to the fact that assessing the efficiency of an SC promotes agreement and consistency with its priorities.

6.2.1.3 Networking Commitment

Numerous studies have shown that networking commitment is essential for directing a SC toward shared objectives and boosting its effectiveness (Chan & Chan 2009; Clark & Lee 2000; Loice, 2015).

The literature supports the existence of a beneficial association between networking engagement and SCE (Deshpande 2012; Janda et al. 2022; Wu et al. 2004). In this regard, Loice (2015) claimed that is essential for businesses to retain long-term relationships with their significant suppliers and focus on giving those relationships their full attention in order to sustain their competitive edge and boost performance. This study's results are consistent with the previous research, supporting the defined association regarding networking commitment and SCE. According to Johnsen and Ford (2001), firms can improve lead times and value, and establish long-term cost reductions by handling stakeholders as allies and sharing strategic information with them. All of these things could help these firms improve value for the ultimate customer. Barringer et al. (2000) and Chin-Chun et al. (2008) concluded that, while there are advantages of teamwork throughout an SC, SC participants often refuse to satisfy the needs of other participants. Coordination among SC participants enables them to become agile, resilient, and reliable; however, this is challenging, especially in developed markets (Surana et al. 2005). Nevertheless, the findings of this analysis that investigates the relationship between networking commitment and SCE indicated that this is not the situation. Meanwhile, SCE was strongly associated with networking commitment.

Similar to target alignment, specifying the different aspects, particularly commitment and partnership, is crucial in examining the interactions amongst SC participants, according to either

network or interaction market orientation, as suggested by Mikkola (2008). Members of the SC would obtain access to services through network connections, leading to longer partnerships (Mikkola, 2008). According to the findings of this research, there is a significant association between the CN and SCE. Such a finding is not unexpected, given that CN is viewed as necessary and a significant issue in successfully maintaining SC channels. It was suggested that for an SC to remain competitive, its participants must be loyal to one another (Elshaer, 2021).

Furthermore, the level of both intrinsic and extrinsic commitment in an SC determines its ultimate efficiency (Wu et al., 2004). Many qualities, like exchanging information and synchronizing making decisions, become consistently linked to teamwork and commitment among SC participants. It has also been proposed that network associations are fostered by regular knowledge exchanges (Min et al., 2005; Sridharan, 2005). **To conclude, commitment to partnership within an SC enhances its efficacy. Such a finding is confirmed previous research and provides observational evidence to the correlation. The advantages of collaborative connections, according to Chin-Chun et al. (2008), come in the form of a firm's capacity to involve suppliers and other partners in mutually advantageous value exchanges. Therefore, connections were a resource and were therefore a portion of a firm's capital.**

6.2.1.4 Organizations' Nature and Supply Chain Effectiveness

After the study examined the direct relationship between PMS and SCE variables, it also explore how the nature of an organization (domestic versus multinational organization) affect the organization's SCF, SCQ, SCC, and SCD. Additionally, the study tested for the potential differences in national and international organizations based on the independent PMS variables

(networking commitment, centralized decision making, and goal setting and alignment) using a t-test statistical approach. Based on the findings obtained, it is evident that except for centralized decision-making and SCC, the mean scores for other variables demonstrated statistical significance across variable grouping. The study employed two companies for comparison: Company A and Company B. Specifically, Company A is a national entity that operates within the UAE, whereas Company B is an international or multinational entity.

It was found that CDM had no significant difference for national and international organizations. Similarly, SCC did not significantly differ between national and international organizations. Additionally, no significant difference was noted between Company A and Company B when decision-making and SCC were compared between the two companies. Therefore, it can be deduced that the nature of an organization (domestic or international) does not influence CDM and the SCC. A parent company can choose the CDM in relation to its foreign branch. Sourcing goods favour CDM within the company of origin (the UAE), inter-company transactions with the parent entity, novel subsidiaries, and smaller subsidiaries. There is no major difference concerning CDM between national and international companies. Similarly, the SCC does not vary considerably for national or international companies. It is approximated that the SCCs for all businesses range between 10 and 20% of the company's total revenues, whether small or large. Conversely, other variables demonstrated statistically significant differences between national and international business operations. For instance, CN had a high national mean score for Company A and Company B. Also, the Company B, an international company, demonstrated a high mean score for goal setting and alignment variables than Company A, a national organization. Regarding SCF, the mean score was significant for the Company B but slightly lower

for Company A. Furthermore, the mean score of SCD was significantly higher for the Company B but lower for the counterpart companies.

As a conclusion to the previous discussion of the hypotheses' results, it was shown that some characteristics of a competitive SC, such as target alignment, CN, and the decision-making process, have the potential to effect SCE but have not been thoroughly studied. According to the study's findings, these parameters have significant influences on SCE (table 5.13). Target alignment positively impacted SCE and SCE was also driven by CN or CDM. The impact of target alignment on SCE was high (see table 5.13), indicating that companies must coordinate both their specific and SC targets to guarantee the entire enterprise and SC remains successful. The impact of network commitment on SCE was also positive. That seems compatible with the previous research, which notes that attention to cooperation and networking within an SC enhances its cumulative effectiveness (Deshpande, 2012; Wu et al., 2004). The impact of decision-making over SCE also was positive, reflecting that whenever decision making was not distributed at various scales throughout an institution, it would influence the competitiveness and effectiveness of the SC. Consequently, goal alignment has a greater influence over SCE than commitment towards networks or decision making. The cumulative efficiency of an SC was demonstrated to be diminished when there is a shortage of coordination between the priorities of individual participants and the objectives of the SC. These findings support network and partnership marketing principles by demonstrating that target coordination is an essential component of a competitive SC, which influences SCE (Deshpande, 2012).

The findings suggest that companies must effectively match their priorities towards SC objectives. To strengthen SCE, businesses must maximize their networking through

communicating together alongside the various representatives within an SC to provide further efficient decision-making processes. To be precise, SC representatives who communicate their objectives and match them against the priorities of SC participants favourably affect the success of such an SC. Consequently, when the priorities regarding SC representatives and the broader objectives related to an SC become adequately matched, both SCE and SCP are most inclined to be successful in general.

Furthermore, decision-making is favourably linked to the effectiveness of the SCs. Representatives within an SC with an efficient decision-making mechanism positively impact each SC's efficacy. This means that an SC's success is much more likely to succeed if it has an efficient decision-making process. That is not surprising, given that the measurements of the competitive SC were discovered to constitute the most widely used SCP, and these findings are compatible with network and game theory.

The findings of this study include a thorough explanation of the implications of effective SC aspects and activities, revealing constructive interactions among all three components and SCE. This research is noteworthy for its ability to empirically evaluate and verify the results of these three components. Furthermore, this is thought to be the first analysis to measure all three parameters simultaneously. The findings of this study provide SC investigators with a new way to calculate SCE by developing a framework of competitive SC measurements that lead to SCE.

