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The Effect of Goal Alignment, Commitment to Networking and Decision-Making on Supply Chain Effectiveness: An Empirical Study

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The Effect of Goal Alignment, Commitment to Networking and Decision-Making on Supply Chain Effectiveness: An Empirical Study

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By
Dalal Yousuf Albishri

Faculty of Business
November 2018
Abstract

Supply chain management as a phenomenon and research into the supply chain field have been increasing over the past few decades. The supply chain is a management philosophy that includes planning, sourcing, manufacturing and transforming raw materials into finished goods and services and delivering these in damage-free condition to customers through various intermediaries at the correct time, cost and place. However, in modern supply chain management, there is a lack of coordination between functional departments, which affects supply chain performance. Therefore, measuring supply chain performance is the first step towards its strategic improvement.

Traditional supply chain performance measures are limited to cost minimisation through efficiency measures and customer excellence in the form of responsiveness. However, effectiveness-based measures are not sufficiently addressed. There is an overall scarcity of research on supply chain effectiveness and a lack of systematic discussion about the factors affecting supply chain effectiveness. This reveals a research gap regarding the under-representation of scholarly studies on supply chain performance within a United Arab Emirates (UAE) context. This study aims to navigate beyond present research boundaries by establishing a thorough understanding of supply chain effectiveness, a key aspect of supply chain performance. This will add to the research literature, allowing organisations to consider changes with an emphasis on effectiveness as a critical aspect of supply chain performance assessment.

The objective of this study is to empirically test the relationships between goal alignment, commitment to networking and decision-making with four aspects of supply
chain effectiveness. This research aims to investigate the influence of these three dimensions of a strategic supply chain on supply chain effectiveness.

The methodology employed in this study is primarily deductive in nature. A questionnaire-based survey was used to gather quantitative data from various supply chain organisations across industry verticals that are operating in the UAE. The data for this study were gathered and analysed employing survey responses from 152 professionals and representatives of the supply chain and logistics sector in the UAE. In this research, structural equation modelling was applied to test these identified factors and their effect on supply chain effectiveness and its performance. The findings of the research suggested that all three strategic supply chain dimensions do contribute to supply chain effectiveness.

This study discovered that the relationship between supply chain goal alignment, commitment to networking and decision-making were significantly and positively correlated with supply chain effectiveness. This research work is considered to be the first of its kind in the UAE region and contributes to both theoretical and practical aspects of supply chain effectiveness and eventually supply chain performance measurement. The research applied structural equation modelling to assess these strategic supply chain dimensions together with supply chain effectiveness and aimed to discover the extent to which these are structured for better performance.

The findings provide insight into the field of supply chain effectiveness as part of supply chain performance. This research work advances theoretical examination into supply chain performance, as it the first research to empirically examine supply chain effectiveness through the lens of dimensions of a strategic supply chain. Several recommendations are offered for supply chain members to improve supply chain
effectiveness while implementing dimensions of their strategic supply chain. In terms of its geographical coverage, the research is limited to the UAE region. The research necessitates the need for a coordination mechanism among networked organisations to be investigated appropriately to facilitate supply chain effectiveness.

**Keywords:** Supply chain management, supply chain performance, supply chain effectiveness, supply chain practices, goal alignment, commitment to networking, decision-making, structural equation modelling
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A sincere appreciation is dedicated here to all my family and friends. I could not have completed this journey without the support and encouragement of my parents, whom I most admire and love and am grateful for being there always to offer love and prayers. I would also like to express my sincerest appreciation to all others who have helped me during my doctoral studies.

Capstone Editing provided copyediting and proofreading services, according to the guidelines laid out in the university-endorsed national ‘Guidelines for Editing Research Theses’.
Certification

I, Dalal Albishri, declare that this thesis, submitted in partial fulfilment of the requirements for the award of Doctor of Business Administration, in the Faculty of Business, University of Wollongong in Dubai, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

Dalal Yousuf Albishri

7 November 2018
List of Abbreviations

$\alpha$  
Cronbach’s alpha

AVE  
Average variance extracted

CBSEM  
Covariance-based structural equation modelling

CFA  
Confirmatory factor analysis

CR  
Composite reliability

DP World  
Dubai Port World Company

EFA  
Exploratory factor analysis

KMO  
Kaiser-Meyer-Olkin

MSEM  
Multi-level structural equation modelling

PCA  
Principal components analysis

PLS  
Partial least squares

SCE  
Supply chain effectiveness

SCM  
Supply chain management

SCP  
Supply chain performance

UAE  
United Arab Emirates

UOWD  
University of Wollongong in Dubai
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Chapter 1: Introduction

This chapter presents the background to the research and provides a brief description of the research problem, aims and objectives. An explanation of strategic supply chain practices follows, focusing on supply chain goal alignment, commitment to networking and decision-making and their relationship with supply chain effectiveness (SCE). From this explanation, the research question is derived.

1.1 Research Background

The supply chain as a phenomenon and interest in supply chain research has been increasing for the past few decades (Handfield 1999; Handfield et al. 2000; Moberg & Speh 2003; Yap & Tan 2012). The supply chain is a management philosophy that includes planning, sourcing, manufacturing and transforming raw material into finished goods and services (Fox et al. 2000). It involves delivering these goods and services to customers through various intermediaries at the right time, cost and place and in damage-free condition (Fox et al. 2000). A typical organisation comprises distinct departments that manage different parts of its supply chain (Shin et al. 2000). For example, purchasing takes care of suppliers and raw materials inventory, operations manages manufacturing and work in process inventory and marketing manages demand and finished products inventory. 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).
To succeed in a highly competitive economy, organisations must manage the integration of business, technology, people and processes within the organisation and across extended enterprises. To successfully compete, organisations search for new business paradigms that would lead to competitive advantage. Supply chain management (SCM) is one such tool that can help companies to improve production processes, reduce costs and successfully compete in a variety of business environments (Awad & Nassar 2010). Therefore, SCM becomes critical to customer fulfillment.

In a globalised economy, SCM is a highly dynamic process that carries enormous risks. The recent economic crisis hugely affected the global economy, including in the United Arab Emirates (UAE) (al-Suwaidi 2011). Organisations in the UAE are facing tremendous challenges in terms of operations and profitability (Ashai et al. 2007). The supply chain and logistics industry is key to the UAE economy and acts as an essential part of business given its small manufacturing base (Frost & Sullivan 2011). A major portion of the UAE’s economy is based in the logistics industry and problems within this industry may have serious implications for the business community, logistical organisations and the UAE economy (Frost & Sullivan 2011). This study will add to the body of knowledge on the UAE logistics sector, which currently is not well researched.

Despite the increasing focus on SCM practices by experts and researchers (Malik et al. 2001; Tracey, Lim & Vonderembse 2005), there remain problems in efficiently and effectively implementing SCM practices (Handfield 1999; Handfield et al. 2000; Moberg & Speh 2003; Yap & Tan 2012). A major reason for this failure could be because there is weak consensus among academics as to the important aspects of a supply chain (Chen et al. 2004; 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, Lyman & Wisner 2002). Beamon (1999) suggested that a ‘supply chain’ is a complex term that involves various parties, such as customers, distributors and suppliers. He further argued that difficulties exist with respect to recognising suitable performance aspects of supply chain analysis. Academics have so far been comfortable to limit their selection to performance aspects. For example, Christy and Grout (1994) suggested ‘customer responsiveness’ as an important dimension of SCP. Some researchers have considered cost as the prime dimension (Cohen & Lee 1988), whereas few have identified supply chain flexibility (Lee & Billington 1993) as a significant measure of SCP. The literature has commonly disregarded the complexity of supply chain levels and failed to adequately describe the entire supply chain system (Beamon 1999). It is important that the different dimensions of SCP are appropriately considered to capture its performance. This research plans to focus on Okongwu et al.’s (2012) three dimensions of SCP—effectiveness, efficiency and responsiveness.