SCE is guided by the collection phase of these proportions, which is a special aspect of this design. The creation of a detailed theoretical structure and the confirmation of theories that understand the correlations among competitive SC aspects and SCE is a core component of this study. The analytical findings that these three parameters impacted the SCE backup network,

partnership marketing, game, and social capital concepts. Consequently, this study concludes that these explanations have provided analytical frameworks for explaining and illustrating how aspects of a competitive SC affect SCE.

6.3 Techniques and competencies of logistics: professionals' perspectives.

6.3.1 Competencies in Performance Management for Logistics Professionals Managing Logistics Processes

From the standpoint of supply chain managers, this section offers a thorough overview to better grasp the tactics and resources of SCs. Open-ended questions are more difficult to answer and demand significant coding (Reja et al. 2003). The key items in the study were determined using a content analysis, and the data were compiled using item coding. Content analysis is "a research method that uses a collection of procedures to draw reliable conclusions from text," according to Weber (1990, p. 9). The introductory questions included:

- *“What value does the company add before selling the final product?”*
- *What are the skills needed to be successful supply chain manager?*
- *What are company’s added value to improve competitiveness in logistics sector?”*

The talent pattern for SC managers is wider, more diverse, and wider than for several managerial groups (Mangan & Christopher 2005). Moreover, their highly qualified identity is still loosely implemented (Zinn et al. 2014), making it complicated to evaluate SC experts as there sufficient variation in how they perform their scope of responsibility. It is only recently that corporations have established a separate position for SC managers, and colleges have incorporated SCM as a subject in their studies (WU et al., 2004). Fawcett and Waller (2013) claimed that SC

managers are a diverse group: they frequently work in logistics, shipping, procurement, and selling, with the terms “logistics manager” and “SC manager” being used interchangeably (Lambert et al., 2008). Murphy and Poist (2007) argued for a rethinking of the function of these leaders using research conducted with managers in more than 100 firms to identify the abilities needed of logistics managers in the 2000s compared to the early 1990s. An SC perspective, which necessitates human management abilities and a platform view of the organization, defined the abilities for managing modern logistics rather than only technical talent linked to a single functional domain. Gammelgaard et al. (2001) emphasized the significance of excellent communication skills for today’s logisticians, including both upstream and downstream communication inside the company.

In this essence, the respondents from the two organizations explained that to be a successful SC manager in the logistics industry, addressing the third objective, which tries to identify the possible PM abilities needed by logistics professionals to manage logistic operations efficiently, the manager should have a set of specific skills, but any individual could not be a successful SC manager. They reported that a successful manager should have a fair knowledge of the products, knowledge of supplying local and international markets, flexibility, and business ethics. In this regard, Wu and Choi (2005) claimed that a basic issue is a lack of knowledge about what information sharing is and what constitutes the necessary components of effective information sharing. Also, the responses revealed that managers should have the ability to solve problems, troubleshoot, manage projects, and develop technical understanding. This view was confirmed by Chan and Chan (2009) and Elshaer (2021) who asserted the importance of leadership abilities in sustaining the performance of

the organization. They further claimed that the current competitive environment forces supply chain participants to think and act strategically. Additionally, the successful SC manager should be decisive, punctual, business-oriented, a smart worker, have enough communication skills, and plan and manage time. Moreover, the successful SC manager should be knowledgeable about continuous improvement, implement successful KPI's, pay great attention to details, and be curious about the vicinity and operations. If the SC manager is well aware, it would be easy to complete all tasks promptly. Therefore, SCM is centred on the individual (Thornton et al., 2013), and the core of every strategy formulation process is getting strategy implementation correct. Nevertheless, Teller et al. (2012) claimed that there is disconnect amongst SCM performance assessments, corporate strategies, human capital systems, and institutional structure. Consequently, SCM is regarded as a crucial feature. The way organizations must think about the current SC manager has evolved dramatically throughout the years. Primarily focusing on logistical activities and supply (Murphy & Poist 2007), optimizing SCs has advanced to a broader perspective that includes performance privileges (Sohal 2013).

In addition to the previously mentioned set of skills that should be found in successful SC managers, the respondents expressed several other traits and skills necessary for achieving SC effectiveness. The ability to lead and a commitment to following the law are seen as core features of effective managers. The soft skills in terms of teamwork, negotiation, and communication were also noted as being significant contributors. Prior studies have also highlighted the significance of elements like dedication, communication, and collaboration in creating strategic supply chains (Chan & Chan 2009; Dash et al. 2007).

Furthermore, the findings revealed that a successful SC manager within the company should have distinctive skills that make them a successful manager. These skills include technical understanding, cost accounting skills, the ability to understand financial statements, understanding e-business/e-procurement systems, troubleshooting, problem-solving, understanding cross-cultural/global issues, and business ethics. While performing his obligations in such an institution, a leader must not only be prudent in decision making but also have soft skills for organizational management (Manullang, 2017).

Additionally, some of the respondents stated that a successful SC manager needs to know the Arabic language, should be able to manage time appropriately, be experienced, be collaborative, and have positive attitudes towards work. Moreover, they should keep up to date with the best process and practices, understand local conditions, provide safe services, conduct staff training, be aware of the market conditions, and have purchasing skills. Finally, the successful SC manager should have the ability to negotiate successfully for resources, budgets, and schedules and have proactive approaches to risk management. **In accordance with these findings, Kythreotis et al. (2010) and Anggiani (2017) argued that effective leadership is deemed as a significant factor for the effective performance of the organizations by ensuring a conducive environment, providing adequate assets and resources, and ensuring a good rapport with stakeholders as well as the performance of stakeholders.**

6.3.2 Adding Value through Supply Chains

One of the main objectives of the adopted PMS within any organization is to add value to the products and services provided. Companies with comprehensive and balanced PMS surpass others (Martinez and Kennerly, 2005; Lawson, 2003). Therefore, many companies prioritise the implementation and utilization of a wide range of PMS solutions compared to conventional financial-focused systems –see Figure 6.1. According to recent studies, organizations typically adopt PMS to track efficiency, minimize costs, and create other advantages.

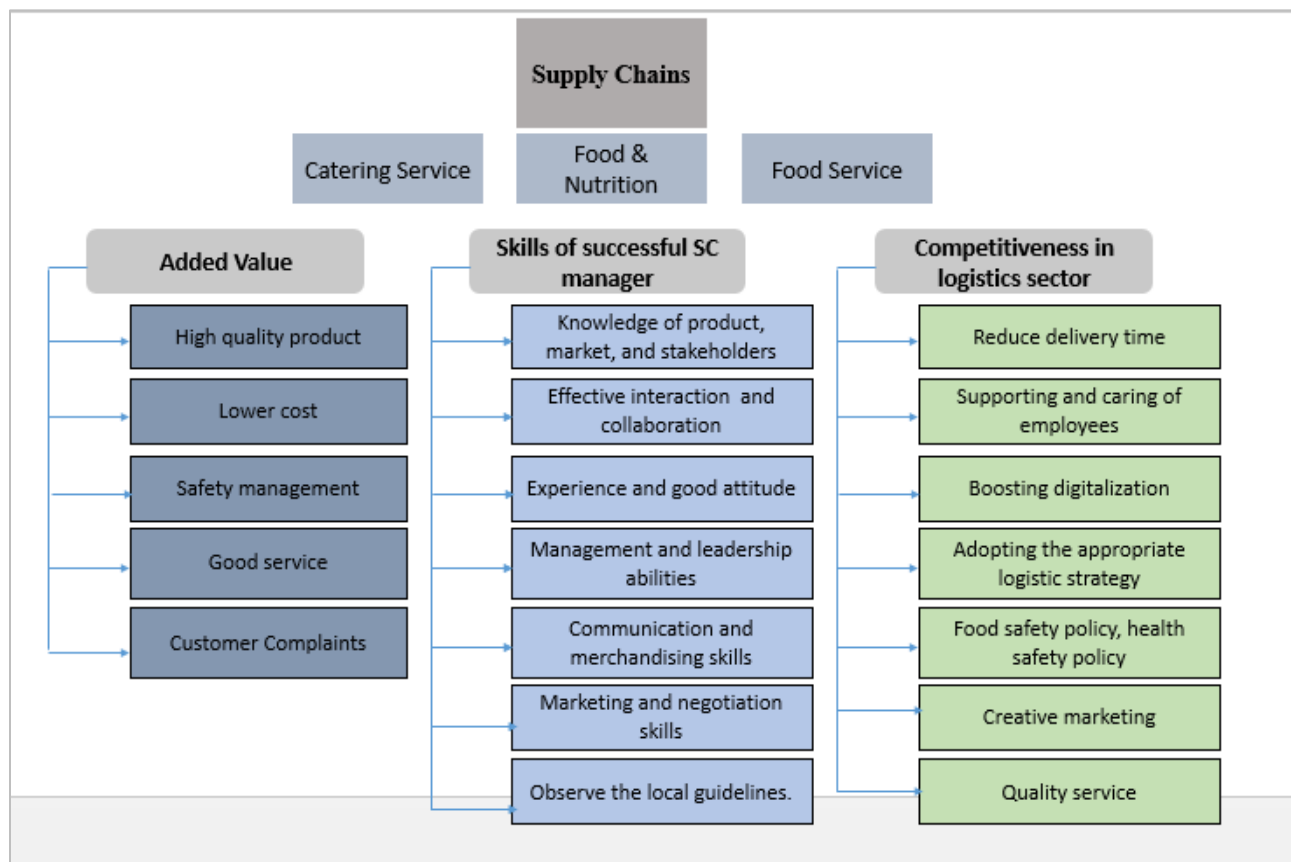


Figure 6.1 Coding items of the supply chain companies' characteristics.

The current study's findings revealed that supply chain organizations can create value by engaging in various tasks or taking other actions, such offering high-quality products at competitive prices. In this context, Lee (2010) asserted that certain metrics of quality and cost may play a crucial role in determining the SCE. Additionally, it was noted that excellent customer complaint handling and safety management boost the efficiency of supply chains. In this regard, supply chain effectiveness was defined by Okongwu et al. (2012) as "the effectiveness to fulfil orders precisely as per customer's request or, in other words, the level of quality of customer orders and it can be determined by measuring in with respect to the percentage of the order that is completed within reasonable amount of time by the customer." These added values could be observed across their low-cost products, reduced delivery time, better quality products, high-quality services, better availability and prices, effective operations, tracking, reporting, expansion of the warehouse in more hubs, availability during COVID-19, delivery of a wealth of health, end to end SC solutions, and centralized purchases.

Moreover, the respondents further reported that "the company's products and services have many added values, such as the high-quality products that serve the end-users, safety, food safety management, lower-cost delivery, efficient delivery time, facilitating customer requirement, and several alternative solutions". Consequently, employees of the both companies are aware of the techniques that may add value to the products and services they provide to maintain their customers and extract new ones.

6.3.3 Plan to Improve Competitiveness in Logistics

The logistics industry in the UAE is lucrative and rising, dominated by major multinational corporations, but varied in terms of scale and composition among the wider base of participants.

Moreover, the UAE climate reflects robust economic progress with major governmental and private enterprise investment in infrastructure (Stockdale 2015).

The managers of Company A stated that their company has plans to improve their competitiveness across the logistic sector, which is based on sourcing better quality products at effective prices, expanding warehouse facilities and adding more hubs, enhancing employee training and education, offering a customer service of greater value, lowering pricing or improving benefits, and continuously updating their systems. Additionally, the company would act to have better access to all items needed, expand suppliers, improve cost-effectiveness, hire people with good backgrounds in logistics, increase technological systems, and improve the ERP system. Moreover, the company would add new companies under its distribution, expand the fleet, recruit new staff, and provide higher quality products, on-time dispatching, and more training about SC and logistics. These results are in line with Hill's (2021) suggested strategies for enhancing SCs across all firms. Hill suggested that companies have to improve their distribution networks, embrace technologies, and develop healthy relationships with suppliers. Moreover, the management should regularly review their procedures and be interested in establishing green initiatives (Hill, 2021).

They also advocated that company plan for expanding the current utilities and acquisition, maximizing the advantages of the vendors, and increasing contracts contributed to the growth of sales. In addition, it improved the movement, storage, and flow of goods, services, and information inside and outside the company. Additionally, it provided employees with the chance to improve and grow, increase their salary, and develop policies that align with the company goals and objectives. Finally, it will assist in establishing more business with manufacturers directly,

introduce their own product line, focus on order-to-delivery lead-time, plan accordingly, and optimise warehouse management for maximum productivity. In this essence, Shethna (2020) asserted that these plans should be implemented in action plans to enhance improvement in the future. These actions should include improving distribution networks, creating a distribution plan, controlling operational costs, establishing a modern SC corporation, and creating performance benchmarks for the organization (Shethna 2020).

The respondents from Company B mentioned that their company's plan for improving competitiveness is based on improving quality, delivering services, hiring skilled people, developing mobile applications for the company, developing a new warehouse to reduce lead time, finding new suppliers for the customers, and adding more logistics hubs. These plans and tactics were initially asserted by Lee (2010) who claimed that certain metrics of quality and cost may play a crucial role in determining the SCE. Furthermore, they emphasized the role of adapting new methods, applying new technology, increasing their partners, and reducing delivery time. They further argued that the company would take necessary steps to plan for digitalization for best results, strategic planning, high-quality materials, intensive marketing, providing more care to staff and customers, and adopting new ideologies.