Since a supply chain has organisational implications, it is critical to evaluate the influence of SCM using an organisation’s performance measures (Green et al. 2006). It is also necessary to identify which aspects of SCM are associated with SCP and organisational performance, as the traditional supply chain construct has failed to consider the strategic supply chain dimensions (Albaloushi & Skitmore 2008).

Most supply chain research analyses the rationale behind SCM or emphasises specific SCM practices. However, this research aims to navigate beyond these boundaries by establishing a comprehensive understanding of SCE, a key aspect of SCP. This research will add to the literature, allowing organisations to consider changes that emphasise effectiveness as a significant aspect of SCP assessment.
When conducting any research, understanding its theoretical foundation is essential. Parallel to the growth of SCM, many theories were advanced, such as theories around social capital, relationship marketing, stakeholders, networks, game or resources. For example, network theory focuses on creating long-term relationships between supply chain members, while relationship marketing theory clarifies various processes or dimensions, including commitment and collaboration between supply chain members (Toften & Olsen 2003; Jraisat 2011). Conversely, game theory is a strategic decision-making theory that has become a crucial instrument when analysing supply chains with inconsistent objectives. Further, social capital theory represents a significant concept that clarifies concerns in strategic alliances and allows resources to flow without restriction to where they are required, leading to enhanced performance (Matthews & Marzec 2011; Tsai & Ghoshal 1998). Resource-based theory is concerned with gaining access to other organisations’ key competencies to obtain competitive advantage. These theories are discussed in more detail in Chapter 3.

Although an important issue, there is little research into the subject of SCE (Kim et al. 2006; Kim & Lee 2010). For example, a literature discussing the importance of SCE, a key aspect of SCP, did not receive enough attention (Deshpande 2012; Kurniawan et al. 2017; Crook et al. 2008). Recognising external pressures and internal drivers will further force organisations to identify methods to coordinate and optimise their supply chains (Deshpande 2012). It seems that academic investigators have identified many strategic supply chain dimensions. However, researchers have not sufficiently emphasised the relative degree of SCE nor considered the significance of factors such as goal alignment, commitment to networking and decision-making. Babbar et al. (2008) argued that these SCM practices can have a significant influence on SCE. Supply chain members affect effectiveness with respect to quality, cost, flexibility and delivery and
SCE can be determined by these measures (Gunasekaran et al. 2001). Thus, in this study, SCE is determined by delivery, cost, flexibility and quality. The next section presents the research gaps in more detail.

1.2 Research Gaps

Organisations implement supply chain best practices; however, there is evidence of supply chain failure (Arzu Akyuz & Erman Erkan 2010). Most SCM literature focuses on the importance of a limited number of supply chain dimensions. It is believed that understanding the true dynamics of supply chains is far more complex than what most previous studies have shown.

This research aims to establish a comprehensive understanding of SCE, one of the key aspects of SCP. Okongwu et al. (2012) outlined that SCP consists of three key dimensions: effectiveness, efficiency and responsiveness. The authors indicated that it is important that all three different dimensions of SCP are appropriately considered to capture the performance of a chain. This study focuses on the effectiveness dimension of SCP, which is essential for better SCM; efficiency and responsiveness have already been studied in the supply chain literature (Leonczuk 2016). Further, SCE is a key part of SCP, which is believed to be understudied in the literature (Kim et al. 2006; Kim & Lee 2010).

The literature has not adequately reported on SCP and research into realising SCE remains scarce. There is an overall scarcity of investigation into SCE and the systematic discussion of dimensions of a strategic supply chain that affect SCE (Kim et al. 2006; Kim & Lee 2010). Further, there is an under-representation of scholarly research on this subject within a UAE context. Previous research has suggested three dimensions to a
strategic supply chain—goal alignment, commitment to networking and decision-making—might have an influence on SCE. These variables were sporadically captured by Deshpande (2012) but have not been empirically investigated to date. This is the first study to empirically test the effect of all three strategic supply chain dimensions on SCE within a UAE context. Table 1.1 presents a summary of the research gaps.
## Table 1.1: Summary of Research Gaps

<table>
<thead>
<tr>
<th>Author</th>
<th>Results/Outcomes</th>
<th>Reflection/Gap</th>
</tr>
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| Leonczuk (2016), Singh (2016) and Arzu Akyuz & Erman Erkan (2010) | • Performance consists of effectiveness and efficiency  
• Measuring SCE is needed for better SCM  
• Organisations failed to maximise effectiveness | SCE is a key aspect of SCP and needs to be explored |
| Lockamy & McCormack (2004), Chen & Paulraj (2004), Cousins (2005) and Beamon (1999) | • Lack of research examining the relationship among particular SCM practices and SCP  
• Need to explore others factors of SCP | Research is required into the factors contributing to SCP |
| Gunasekaran et al. (2001), Kim et al. (2006), Kim & Lee (2010) and Sharma & Yu (2010) | • Need to measure SCE  
• SCE can be determined by measures such as delivery, cost, flexibility and quality  
• SCE is understudied in the literature  
• Supply chain needs strategic alignment  
• The extent of commitment throughout the supply chain decides overall SCE  
• Commitment to networking in a supply chain is a key factor to effectively manage supply chain networks  
• Centralised structure obstructs realising the goals of supply chain  
• Decentralisation to be more effective  
• SCM dimensions such as goal alignment, commitment to networking and decision-making can influence SCE | SCE is not fully explored in the SCM literature and research is required to explore these measures in an emerging market Goal alignment, commitment to networking and decision-making might have influence on SCE and should be researched |

Note: SCE = supply chain effectiveness; SCM = supply chain management; SCP = supply chain performance.

The literature also suggests that dimensions of a strategic supply chain that influence SCP have been reported, but there is a lack of empirical research investigating the relationship between particular strategic supply chain dimensions and SCE (Lockamy & McCormack 2004). Moreover, overall measures in terms of effectiveness have not been
reported. It is also assumed that SCE is understudied, requiring further investigation into its relationship with organisational factors (Kim et al. 2006; Kim & Lee 2010). Thus, this research intends to go beyond permitting academics to consider effectiveness as an important aspect of SCP.

This research is of significance to researchers and specialists, as the suggested framework is anticipated to discover various ignored relationships. The study could also be perceived as a response to the request by previous research to investigate the external and internal factors that contribute to SCP (Chen et al. 2004; Cousins 2005; Dyer & Singh 1998). There is a necessity to investigate the connection between dimensions of a strategic supply chain and effectiveness as part of SCP (Styles & Amber 2000). Further, there is scarce current literature that identifies strategic supply chain dimensions that influence SCE within a UAE context. This research attempts to explore this gap through its conceptual framework.