As a result, both businesses are getting ready for competition. The management of both businesses engaged about a wide variety of ideas in preparation for enhancing their competitiveness in the logistics industry.

The current competitive environment forces supply chain participants to think and act strategically. The importance of strategically operated organizations, where managers and staff are capable of realizing their organization's strategic aim and actively contributing

to the organization, has received a lot of attention from researchers (Elshaer & Marzouk, 2019). In essence, the respondents were highlighted some of their strategies and actions that increase the efficiency of their firms in the logistic industry (as summarized in Figure 6.1). Various areas of practice that could increase the effectiveness of the firm were mentioned in their responses, including:

- Use of technology,
- Timely delivery and suitable operational strategy,
- Marketing strategies,
- Food safety and health policies, and
- Supporting and caring of employees.

6.4 Conclusion

The role of PMSs in the SC involves optimizing its effectiveness to improve SCM efficiencies and assist in reaching the company goals. SC PMS can assess most processes, strategies, and technologies by employing metrics and indicators. According to Kurien and Qureshi (2011), PMS employs qualitative metrics such as the quality of products and services plus client satisfaction levels coupled with quantitative evaluations, including SC KPIs such as time and costs. Consequently, PMS provides business initiatives that target the improvement of the effectiveness of SC during the formulation of company policies and strategies. By accurately evaluating the entire SC and its actors, PMS ensure efficient functioning of the SC.

Carvalho et al. (2010) present various benefits of PMS on SCs, including enhancing coordination of SC activities, timely delivery, and cost reduction. The use of PMS can enable SCs to minimize the costs of logistics services. For instance, SC KPIs for inventory can help an organization assess the speed at which it moves its inventory and delivers goods to customers. Rapid movement of inventory minimizes storage costs and helps a business sell its goods at the most appropriate prices rather than discounting the products to clear the remaining stock. PMS facilitates on-time delivery that reduces troublesome costs. Additionally, PMS affects SCE by affecting the flow of information. Businesses need to employ effective communication strategies to function effectively (Cai et al., 2009). Various business divisions and workers are usually interconnected as they work to achieve the overall company strategies. Therefore, they need to communicate, and PMS delivers such platforms and facilitates informed and effective decision-making (Kurien & Qureshi, 2011).

To determine the relationship between PMS and SCE, three components of PMS, including CDM, CN, and GSA, were studied against four SCE variables: SCF, SCQ, SCC, and SCD. The findings obtained are examined in the subsequent section. The three hypotheses of the present study are all supported by the findings of the quantitative analyses. Consequently, the three main variables of the PMS, that is, CDM, CN, and GSA, are found to affect the SCE positively. Moreover, the answers to the present study's questions revealed different aspects related to the SC and logistics services within the two companies of the present study, such as the skills of the SC managers and the plans for each company to improve effectiveness and efficiency across the logistics sector.

The specific dimensions of PMS (including CDM, CN, and GSA) were used to predict the relationship with specific dimensions of SCE (SF, SCQ, SCC, and SCD). The present study revealed several direct relationships between PMS dimensions (independent variables) and SCE dimensions (dependent variables). CDM was positively related to SCF, SCQ, SCC, and SCD. CN as an independent variable of PMS was also positively related to various dependent variables of SCE, including SCF, SCQ, SCC, and SCD. Furthermore, GSA as an independent variable of PMS was found to be directly and positively related to SCF, SCQ, SCC, and SCD. Thus, it can be deduced that based on the direct and positive relationship between PMS and SCE dimensions, PMSs play an integral role in enhancing the effectiveness of SCs.

Chapter 7

CONCLUSION AND IMPLICATION

Chapter 7: CONCLUSION AND IMPLICATION

7.1 Introduction

This chapter includes a description of the conclusions and a concise description of the implications of the present research and its contributions. The limitations of the present research are then presented alongside potential research directions. Concluding notes are given in the final part throughout this chapter.

7.2 Findings Summary

The purpose of the study is to examine how PMS contributes to SC effectiveness in the context of logistics services provided by the UAE private sector. The efficiency of the SC is thoroughly explored in the study using a mixed method approach.

The results showed great promise and supported the hypotheses that goal alignment, commitment to networking, and decision-making have an impact on SCE. The research's examination of these three aspects of SCE is its main contribution. The main findings and results obtained across the different stages of the present study could be presented as follows. The present research objectives were to investigate the relationship between SCE and CDM, GSA, and CN. In terms of competitive SC measurements, it was discovered that GSA, CN, and CDM were all positively linked to SCE. The statistical analysis of the present study reflect the significant positive relationships (see table 5.13). The respondents expected greater degrees of GSA and CN as related to the CDM. Consequently, the SC stakeholders should pay more attention to the quality of the products or services that reflect service performance, conformance to design specification, customer complaints, and time elapsed to solve customer complaints. Additionally, they should

focus on the distribution or delivery dimensions that reflect delivery performance, on-time delivery, access to markets, and customer order processing time.

Regarding the position of SC management within the administrative structure of the two companies of interest, the participants stated that the SC and logistics are characterized by having a separate department within the two companies, but not in conjunction with other management. This reflects the importance of SC and logistics management within the two companies. However, the findings revealed that the managers working in the SC should have a special set of traits and skills, such as fair knowledge of the products, knowledge of supplying local and international markets, flexibility, and business ethics. Additionally, they should have sufficient communication skills and be able to plan and manage time. Moreover, these managers should also have analytical skills, planning skills, negotiating skills, information technology and automation, a grasp of economics and market dynamics, understand cost-to-serve, and a high-qualified workforce. Additionally, the two companies are keen to make added values for their products and services as a way to attract new customers and maintain existing partnerships.

The managers of the two companies mentioned the plan of each company to enhance in the future, which included comprehensive positive ideas for improvement. The two companies plan to expand warehouse facilities, add more hubs, enhance employee training and education, offer customer service of greater value, lower pricing or improve benefits, and continuously update their systems. The company plan also includes expanding current utilities and acquisitions, maximizing advantages for vendors, and improving contracts that contribute to the growth of sales. Additionally, they plan to implement policies to improve the movement, storage, and flow of goods, services, and information inside and outside the company. Finally, they plan to establish

more business with manufacturers directly, introduce their own product line, focus on order-to-delivery lead-time, plan accordingly, and optimize warehouse management for maximum productivity. They also tend to improve quality, deliver services, hire skilled people, develop mobile applications for the company, create a new warehouse to reduce lead-time, find new suppliers for the customers, and add more logistics hubs. Additionally, they plan to flow the presage, adopt new methods, apply new technology, increase partners, and reduce delivery time. Moreover, the company will take necessary steps to increase digitalization, use strategic planning, use high-quality materials, develop intensive marketing, provide more care to staff and customers, and adopt new ideologies. Also, there are many differences between private companies and their governmental counterparts. The private companies have more flexibility in Company A, more professionalism, better management, and match the market. Additionally, these companies have more standard operating procedures to follow and more growth opportunities. Moreover, in terms of operating systems, the private companies use the Oracle system, while the government uses the SAP system.

The study's qualitative section revealed that additional chain measurements and measures of contribution are required in order to fully explore the mechanism for achieving the SCE. These measurements are needed in order to ascertain how much value the corporate supply chain is producing for both its end users and each link. The decision/operation relationship is continuously evaluated, and steps are taken to jointly improve performance.

A business supply chain demands even more collaborative, coordinated, and integrated work activities (strategy, structure, systems, shared values, skills, workforce, and style). The roles and requirements for some of the supply chain processes identified and illustrated in figure 5.5 for the various approaches in performance management system alignment, as well as the 7S components discovered in the quantitative and qualitative analysis, should be recognized. Figure 7.1 depicts how to size the basic flows in an integrated chain to ensure effectiveness.

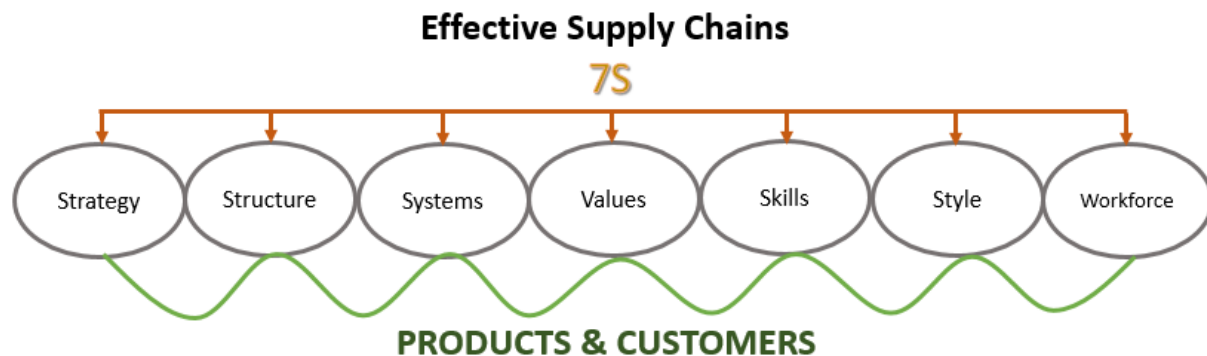


Figure 7.1. Basic Flows of achieving effectiveness in Corporate Supply Chains.

Companies can achieve greater effectiveness by focusing more on customer service with a corporate supply chain. They also cut waste, become faster and more adaptable, and maintain the highest quality standards. In general, they are obtaining a competitive advantage, and they are continuing to undertake ongoing improvements in order to maintain that position (Biz-Development 2011). This area necessitates extensive cultural work since the chain must always know its financial liquidity for investment planning and unforeseen modifications (Acero 2006). Because competition is no longer between businesses, but

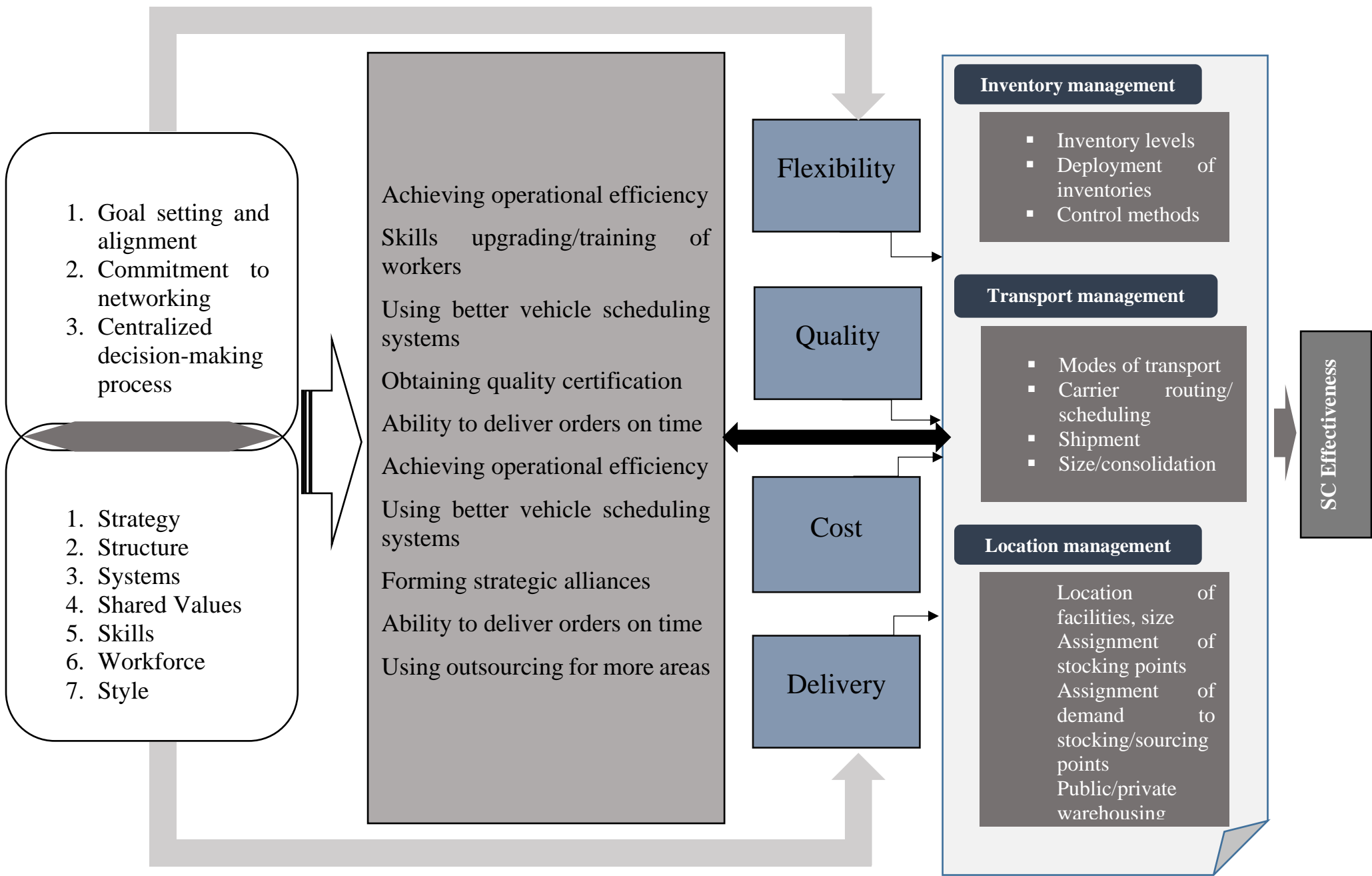
between supply networks, effective supply chain management has become a potentially beneficial tool to secure a competitive edge and improve organizational performance (Christopher 2011).