There is a significant body of literature related to supply chain practices. The existing literature identifies numerous supply chain dimensions, such as the optimisation of inventory, resources, information and technology and demonstrates how members of the supply chain are connected for common advantage (Bagchi et al. 2005; Cao & Zhang 2011; Cao et al. 2010; Stavrulaki & Davis 2010; Fantazy, Tipu & Kumar 2016). 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. Determining the effectiveness of a supply chain encourages alignment with the goals of the supply chain.
Organisations need to align their business strategies and supply chain strategy. Further, Bowersox et al. (1999) added that supply chain members need to have strategic alignment for their supply chain to be effective. According to Sahay and Mohan (2003) and Wu et al. (2004), the extent of commitment throughout a supply chain decides overall SCE. Soosay et al. (2008) added that working together with supply chain members improves its effectiveness. Conversely, to achieve SCE, supply chain members need to understand the value of supply chain processes and supply chain success should be included in its members’ goals (Deshpande 2012). Babbar et al. (2008) suggested that decision-making can influence SCE.

To find the dimensions of a strategic supply chain that affect SCE, this study considers goal alignment, commitment to networking and decision-making critical to SCE. This research attempts to address the research gaps by empirically investigating if these three dimensions of a strategic supply chain affect SCE.

1.3 Purpose Statement

The main purpose of this empirical research is to investigate the role of goal alignment, commitment to networking and decision-making on SCE. Previous studies suggest that these strategic supply chain dimensions could have a direct effect on SCE (Babbar et al. 2008; Deshpande 2012).

This study addresses the call for further research into the dimensions of a strategic supply chain that contribute to SCE (Chen & Paulraj 2004; Cousins 2005). Although SCE is an important aspect of SCP, few studies have discussed this issue (Kim et al. 2006; Kim & Lee 2010). Thus, the purpose of this research is to produce a theoretical model of SCE to empirically test the relationships between goal alignment, commitment
to networking and decision-making and four aspects of SCE in terms of quality, cost, flexibility and delivery.

1.4 Definitions of the Terms

In the context of this study,

Supply chain performance is the overall evaluation of a whole organization’s supply chain activities with respect to its effectiveness and efficiency (Akyuz & Erkan 2010).

Supply chain effectiveness refers to ‘the effectiveness to fulfil orders precisely as per customer’s request or in other words the completeness of customer orders and it can be measured in with respect to the percentage of the order that is completed within acceptable time frame by the customer’ Okongwu et al. (2012).

Goal alignment is defined as organisational goals need to be consistent with that organisation’s environment (Miles & Snow 1978).

Commitment to networking is defined as increased trust between network members that results in strengthened collaboration through which members share information, benchmark operations and have more open discussions (Fantazy, Laihonen & Pekkola 2016)

Decision making is classified as strategic long-term decisions that link to corporate strategies that concern an overall organisation and operational short-term decisions that emphasis the day-to-day activities of an organisation (Chopra & Meindl 2009).
1.5 Research Question

The variety of opinions in the literature on SCP has created a significant knowledge base but has led to conceptual confusion due to researchers’ diverse perspectives about SCE. To date, little effort has been made to investigate how strategic supply chain dimensions contribute to SCE and, thus, SCP. SCE is a key aspect of SCP and needs to be explored (Leonczuk 2016; Singh 2016) and research is needed into dimensions of a strategic supply chain that contribute to SCP (Beamon 1999; Chen & Paulraj 2004; Cousins 2005; Kim & Lee 2010; Lockamy & McCormack 2004; Sharma & Yu 2010). Goal alignment, commitment to networking and decision-making might influence SCE and are worthy of investigation (Babbar et al. 2008; Deshpande 2012; Sahay & Mohan 2003; Soosay et al. 2008). Deshpande (2012) and Kurniawan et al. (2017) argued that SCE has not received enough attention in previous studies. They suggested that there is an overall scarcity of investigation into SCE and a lack of systematic discussion about the dimensions of a strategic supply chain that affect SCE. This research aims to fill this gap in the literature.

Variables such as goal alignment, commitment to networking and decision-making can increase the importance of SCE and the significance of these dimensions to SCE is rationalised by the literature. This research proposes that a gap exists in the literature regarding studies that link SCE to antecedent variables such as goal alignment, commitment to networking and decision-making. This research is motivated by the need to answer how these variables can affect SCE. Hence, the key research question was developed:

- What are the effects of a strategic supply chain’s goal alignment, commitment to networking and decision-making on SCE?
The following sub-questions were also developed:

- What is the effect of *goal alignment* on SCE?
- What is the effect of *commitment to networking* on SCE?
- What is the effect of *decision-making* on SCE?

This study investigates the influence of three strategic supply chain dimensions on SCE. Specifically, *goal alignment*, *commitment to networking* and *decision-making* are explored in terms of their relationship with four aspects of SCE.

To achieve the purpose of this study, the research objectives are:

1. to determine the extent to which a strategic supply chain’s *goal alignment* influences SCE
2. to determine the extent to which *commitment to networking* influences SCE
3. to determine the extent to which *decision-making* influences SCE
4. to perform an empirical study within a UAE context using structural equation modelling (SEM)
5. to recommend strategies for effective supply chains in the UAE logistics industry.

### 1.6 Significance of the Research

This research is significant for diverse reasons. Fawcett et al. (2011) suggested that there has been a call for research into logistics and SCM at a day-to-day operational level and a strategic level. In the present supply chain literature, there is an ongoing argument regarding strategic supply chain dimensions and their effect on performance (Cao & Zhang 2011; Stank, Keller & Daugherty 2001; Siew et al. 2012; de Leeuw & Fransoo 2009).
The supply chain and logistics sector is a vibrant and continuously developing field. Recently, the UAE logistics and supply chain industry adopted new technologies, policy and process improvements and strategic initiatives. Nevertheless, little research has been done on strategic supply chain dimensions and their effect on performance. This research will contribute to the effective implementation of strategic supply chain dimensions by supply chain members. It will also underline the significance of adequate and applicable information for planning and implementing successful dimensions of a strategic supply chain to enhance performance.

Using SEM, this is considered the first research to empirically investigate the relationships between three dimensions of a strategic supply chain—goal alignment, commitment to networking and decision-making—and four aspects of SCE in terms of quality, cost, flexibility and delivery. The research will help practitioners to understand goal alignment, commitment to networking and decision-making, their influence on SCE and where in the supply chain to develop SCE. Assessing the relationship between these supply chain dimensions and SCE will benefit organisations. According to Akdogan and Demirtas (2014), SCP is perceived as a subset of organisational performance. Many organisations have recognised that to develop an effective supply chain, SCM performance needs to be evaluated (Sum, Chew & Kwan 2001; Tan, Lyman & Wisner 2002). Researchers proposed that the practices of SCM affect organisational performance (Akdogan & Demirtas 2014). Thus, as suggested by Prajogo and Olhager (2012) and Zhu et al. (2013), the performance indicators in a supply chain setting are key inputs to an organisation’s success and affect performance outcomes.

The findings from this research are expected to generate new insights that enrich the existing literature on SCE. Given the necessity for organisations in a supply chain in today’s competitive marketplace to understand the effect of goal alignment,
commitment to network and decision-making on SCE, this research will help organisations to establish appropriate schemes and practices that lead to high levels of effectiveness. The research highlights key issues, problems and challenges that organisations face with respect to SCE and recommend theoretical and practical ways in which those issues can be resolved.