7.3 Research Contribution

SCE is a very risky process in a market that is increasingly worldwide. The recent health and economic crises have a significant negative influence on the global economy, including that of the UAE (Albishri, 2018). Organizations in the logistics cluster in the United Arab Emirates confront severe limitations in terms of operations and profitability (Ashai et al. 2007). The UAE economy depends heavily on the supply chain and logistics industry due to its small manufacturing base (Frost & Sullivan 2011). Failures in the logistics industry, which is a crucial part of the UAE economy, might have a negative effect on the business community, logistics firms, and the nation's economy (Frost & Sullivan 2011). The majority of SCM literature emphasizes the significance of a few select supply chain parameters (Albishri, 2018). As consequence of this failures in properly addressing implementing SC effectiveness, four research gaps (evidence gap, knowledge gap, practical-knowledge gap, and empirical gap) have been identified and addressed them.

This study filled a gap in the literature on the use of performance details by emphasizing knowledge and managerial strategies. The findings were encouraging and verified the predicted findings that GSA, CN, and CDM have an impact on SCE. The current study's key contribution is the investigation of the three components' influence on SCE. This thesis adds to the scientific literature by demonstrating the impact of competitive SC

features, and its conclusions are based on contemporary conceptual and observational research interventions. Furthermore, the 7S model emphasizes that an organization's internal parts are interdependent and must be linked in order to be effective. Figure 7.2 summarizes the major contribution of the study by merging and highlighting the key findings derived from the mixed method analysis.



The findings of the present study could help SC and logistics managers focus on the variables or factors that demonstrate significant positive relationships with SCE. These variables are CDM, CN, and GSA, and the effective application and implementation of these variables would lead to the improvement of the performance and effectiveness of the SC across organizations. Additionally, the study provides significant input for SCM managers by providing appropriate strategies to evaluate the effectiveness of their SC performance and novel dimensions concerning SCM practices presented in the paper. Moreover, the paper delivers scholarly contributions that offer researchers new insights and avenues for further studies.

7.4 The practical and managerial implications

These findings are important to organizations to build credibility to a competency-based PMS, as the research empirically validates the findings. While the organizations use PMS for many other aspects, the foremost important criteria are decision-making, goal setting and alignment, and networking commitment.

Representatives across every SC should enhance the SCM by bringing more time into applying core aspects of a competitive SC, which strengthen its ultimate effectiveness. The managerial implication of the results is that they encourage supply chains in general and individual organisations in particular to focus more on dimensions of a strategic supply chain that contribute to SCE. Doing this will likely establish a performance-driven culture that will also enhance SCP in the long term. CN, GSA, and CDM, in particular, should be strengthened.

The current study is not only expand knowledge regarding SCE but also guide SC professionals on how to strengthen SCE via greater mission alignment, enhanced chain networking, and successful decision-making. It was proposed that coordination among SC participants is becoming progressively important to remain successful in the industry. SCE's comparable degree is largely determined by competitive SC parameters. Supply chain managers must align and communicate their priorities with the rest of the SC, and this eventually will determine the comparative SCE. The evidence-based structure identifies the core characteristics to remember when handling SCP and judging the comparative SCE (Ketchen et al., 2007).

The structure of the present study and the obtained findings can promote the establishment of a systemic interpretation regarding a SC and assess its relative efficacy by considering the methodological basis regarding the relationships among its aspects and the efficacy of its competitive supply. By combining aspects of a competitive SC through SCE, the structure would help SC professionals' better grasp the complexity and complexities of handling these parameters.

7.5 Recommendation

Managers have a variety of motivations for adopting performance management systems and devoting time and money to these practices. Based on this study's findings, it is evident that PMSs are integral to SCE as these systems affect CDM, CN, GSA, SCQ, SCC, SCD, and SCF. Managers of valuable, well-known companies do not want their brands' reputations to be harmed by unethical supply chain tactics. Therefore, these managers are more inclined to make investments in strategies that could help to preserve the reputation of their product.

Practitioners should strengthen their SCM efforts by implementing key best practices, particularly those that enhance relationship, develop achievable and strategic goals, and propel their businesses to a competitive advantage. These practices also were claimed by Lambert (2014) who developed eight practices to enhance the supply chain management. Particularly, PMSs are essential for low-performing businesses to boost their performance and competitiveness in the global business arena. Lambert created various processes to increase efficiency, such as customer and supplier relationship management, customer product and service management, demand management, order fulfilment, and returns management. Based on this and the conclusions of the current study, SCM should incorporate three primary practices (setting strategic goals, developing strategic relationship and networks, and making reliable decisions). Therefore, SC managers need to employ PMSs as it is a prerequisite for effective decision-making and enhancing many aspects of the SC. Businesses that deploy PMSs in the SCM efforts will generate organizational successes by improving supplier partnerships and relationships. Furthermore, PMS within the SC can increase revenue, improve business efficiency, and enable businesses to exploit big data for predictive analyses and reduce the cost of conducting business. However, while exploiting SC PMS, organizations must ensure that such systems are proven and cost-effective to avoid eroding their benefits. They will compete effectively on global levels, facilitate effective information flows and lead to new inter-organizational relationships beneficial to business success. Ultimately, this will improve the competitive advantage of businesses.

Additionally, according to the 7S model, the following internal principles suggest that organizations must be aligned in order to be successful and perform effectively:

- **Identify the areas that are not effectively aligned**

SC managers be aware of how the seven aspects interact in their organization. For example, they may have established a strategy that relies on speedy product introduction, but the matrix structure with conflicting relationships prevents this, resulting in a conflict that necessitates a change in strategy or structure.

- **Determine the best organizational design.**

The second step is determining what effective organizational design you want to achieve with the assistance of top management. Knowing the intended alignment allows you to define goals and make action plans easier. For several reasons, this phase is more difficult than identifying how your organization's seven areas are now aligned.

- **Determine where and how modifications should be made.**

Determine how to reorganize reporting connections and which top managers the company should let go, as well as how to persuade them to change their management style so that the organization can perform more efficiently.

- **Make the necessary changes**

The most critical stage in any process, change, or analysis is administration, and only well-implemented changes have good impacts. As a result, SC managers should identify individuals within your organization or engage consultants who are most qualified to implement the changes.

- **Continuously review the 7s**

The seven elements are dynamic and alter on a regular basis: strategy, structure, systems, skills, staff, style, and values. A change in one aspect always has an impact on the others, necessitating the implementation of a new organizational design. As a result, continuous review of each area is critical.