1.7 Contribution of Research

This practical research offers an extended view of the supply chain literature and enriches the knowledge base on supply chains in general and SCE in particular. This practical research work develops the literature concerning supply chain effectiveness and seeks to enrich present literature concerning supply chain, mainly through better realisation of the various dimensions of a strategic supply chain and their relationships with SCE.

This is the first study to use SEM to empirically test the direct relationships between dimensions of a strategic supply chain—goal alignment, commitment to networking and decision-making—and SCE in terms of quality, cost, flexibility and delivery. These relationships have not been empirically tested before. Therefore, this research clearly contributes to the strategic supply chain field. This research proposes a comprehensive model, as to date no framework has been developed to explore the relationships between these variables. However, Li et al. (2004) addressed supply chain practices and organisational performance based on an efficiency measure point of view.

This study adds to the supply chain literature by analysing SCE as a key aspect of SCP. This is a principally challenging issue in a networked environment in which organisations might have conflicting objectives and standpoints on performance. This
study also contributes to the current academic literature by identifying the determinants of SCE. This research is motivated by the lack of research in the field of SCE, particularly in the UAE region and may suggest different relationships between goal alignment, commitment to networking and decision-making and SCE. Therefore, this study is expected to make imperative contributions to the theoretical and empirical knowledge base on the influence of these constructs on SCE, especially in the UAE. The practical value of this research lies mostly in the fact that best practices are still in the process of being implemented across the UAE’s logistic and supply chain industry. In terms of methodological contributions, a new questionnaire was developed, including measurement scales for goal alignment, commitment to networking, decision-making and SCE. On the other hand, the findings of this research will create a preliminary contribution to the request related to the dimensions of the strategic supply chain that needs to be considered for supply chain effectiveness.

1.8 Outline of Chapters in the Thesis

This thesis comprises eight chapters. Chapter 1 presents a broad overview of the study along with a brief description of the research problem. This is followed by the motivation for and objectives of the research, the contribution to knowledge, a statement of significance and an outline of the remaining chapters.

Chapter 2 presents a general overview of the UAE as a context for this study, highlighting the background of the country and facts about its industry. This is followed by a detailed background of the country’s economic growth with a special emphasis on Dubai.
Chapter 3 offers a comprehensive review of the literature that discusses the theoretical framework, research gaps, model and constructs the thesis investigates. It begins with an overview of the relevant literature on supply chains and logistics. After presenting an overview on SCP, SCE is thoroughly discussed. This is followed by a discussion on the main constructs of this study: goal alignment, commitment to networking, decision-making and SCE. A summary of the relationships between the key concepts of this research is discussed. This chapter critically reviews the relevant literature to identify gaps in the literature that this research aims to fulfil.

Chapter 4 provides a discussion of the research framework and conceptualisation. This is followed by the research model and hypothesised relationships between the constructs of interest. Chapter 5 details the research methodology used for this study’s underlying research philosophy, methods and design. The quantitative research and methods used to statistically test the research hypotheses are discussed and the development of the research instrument and the study’s population and sample size are described.

Chapter 6 presents the data analysis results using partial least squares (PLS) and the statistical methods applied to analyse the findings from the survey. It also presents a profile of the respondents and descriptive data analysis. The chapter concludes by presenting the results of the PLS analysis used to examine the effects of goal alignment, commitment to networking and decision-making on SCE.

Chapter 7 focuses on a discussion of the results and presents the main findings of the study within the context of the literature, its limitations and future research directions. Chapter 8 presents the conclusions derived from this research as well as recommendations for policy makers, practitioners and other stakeholders are presented.
Chapter 2: Context of the Study

2.1 Background to the UAE Logistics Industry

According to the article ‘UAE Logistics Market to Be Worth $27 Billion in 2015’ (Gulf News 23 May 2014), the UAE logistics and transport sectors benefit from the country’s unique location, developed infrastructure and liberal, non-bureaucratic government focused on developing these sectors. Sadaqat (2008) argued that the country is yet to support its position as a worldwide logistics centre, facilitated by its geographical position and outstanding infrastructure. The UAE is known worldwide for its role as a regional hub serving multinational organisations by providing much needed economic, social and technological infrastructure. The country has witnessed incredible growth in its economy in the past years as a result of various success factors, including its ruler’s visionary leadership, accessibility to natural resources and its strategic location. The UAE is a federal nation comprising the seven emirates of Abu Dhabi, Dubai, Sharjah, Ajman, Ras Al Khaimah, Umm Al Quwain and Fujairah. According to Sadaqat (2008), the geographical location of Dubai and its infrastructure, supply chain and logistics make it a key supply and redistribution gateway. The country is gifted with massive oil reserves that helped to boost its economic growth (eGovernment 2012).

According to Frost and Sullivan (2016), the UAE logistics industry is experiencing structural alterations because of economic diversification schemes, the merging of local trade and customs regulations and the growth and transformation of logistics infrastructure. The UAE’s economic progression is anticipated to be derived from non-oil economic industries, construction undertakings concerning capacity expansion and transformation of logistics infrastructure. In general, its economic progress largely relies
on operational aspects and the configuration of sectors of the economy. Nevertheless, the emirates of Abu Dhabi and Dubai were the region’s leaders in introducing free zones with diverse policies and regulations to draw additional overseas investment (Frost & Sullivan 2011).

The argument put forward in the Gulf News (23 May 2014) was that the UAE was investing billions in its logistic industry, including in airports, free zones and seaports. Dubai World Central is being developed in Dubai, the home of a future airport that links to Dubai Port World Company’s (DP World) flagship seaport, Jebel Ali. Conversely, the Midfield Terminal Complex is being developed in Abu Dhabi with ongoing investment in its flagship industrial port, Khalifa Port (Gupta, Arif & Richardson 2014). Further, Abu Dhabi and Dubai introduced an industrial development concept in the early 2000s as an initiative to help ensure the optimisation of resources with respect to allocation and utilisation (eGovernment 2012).

The UAE is known globally as the financial hub of the Middle East. The UAE leads regional industrial growth and has realised great success in establishing several industries, including construction, tourism, financial services, logistics and education. In around two decades, the UAE has significantly transformed to construct state-of-the-art infrastructure in a variety of fields and disciplines. It has focused on bringing reforms to education, health, hospitality, real estate, transport, logistics and the overall economy. The UAE’s economy is based on different clusters, including trade, shipping, logistics, banking, real estate, construction and most importantly tourism. Since this research will highlight issues related to the supply chain, logistics activities will be primarily discussed (Frost & Sullivan 2011).
The UAE is also a business hub that is strategically placed to serve China and other industrial nations with regards to importing goods. It is one of the biggest importers of Asian goods to the Middle East and is classed as a re-export hub for the Middle East and North Africa. The goods are usually imported from China and other Asian countries and then re-exported to African, European and Commonwealth of Independent States countries in small quantities. Apart from being in an ideal geographical location, the UAE facilitates businesses by having strong social and economic links with Asia, Europe and Africa (eGovernment 2012).

The UAE has grown substantially over the years, especially in its real estate, finance and logistics sectors. To facilitate global business activities and strengthen its existing infrastructure, the country is focusing on the construction of a state-of-the-art logistics centre. The construction of the Al Maktoum International Airport, which was opened to cargo flights in June 2010, was a major milestone for the country with regards to logistical infrastructure. When it opens to passenger aircraft, the Al Maktoum International Airport will be the largest airport in the world. The new airport in Dubai was constructed to support and facilitate the country’s supply chain activities (Frost & Sullivan 2011).

The UAE’s logistics-based industries are considered fruitful because of the country’s valuable geographical position, highly developed infrastructure and industry with deep-rooted organisations that provide linked and supportive services—the basis of industrial competitiveness (Sundarakani et al. 2012). The government of the UAE has taken initiatives to create economic zones across the emirates to cater to the increasing demands of the business community. They have also initiated a free-zone concept that allows diverse business activities to prosper without local intervention. The government
has taken all possible steps to ensure that business policies are friendly and infrastructure readily available to organisations at all times (Arafat et al. 2018).

The last 10 years have been extremely beneficial to the UAE, as it has become a first-choice destination for both business and leisure travellers (Frost & Sullivan 2010). The UAE now emphasises the promotion of free trade and tourism culture to boost economic activity in the region. By opening up freehold property in designated areas of the country, the UAE has enjoyed magnificent growth in real estate and other sectors of the economy, inviting many high-profile organisations and individuals to the country.

However, the UAE was caught off guard at the start of the financial crisis. The collapse of two major banks in the United States of America created global economic uncertainty and created economic problems that were felt in the UAE in 2010. This research will discuss the adverse effects of the global financial crisis and its implications on the transport industry. Studies conducted by Frost and Sullivan (2011) and Sundarakani (2017) found that the UAE’s logistics market is set to generate record revenues and will continue to grow over the medium term as a result of concerted efforts to place itself at the centre of the global freight forwarding network.

There are constant threats to the UAE’s supply chain, such as political unrest in neighbouring countries, over-capacity and drops in demand that continually threatening to push down rates and impinge on profits. The UAE’s primary ports are forecast to grow over the medium term, though at a rate slower than before the economic crisis. The air and logistics sectors in the UAE are continuing to grow at a rapid pace, with more logistics companies relocating their hubs to the country and national air carriers continuing to expand and post improved results (eGovernment 2012; Arafat et al. 2018).
Capitalising on its strategic location, the UAE has successfully managed to become a regional logistics hub, with billions of dollars being invested to fast-track development of warehousing facilities and transportation infrastructure. The UAE is considered a land of significant opportunity for logistics services providers, especially those involved in freight forwarding and shipping services. This is because most typical manufacturing industries have trading operations in the UAE only, resulting in a logistics sector that is skewed towards freight forwarding (Haq 2011). Analysis from Ramakrishnan (2010) revealed that in 2011, revenue from the logistics market was USD7.03 billion and was projected to reach USD9.40 billion in 2014 (see Figure 2.1).

Figure 2.1: UAE’s Logistics Market Vis-à-Vis the Gulf Corporation Council

Source: Frost and Sullivan (2011)

This suggests that the UAE’s logistics industry will flourish in the coming years. The UAE has an advantage over its neighbouring countries, as it is the midpoint between the East and the West. Research by Frost and Sullivan (2011) showed that a major portion of the UAE’s logistics revenue (63.1%) was gained by the freight forwarding segment (an integral part of the 3PL industry), followed by the transportation segment (18.6%) (see Figure 2.2). Figure 2.2 shows that a major portion of logistics revenue came from
sectors, such as oil and gas, engineering and fast-moving consumer goods industries. This is attributable to international trade activity and a large volume of imports from high-growth economies such as India and China. As the UAE manufacturing industries are focused on trade and logistics, the need for freight forwarders and shipping in the logistics sector is high. Through its strategic location, the UAE has established itself as a transcontinental centre for imports, exports and cross trade (Sundarakani 2012).

After the global economic crisis, the severe drop in the global market and cessation of the UAE’s and region’s advancement affected the logistics sector. Regardless of whether world trade increases, there exist severe worries with regards to the capability of the UAE’s logistics industry and others to realise their development and progression. The UAE-based logistics industry has been fruitful previously but the threat of external environmental elements halting the development and advancement of the industry’s plans is real.

Other regional countries with equal benefits could nullify the benefits received by operators in UAE’s logistics industry if comparable approaches are adapted. Nevertheless, the general value established by the ecosystem—which comprises several cooperating units, such as small and large logistics organisations, educational institutes

Figure 2.2: UAE’s Logistics Market Breakup

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Other regional countries with equal benefits could nullify the benefits received by operators in UAE’s logistics industry if comparable approaches are adapted. Nevertheless, the general value established by the ecosystem—which comprises several cooperating units, such as small and large logistics organisations, educational institutes
and public establishments that provide extraordinary supportive services to endorse industries—cannot simply be simulated. Within this ecosystem lies the actual competitive edge of UAE’s logistics sector.

In the UAE, DP World is the biggest marine terminal and port operator in the Middle East, providing market access to two billion people crossways in the region. Its UAE portfolio contains the flagship Jebel Ali Port, Port Rashid Cruise Terminal, Port Rashid Coastal Berth, Port Hamriya and Fujairah Container Terminal. The dedicated UAE region’s skilled and expert team of more than 6000 people aims to improve customers’ supply chain efficiency through the successful running of the container, bulk and other terminal cargo (Gupta, Arif & Richardson 2014).

The global approach to the environment of local UAE businesses is that an organisation’s adoption of excellence and innovation as well as productivity forces its philosophy of customer service as core to business. For the following 16 years, this move towards a superior level of customer service won the Jebel Ali facility the award of Best Seaport in the Middle East. Thus, it will be helpful for the logistics community to thoroughly investigate the actual value creation the logistics industry in Dubai delivers (Arafat et al. 2018).

This chapter presented a background to the UAE’s logistics and supply chain industry. The next chapter will present the literature review and focus on the key variables of the study.
Chapter 3: Literature Review

3.1 Introduction

This chapter presents a literature review of the constructs being investigated to establish a theoretical background. This review of the literature covers current research on strategic supply chain dimensions, consisting of goal alignment, commitment to networking and decision-making and how they relate to SCE. In this chapter, a theoretical framework is discussed and the study’s research hypotheses are given based on the literature review.

Figure 3.1: Literature Review Tree Leading to Determinants of Supply Chain Effectiveness

In an attempt to develop a theoretical model representing SCE, this study first draws upon the SCM literature and discusses SCP (see Figure 3.1). It highlights SCE as a critical aspect of SCP. The theoretical background is then employed to develop a theoretical model of SCE. Specifically, the current research draws upon three strategic supply chain dimensions that influence SCE. These dimensions are goal alignment,
commitment to networking and decision-making. The extant literature on these three dimensions is offered to underline their role in SCE.

3.2 Relevant Theories

When conducting research, it is critical to understand the theoretical foundation of the subject being investigated. To review SCM practices and provide a context within which to review the literature, a brief discussion of the theories guiding this study is presented. In addition to realising the behaviour of members of a supply chain, there is a need to investigate and integrate relevant theories in the supply chain field (Boyer & Swink 2008; Chicksand et al. 2012; Soni & Kodali 2012). Despite the well-known appreciation of SCM’s potential positive effects on organisational performance, there is considerable evidence that a discrepancy exists between theory and practice in its understanding and adoption. Research into supply chain theory proposes that a chain must be managed from ‘end-to-end’ but notes that ‘our research found very few examples of this’ (Storey et al. 2006, p. 763). Further, parallel to the growth of SCM, many theories—such as social capital, relationship marketing, stakeholder, network, game and resource-based theories—simplified managerial processes and assisted organisational performance (Barney 1991; Jraisat 2011; Mikkola 2008; Skjoett-Larsen et al. 2003; Toften & Olsen 2003).