7.6 Strengths of the Study

This study is unique in that no previous research has examined the linkages between important PMS features and supply chain performance in a critical economic sector (Lockamy & McCormack, 2004). The logistics and supply chain sector in the UAE has recently embraced new technologies, updated policies and procedures, and development strategies. The study intends to handle this issue practically. Second, the study attempts to discover various potentially understudied areas in the literature on logistic services on a micro scale. The study can also be viewed as a reaction to a research call for more research into the relationship between supply management concepts and performance systems (Chen & Paulraj, 2004; Cousins, 2005; Deshpande, 2012).

As a descriptive quantitative survey, this study gave an in-depth picture of the role of PMSs in boosting the efficiency of SCs by offering a high degree of information that are exceedingly valuable. The study generated hypotheses that let the researcher to investigate the link between dependent and independent variables and how they relate to SCE. The use of surveys allowed the study to collect data from a broad sample using a probabilistic sampling strategy to avoid bias. The reliability and validity of the measures utilized in the study were ensured, resulting in reliable findings. A pilot study was conducted that enabled the

research to adjust the questionnaire to ensure validity and accuracy. Moreover, a survey approach proved cost-effective, especially when collecting data from a large sample. As the findings are reliable, they can be generalized to a certain extent, particularly for UAE firms. Additionally, the study was versatile as it studied several variables (independent and dependent) in a single study, it fills pertinent gaps that have not received sufficient attention in past studies, and the findings can be applied to improve SC management practices.

7.7 Study Limitations

There were some potential analysis limitations. In terms of methods, the survey respondents were limited to SC organizations located in Abu Dhabi. The incorporation of firms across different Emirates may have contributed to a further diverse survey. The confined data sources from respondents only from the Abu Dhabi Emirate would make the findings and overall results more limited and confined spatially. Additionally, the present study investigated private companies only in the UAE but did not examine governmental companies. This is due to the difficulty of collecting data from governmental organizations, which makes data collection from these organizations a difficult process.

Finally, due to the COVID-19 pandemic, there were difficulties in meeting people working or interested in the SCs and logistics sector. Consequently, the researcher used social media tools and Internet communication whenever needed. If the study were to be redone, then the following could be considered: (1) Using mixed-methods research for qualitative to be exploratory and quantitative to be explanatory; (2) Instead of two companies, segmenting the companies into small/medium/large to get a better representation of the SC and logistics industry; (3) Include

respondents with CDM, SCM, and logistics functions; and (4) Focus on performance assessments of SCM.

7.8 Future Study Directions

While the study endeavoured to provide holistic information regarding the significance of PM achieving an efficient SC, further exploration is needed. While the findings revealed a positive association between various SC processes and SCE, there was an indirect link that could be argued to be moderation and mediation. Nonetheless, there is a need for further research to examine the dynamics of the linkages comprehensively. Future studies should create a mixed method using both qualitative and quantitative obtained from a large sample. The focus should be on how PMS can enhance the competitiveness of SCM. Additionally, futuristic mathematical models like structural equation modelling can be applied to examine SCE holistically.

Also, future studies should extensively analyse the indicators of SC performance and their correlation to SCE to fill the existing theoretical gaps. The measurements used in the study can be improved by widening the analysis of SCE. This will offer resourceful insights for SCM practitioners who intend to improve the performance and efficiency of their SCs. Another vital area involves studying the difference between the role of PMS in private and public companies. There is a need to examine how PMSs improve the effectiveness of domestic and global SCs and how they affect networking and enhance decision-making processes. Furthermore, prospective studies should recognize the mediation of effect in reaching those aspects and its progression to historically explored traditional hypotheses to achieve a competitive edge. Moreover, investigating

the distinct impact of each technique feature of SCE and the results are seen as a promising field for future study.

7.9 Conclusion

This research synthesized a wide body of information regarding the exterior and intrinsic aspects concerning SCE. It demonstrated that the bulk of existing literature has stressed the value of specific SC components. Consequently, comprehending the true SCM mechanics is much more difficult than demonstrated. The relative importance and interdependence of numerous SCM policies, procedures, behaviours, and structures and their direct impact on SCE, in particular, have not been thoroughly examined or grasped. The implementation of aspects of a competitive SC as core activities influencing SCE must be thoroughly embraced by SC participants. The conceptual structure established in this study has established a strong base for the empirical creation of alternate frameworks enabling scholars to evaluate connections among different SC operations and their impact on SCE. According to the implications, regarding any SC to become properly applied, all aspects of SCM must be thoroughly adopted and recognized in the plan. Ultimately, when paired with the effects of the multi-level structural equation modelling template, the conceptual structure supports SCM administrators with a tool for making smarter SC judgments.

This study provided a systematic method for conceptualizing SCE and the supporting aspects of a competitive SC. This study adds to existing studies about SC participants' collaboration and emphasizes the importance of studying SCE. With the emergence of SCM principles over the past two decades, such a contribution is important. Subsequently, the comparable degree of efficacy and associated mechanisms remain unexplored. The current study

addressed this research void by accounting for the concept of efficacy inside the framework of such an SC. The proposed design highlights different SC characteristics, and future studies could operationalize this to explore the comparable extent regarding SCE.

The effective collection of aspects across a specific SC, which influences SCE, will assist in detecting troublesome fields and is crucial for controlling SCs in a turbulent world and challenging international business environment. Consequently, the necessary parameters and variables could be used to determine the efficiency of an SC.

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Appendices

A. Questionnaire of the present study

Part A: INFORMANT DATA

INSTRUCTION: All data provided in this form is considered confidential and would be used only for the purpose of scientific research. Moreover, you will not be identified in any part of the final research.

1. Gender

- Male
- Female

2. Age

- Less than 20 years
- 20 - 25 years
- 26 - 30 years
- 31 - 40 years
- 41 - 50 years
- 51 - 60 years
- Above 60 years

3. Number of years the organization has been in existence

- Less than 5 years
- 5 – 10 years
- 10 - 20 years

- More than 20 years

4. What is your position in the organization?

- Upper level manager (Your subordinates are middle level managers)
- Middle level manager (Your subordinates are first level supervisor)
- First line supervisor (Your subordinates are general employees)
- Employee (You don't need to supervise other people)

5. How many total employees are working in your company?

- 1 – 100
- 101 – 500
- 501 – 1000
- 1001 – 5000
- 5001 – 10000
- More than 10000

6. How many employees are currently working in the supply chain department? If your company does not have a separate supply chain department, please indicate the number of employees who undertake supply chain related activities.