Research models of both an empirical and conceptual nature regularly emphasise relationship aspects of a strategic supply chain but use similar theoretical dimensions to describe the relationships, such as commitment, communication and collaboration (Dash et al. 2007). Commitment is the need to continue relationships between organisations in a supply chain (Wilson 1995) and trust is an element that promotes alliance-based learning and flexibility by decreasing the necessity for a formal contract-
based relationship (Taylor 2005). Network theory offers a valuable framework to analyse business situations and adds a new level of complexity in realising relationship perspectives (Jraisat 2011). Network relationships ease information sharing, allowing supply chain members to gain access to resources, resulting in long-term relationships (Mikkola 2008). A network perspective suggests that organisations depend on both relations with their immediate associates and with the extended network of supply chain members. The emphasis of network theory is to create long-term relationships between supply chain members. Conversely, relationship marketing theory is a valuable viewpoint that clarifies the processes or dimensions, such as commitment and collaboration, that are critical to investigate the interrelationships among particular phenomena of supply chain members (Toften & Olsen 2003; Jraisat 2011). Relationship marketing theory can offer an understanding of the many streams and dimensions in supply chain relationships, including the foundation, process and structure of the relationships.

Game theory is another relevant theory concerned with the decision-making variable that is being investigated in the study. This theory is a strategic decision-making theory that has become a crucial instrument when analysing supply chains with inconsistent objectives. It examines the differing and supportive behaviours of supply chain members to assist with strategic decision-making.

Resource-based theory is one of the most adopted theories in the SCM literature. It suggests that an organisation’s resources are its most significant assets. Therefore, the main concern of this theory is about gaining access to other organisations’ key competencies to obtain competitive advantage. Organisations struggle to use their unique assets in an effective and efficient manner that would otherwise lead to better performance in terms of quality, lead time and financial returns. Conversely,
stakeholder theory is also suitable when discussing SCM. In practice, both stakeholder and institutional theory are similar in how they group an organisation’s external ‘others’. They consist of the input and output environment of an organisation (i.e., suppliers and product consumers), the competitive environment (i.e., companies producing similar services or products) and the regulatory environment (Lui et al. 2012).

Krause et al. (2007) found support for a relationship between social capital in terms of perceived shared values among supply chain members and performance with respect to quality, cost, flexibility and delivery. These four dimensions of performance refer to effectiveness (one of the three aspects of performance) in this research. Significantly, in the absence of valuable resources or ways to obtain those resources, organisations might have trouble in profiting from strategic alliances (Hamel 1991). Therefore, social capital represents a significant concept for clarifying the cause for concern in strategic alliances (Matthews & Marzec 2011). Social capital allows resources to flow without restriction to where they are required, leading to enhanced performance (Tsai & Ghoshal 1998).

The theoretical background presented above—social capital, relationship marketing, stakeholder, network, game and resource theories—offer the theoretical foundation for this study.

3.3 Supply Chain Management: An Overview

In the context of SCM, an organisation’s goal to survive and remain competitive is relevant given the fact that the flexibility of organisational operations leads to competitive performance (Fantazy, Tipu & Kumar 2016). The supply chain as a management philosophy and approach has a significant role in organisations, industry
and the supply chain as whole. The growing complexity of supply chains means that it is necessary to track an increasing amount of information, permitting an assessment of their overall function (Leonczuk 2016). Supply chains are found in both product and service organisations, even though the complexity of the chain can differ significantly from one trade to another (Ganeshan & Harrison 1995).

A supply chain consists of planning, sourcing and manufacturing products and services and delivering these to end customers at the right time, cost and location (Fox et al. 2000). The objective of SCM is to maximise supply chain surplus (Chopra & Meindl 2009). Further, a supply chain is a multi-functional entity and several SCM issues arise from a lack of coordination of supply chain activities and allocation of responsibilities to different functional areas (Dornier et al. 1998).

Whenever a lack of coordination occurs between organisations’ departments, it will lead to serious effects on a supply chain within and outside the organisations. Additionally, ‘supply chain’ as a term is complex, involving many different parties, including suppliers, manufacturers, distributors and consumers (Beamon 1999). It becomes vital to evaluate the effect of SCM, as it has organisation-level implications (Green et al. 2006). A supply chain acts as a coordinator of supply and production activities—the essence of SCM—and is the only way to achieve operational effectiveness in comparison to cost, delay time and customer service (Dornier et al. 1998).

According to Chandra and Kumar (2000), the supply chain philosophy is based on six important pillars:

1. flexible organisations
2. organisational relationships
3. overall coordination of a supply chain
4. enhanced communications
5. manufacturing strategy establishment
6. cost control.

The supply chain network is actually supported by three pillars:

7. operations, including an organisation’s capabilities in a supply chain, development of new products and services and knowledge management
8. organisational structures, including the extent of vertical integration ties
9. performance measurement and enabling technology, including technical progress and information technology (Akkermans et al. 2003).

The concept of SCM is founded on the idea that supply chains rather than individual businesses compete against each other. Scholars claim that cutting-edge organisations know the fallacy of only shifting costs upstream or downstream and seek to make the whole supply chain more competitive through overall cost reduction and value addition (Christopher 1992). According to Amouzegar and Lev (1999), SCM necessitates coordination in the flow of goods, services and information among members of a supply chain, such as suppliers and customers and the goal of SCM to send the correct products to the correct place at the correct time and price.

SCM is intended to examine and manage supply chain networks. The basis for this concept is the opportunity to save costs and improve customer service. An important objective is to improve an organisation’s competitiveness in the global marketplace despite competitive forces and changing customer needs (Langley et al. 2008). Lambert, Stock and Ellram (1998) suggested that ‘supply chain’ is a term used to represent an alignment of organisations. They defined SCM as ‘the integration of business processes
from end user through original suppliers that provides products, services, and information that add value for customers’.

Since its introduction in the early 1980s, SCM has developed into one of the most popular fields in management (Oliver & Webber 1992; La Londe 1997). Drucker (1998) claimed that there is a paradigm shift within the literature related to the management field, such as the recent shift in which single business units no longer compete as independent entities but as supply chains. Business management has reached a new era in which the ultimate success of individual businesses will depend on its capability to integrate a complex network of corporate relationships. Consequently, the attention changes from competition between organisations at a similar level in a supply chain to competition between supply chains. Following the same rationality, an organisation’s capability to establish long-term relations founded on trust with strategic partners, such as customers and suppliers, will result in significant competitive advantage (Jespersen & Skjott-Larsen 2000). The trend towards improved integration and collaboration as an answer to the call for the coordination of activities and resources in a supply chain results in an increased complexity in tasks of planning and management. The emphasis on the management of individual organisations is not enough, as consideration and participation in the management of a network of organisations within processes of upstream supply and downstream distribution is a crucial requirement.

3.3.1 Supply Chain Management Definition

SCM is defined in many ways and from various perspectives (Ballou et al. 2000; Harland 1996; Svensson 2002). There are over 100 definitions of SCM (Mentzer et al. 2001). There are distinct definitions of supply chain and SCM because the chain of supply exists regardless of its management. According to Mentzer et al. (2001, p. 4), a
supply chain refers to ‘a set of three or more entities (organizations or individuals) directly involved in the upstream or downstream flows of products, services, finances, and/or information from a source to a customer’. Christopher (1998) defined a supply chain as a network of organisations that are involved in various activities and processes that create value in the services and goods used by the end consumer.

SCM provides products, services and information that add value for end consumers (Lambert 2000; Grant et al. 2006). Janvier-James (2012) defined SCM as the:

   Strategic and efficient coordination of the conventional business functions and the strategies across these business functions within a specific corporate and across businesses within a supply chain, for the aims of developing the long-term performance of the corporate and the supply chain as an entire entity.

SCM represents management activities that transforms raw materials into semi-finished products (i.e., intermediate) and final products before distribution to customers (Dornier et al. 1998). Similarly, Akdogan and Demirtas (2014) defined SCM as ‘the series of approaches that integrate suppliers, manufacturers and warehouses in the most efficient way and while doing this; it minimizes the whole system costs and meets service level needs’. Mentzer et al. (2001b, p. 22) defined SCM as the strategic management of corporate functions within a specific organisation and across organisations in a supply chain to improve the long-term performance of both separate organisations and the entire supply chain.

According to the Supply Chain Management Professionals’ Council (2009), SCM includes the design and management of activities involved in sourcing, purchasing and transforming supplies as well as all activities in logistics management. It also includes
coordination with network partners, including suppliers, service providers and customers. SCM is defined as the management that allows an organisation to acquire the correct services and products and deliver these on time to the required location, in an appropriate quantity and at an acceptable cost (Janvier-James 2012).

In short, SCM is a business scheme to enhance stakeholders’ value by enhancing the flow of products, services and information from source to consumer (Akdogan & Demirtas 2014). Sum et al. (2001) argued that it includes the processes of producing and satisfying the market’s demand for products and services. From these definitions, it can be concluded that SCM is considered an integrated network of all activities relating to all supply chain members, including an organisation’s departments and external associates. The key point in SCM is that the general process is a distinct system and each member’s performance influences overall SCP. All SCM definitions presented in this section are satisfactory but fail to highlight the significance of SCE.

3.3.2 The Importance of Supply Chain Management

Lummus and Vokurka (1999) suggested that the significance of SCM increased at the end of the 20th century and gained special significance to most organisations for important reasons. First, organisations have become increasingly specialised and seek suppliers who can provide materials with better quality and less cost. These companies realised that when an organisation deals with another who performs the next stage in all supply chains, all will achieve benefits from the success of others. Second, as a result of improved local and global competition, customers can select from several to meet their requirements. Last, most companies understand that maximising the performance of a single department or function will result in a decline in optimal performance for the whole organisation.
In addition, SCM contributes to:

- greater participation of information among suppliers and customers
- the move from mass to flexible production
- a higher dependence on obtained materials and external sources while reducing the number of suppliers
- the necessity to coordinate operations across multiple sites (Lummus & Vokurka 1999).

Presently, the importance of SCM has increased for many reasons, including that it is considered a tool to help organisations to enhance production, reduce costs and successfully compete within industry (Awad & Nassar 2010). Tarn, Yen and Beaumont (2002) suggested that SCM is a collaborative work, comprising many parts or practices spanning a product’s whole life cycle, from providing raw materials to the point at which the consumer buys the good.

Most organisations have not adequately focused on their supply chains even though they were focused on their operations and direct partners. However, many factors have made this the current focus for organisations. The necessity to advance operations, increased levels of external sources, transportation cost increases, competition pressures, globalisation, increased interest in ecommerce and the complexity of supply chains are some of the most important factors (Stevenson 2002). Thus, SCM has become important for organisations looking for a means in which to face the difficulties of competition in today’s business environment.
3.3.3 Goals of Supply Chain Management

SCM attempts to minimise overall expenses, develop overall quality and enhance profitability (Leanders & Fearon 1997). According to Boubekri (2001), the significant purposes of SCM are varied and are to:

- offer the finest service to the end customer
- decrease the cycle time of production
- minimise the risk in a supply chain to have a constructive feeling about processes and inventory levels
- emphasise a supply chain to optimise the system.

An effective supply chain enables information management decisions along each phase of the supply chain. At each phase, there exists a necessity to make the best decision with respect to customers’ wants and how these can be met at the lowest cost (Boubekri 2001).

3.4 Need for Coordination in a Supply Chain

To have sustained competitive advantage, it is important to have coordination among organisations and its supply chain to carefully orchestrate the configuration of their warehouses and distribution centres worldwide (Babbar et al. 2008). Today, the supply chain in a global context is very complex, resulting in various possible outcomes. Challenges and compromise are part of working of supply chain networks. Deshpande (2012) stated that supply chains compete with other supply chains more than with individual organisations.
Once possessing a network node close to big markets, organisations that are able to respond quickly to local customers’ changing needs are the ones that are usually successful in all scenarios (Artikis 1991; Babbar et al. 2008). These organisations need to be flexible and react rapidly to altering volumes, particularly when markets are further incorporated (Sanderson & Hayes 1990). Many countries are troubled by an increased level of uncertainty as a result of a range of legal, economic, social, political, and cultural aspects. Economic aspects resulting in uncertainty govern how local economies are managed, the quality of the infrastructure and the comparative distance from other nodes within a supply chain. In some countries, their economies are poorly managed (Nollet et al. 1994), as unstable inflation rates increase the degree of uncertainty (Deshpande 2012).

3.5 Strategic Supply Chain Management

Ketchen & Hult (2007) and Storer et al. (2013) suggested that although supply chains are now a field for competition among international businesses, supply chains should choose an appropriate strategic method towards relationship and capacity building to continue to be competitive in a dynamic international market. According to Akdogan and Demirtas (2014, p. 1021), strategic management philosophy is a means of rationalising that is dedicated to ‘discovering tools and techniques that provide for increased operational effectiveness and efficiency throughout the delivery channels that must be created internally and externally to support and supply existing corporate product and service offerings to customers’. Cigolini et al. (2004) and Akdogan and Demirtas (2014) argued that a supply chain is an important management practice that needs to be integrated in a strategic manner with other functions within and across companies. Strategic SCM is the strategic, functional and technical integration of
members of a supply chain and their activities through associations, procedures and information sharing to offer member companies a competitive advantage (Ketchen & Ireland 2007).

Gaining knowledge on effectively using strategic SCM is a key objective targeted by various organisations because it could enable organisations to effectively compete against progressively sophisticated competition. Hult et al. (2008) suggested that organisations such as Toyota and Dell have the ability to influence their supply chains to competitive advantage to improve profitability, proving strategic SCM’s value.

Even though strategic SCM results in desirable outcomes, Ketchen and Ireland (2007) argued that its successful implementation is challenging and the strategic abilities of supply chain members are not always apparent and may differ. Akdogan and Demirtas (2014) claimed that supply chain strategies need to be considered in the general organisational strategy.