- 1 – 10
- 11 – 50
- 51 – 100
- 101 – 200
- 201 – 500
- More than 500

Part B: Use the following scale to rate the choice that related to each statement.

| | | | | |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|

| | | | | |
|-------------------|----------|-------------|-------|----------------|
| Strongly disagree | Disagree | Indifferent | Agree | Strongly agree |
|-------------------|----------|-------------|-------|----------------|

(1) Performance management: This section relates to the degree to which authority and power to make decisions are retained to top management of supply chains at your organization.

| | | | | | | |
|---|--|---|---|---|---|---|
| 1 | The company has centralized decision-making authority for various functions. | 1 | 2 | 3 | 4 | 5 |
| 2 | Supply chain management decisions are linked to overall corporate strategy | 1 | 2 | 3 | 4 | 5 |
| 3 | the organization's strategy is usually decided by senior executives | 1 | 2 | 3 | 4 | 5 |
| 4 | All staff in our organization are involved in the strategy process to some degree | 1 | 2 | 3 | 4 | 5 |
| 5 | Most staff in our organization have input into decisions that directly affect them | 1 | 2 | 3 | 4 | 5 |

(2) Commitment to Networking: This section relates to your company's commitment to networking with your supply chain partners.

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | Our organization relationship with the supply chain partners is long-term in nature | 1 | 2 | 3 | 4 | 5 |
| 2 | Our organization have a cooperative relationship with the supply chain partners | 1 | 2 | 3 | 4 | 5 |
| 3 | Our organization and supply chain partners have frequent contacts on a regular basis | 1 | 2 | 3 | 4 | 5 |
| 4 | Our organization and supply chain partners influence each other's decisions through discussion rather than request. | 1 | 2 | 3 | 4 | 5 |
| 5 | organization and supply chain partners share criteria to evaluate performance | 1 | 2 | 3 | 4 | 5 |
| 6 | Our organization negotiates fairly with supply chain partners by following ethics | 1 | 2 | 3 | 4 | 5 |
| 7 | Supply chain partners do not share sufficient information | 1 | 2 | 3 | 4 | 5 |
| 8 | Our organization is committed to the relationship with supply chain partners | 1 | 2 | 3 | 4 | 5 |

| | | | | | | |
|----|---|---|---|---|---|---|
| 9 | Our organization shares very little internal information with supply chain partners | 1 | 2 | 3 | 4 | 5 |
| 10 | The extent of commitment throughout the supply chain decides the overall supply chain effectiveness | 1 | 2 | 3 | 4 | 5 |

(2) Goals setting and alignment: This section relates to your company's goals setting and alignment with your supply chain partners.

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | Our organization shares our goals for business with supply chain partners | 1 | 2 | 3 | 4 | 5 |
| 2 | Our organization works together to achieve common goals with supply chain partners | 1 | 2 | 3 | 4 | 5 |
| 3 | Our organization measures our success as directly dependent upon the success of supply chain partners | 1 | 2 | 3 | 4 | 5 |
| 4 | Our organization's top management gives the time and resources to support suppliers who are willing to stay with long term partnership with the company | 1 | 2 | 3 | 4 | 5 |
| 5 | To ensure overall business and supply chain objectives are being achieved, it is essential for organizations to align their individual business strategies with their supply chain strategy | 1 | 2 | 3 | 4 | 5 |
| 6 | Our organization's top management's priorities have an important effect on organization's overall effectiveness | 1 | 2 | 3 | 4 | 5 |
| 7 | Organization's goals have crucial effect on supply chain activities such as network, procurement and outsourcing decisions | 1 | 2 | 3 | 4 | 5 |

Part C: the following elements can indicate overall **supply chain effectiveness**.

Based on the following scale, indicate the degree of importance of each statement.

| 1 | 2 | 3 | 4 | 5 |
|-------------------|----------------------|-------------|------------------|------------------|
| Least significant | Moderate significant | Significant | High significant | Most significant |

| Supply Chain Flexibility (SCF) | | | | | | |
|---------------------------------------|-------------------------------------|---|---|---|---|---|
| 1 | Service flexibility | 1 | 2 | 3 | 4 | 5 |
| 2 | product & process flexibility | 1 | 2 | 3 | 4 | 5 |
| 3 | Level of customization | 1 | 2 | 3 | 4 | 5 |
| 4 | Supply chain flexibility | 1 | 2 | 3 | 4 | 5 |
| 5 | Supply chain agility | 1 | 2 | 3 | 4 | 5 |
| 6 | Use of technology | 1 | 2 | 3 | 4 | 5 |
| 7 | Government rules & regulations | 1 | 2 | 3 | 4 | 5 |
| Supply Chain Quality (SCQ) | | | | | | |
| 8 | Product/ Service performance | 1 | 2 | 3 | 4 | 5 |
| 9 | Number of non-conformity | 1 | 2 | 3 | 4 | 5 |
| 10 | Conformance to design specification | 1 | 2 | 3 | 4 | 5 |
| 11 | Customer complaints | 1 | 2 | 3 | 4 | 5 |
| 12 | Time to solve customer complaints | 1 | 2 | 3 | 4 | 5 |
| Supply Chain Cost (SCC) | | | | | | |
| 13 | Supply chain cost | 1 | 2 | 3 | 4 | 5 |
| 14 | Inventory turnover | 1 | 2 | 3 | 4 | 5 |
| 15 | Capacity utilization | 1 | 2 | 3 | 4 | 5 |
| 16 | Productivity | 1 | 2 | 3 | 4 | 5 |
| 17 | Government incentives | 1 | 2 | 3 | 4 | 5 |
| Supply Chain Delivery (SCD) | | | | | | |
| 18 | Delivery performance | 1 | 2 | 3 | 4 | 5 |
| 19 | On-time delivery | 1 | 2 | 3 | 4 | 5 |
| 20 | Delivery delay | 1 | 2 | 3 | 4 | 5 |
| 21 | Access to market | 1 | 2 | 3 | 4 | 5 |
| 22 | Customer order processing time | 1 | 2 | 3 | 4 | 5 |

B. Interview Questions

INTERVIEW FORM QUESTIONS

| | |
|--|--|
| Demographic Section | |
| <ul style="list-style-type: none"> ▪ Position ▪ Experience ▪ Organization's Market Focus | |
| <ul style="list-style-type: none"> - What value does the company add before selling the final product? - What are the skills needed to be successful supply chain manager? - What are company's added value to improve competitiveness in logistics sector? | |
| 1 | What is the plan developed by a business to seek competitive advantage in logistic sector? |
| 2 | How the organization is structured and which hierarchical layers are there? |
| 3 | What formal and informal methods of operation, procedures and communication flows? |
| 4 | What are the main capabilities and competences that should the employees have to perform well? |
| 5 | What are the systems of employees' recruitment, training, motivation and rewarding? |
| 6 | How the business is managed by the senior team, how they interact, what actions they take and their value? |
| 7 | What are the standards and values and other forms of ethics that are applied within the organization? |