3.6 Supply Chain Performance

Leonczuk (2016) suggested that the functioning of supply chains should be continuously enhanced. Thus, according to Hausman (2004), measures to enhance SCP have to be used, not just those associated with separate organisations and their functions. The performance of an organisation or supply chain could be measured directly through its product or service delivery to its customers, depending upon the metrics identified by these parties. However, it is more interesting for an entire supply chain to be evaluated. Gunasekaran et al. (2001) identified that SCM must be evaluated for its performance to develop an effective and efficient supply chain.
Mentzer et al. (2001) reported that SCM has been studied from three key standpoints: philosophy of management, implementation of the management philosophy and a set of management processes. From the standpoint of SCP management, each perspective has a different focus and objectives that produce dissimilar managerial information requirements. Overall, SCP could be evaluated by the value represented by its services offered to customers in addition to the profits gained by supply chain members.

SCP is described as operational excellence to provide a distinctive customer experience (Simchi-Levi et al. 2003). According to Leonczuk (2016), SCP is the ability of a whole supply chain to fulfil customer needs and is linked to the guarantee of product or service availability through timely delivery and suitable inventory levels. SCP is the capacity of a supply chain to offer the right service or product to a precise location at an adequate time and at the lowest cost (Zhang & Okoroafo 2015). This description considers the cost, time of delivery and value for the consumer (Leonczuk 2016). According to Whitten et al. (2012), SCP is a supply chain’s capacity to offer services and goods of suitable quality in particular numbers at an agreed time and to minimise the overall cost to the final consumer.

The literature suggests that determining SCP encourages consensus among supply chain members and alignment with the goals of a supply chain (Kaplan, Norton & Rugelsjoen 2010). This measurement raises the performance awareness of the systems’ members and turns attention to the performance of an entire supply chain instead of its discrete members (Shepherd & Günter 2006; Laihonen 2012; Pekkola 2013). Attainment of a sufficient level of SCP is becoming a key benefit to maintain in various industries because of the growing competition between supply chains (Leonczuk 2016). The significance of measuring performance comes from the utilisation of the latest and accurate information in SCM (Laihonen & Pekkola 2016). Analysing SCP is the main
challenge faced by researchers and terms like ‘adequate’ or ‘inadequate’ are frequently used to quantify performance measures (Beamon 1999). SCP has become complex because of the diverse entities involved, such as suppliers, manufacture, wholesalers and customers.

As an aim of this study, SCM is described as several aspects of performance established by an organisation to determine the capability of a supply chain to achieve an organisation’s objectives in both the long and short term. Table 3.1 presents some of the most acknowledged indicators proposed in the literature that can be used to measure SCP.
Table 3.1: Supply Chain Performance Measures

<table>
<thead>
<tr>
<th>Measures of supply chain performance</th>
<th>Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service level, quality, lead time and cost</td>
<td>(Christopher &amp; Towill 2000)</td>
</tr>
<tr>
<td>Lead time, customer responsiveness, flexibility, delivery speed and reliability</td>
<td>(Gunasekeran, Patel &amp; Tirtiroglu 2001)</td>
</tr>
<tr>
<td>Service level, lead time and cost</td>
<td>(Agarwal &amp; Shankar 2002)</td>
</tr>
<tr>
<td>Customer relationships and quality</td>
<td>(Zalani &amp; Rajagopal 2005)</td>
</tr>
<tr>
<td>Flexibility, delivery speed and reliability and cost</td>
<td>(Beamon 1999)</td>
</tr>
<tr>
<td>Quality and cost</td>
<td>(Lockamy &amp; McCormack 2004); (Morgan 2004)</td>
</tr>
<tr>
<td>Customer responsiveness, flexibility, delivery speed and reliability</td>
<td>(Stewart 1995)</td>
</tr>
<tr>
<td>Flexibility and cost</td>
<td>(Felix et al. 2003)</td>
</tr>
<tr>
<td>Customer responsiveness, delivery speed and reliability</td>
<td>(Betchel &amp; Jayaram 1997); (Jayaram 1999),</td>
</tr>
<tr>
<td>Flexibility, delivery speed and reliability</td>
<td>(Zalani &amp; Rajagopal 2005)</td>
</tr>
<tr>
<td>Strategic, tactical and operational</td>
<td>(Gunasekaran et al. 2004)</td>
</tr>
<tr>
<td>Cost, time, quality and flexibility</td>
<td>(De Toni &amp; Tonchia 2001)</td>
</tr>
<tr>
<td>Time, cost, flexibility and quality</td>
<td>(Neely et al. 1995); (Elrod et al. 2013); (Arif-Uz-Zaman &amp; Ahsan 2014); (Bozart &amp; Handfield 2007)</td>
</tr>
<tr>
<td>Time, cost, flexibility, quality and innovativeness</td>
<td>(Shepherd &amp; Günter 2012)</td>
</tr>
<tr>
<td>Customer satisfaction, cost, time, technological innovation, society and quality</td>
<td>(Chimhamhiwa et al. 2009)</td>
</tr>
<tr>
<td>Resources, output and flexibility</td>
<td>(Angerhofer &amp; Angelides 2006)</td>
</tr>
<tr>
<td>Resource, output, innovativeness, flexibility and information</td>
<td>(Cai et al. 2009)</td>
</tr>
<tr>
<td>Quality of service, financial, competitiveness, resource utilisation and innovation</td>
<td>(Cho et al. 2012)</td>
</tr>
<tr>
<td>Assets, cost, reliability, flexibility and responsiveness</td>
<td>(Ganga &amp; Carpinetti 2011)</td>
</tr>
<tr>
<td>Planning and product design, supplier, production, delivery and customer</td>
<td>(Shepherd &amp; Günter 2012); (Arif-Uz-Zaman &amp; Ahsan 2014)</td>
</tr>
<tr>
<td>Quality, cost, total cycle time and delivery</td>
<td>(Kowalska 2011)</td>
</tr>
<tr>
<td>Cost of operations, added value, customer satisfaction and financial results</td>
<td>(Witkowski 2010)</td>
</tr>
<tr>
<td>Customer service, cost effectiveness and integration</td>
<td>(van Hoek 1998)</td>
</tr>
<tr>
<td>Economic performance and operational performance</td>
<td>(Carvalho &amp; Azevedo 2012)</td>
</tr>
<tr>
<td>Inventory optimisation, resource optimisation, transport optimisation, information and technology optimisation</td>
<td>(Anand &amp; Grover 2015)</td>
</tr>
</tbody>
</table>
Based on the review of the literature, researchers view the issue of SCP evaluation from various angles. Gunasekeran, Patel and Tirtiroglu (2001) and Gunasekaran et al. (2004) operationalised SCP at three different levels. They differentiated measures based on whether the *decision-making* level is strategic, tactical or operational. The strategic level includes areas, such as customer query time, order lead time and flexibility. The tactical level includes the cycle time of product development, purchase order and planned processes, reliability of delivery, responsiveness and effectiveness. The operational level includes other areas, such as total inventory and capacity utilisation.

Others divide them into cost and non-cost. For example, De Toni and Tonchia (2001) recognised two types of performance measurement. One is traditional cost performance, which is related to organisational results, such as productivity and production costs, and the other are non-cost measures such as quality, time and flexibility and are considered more innovative. Zalani and Rajagopal (2005) suggested that SCP measures include quality in terms of the capability to deliver products on time and meeting delivery times. They proposed that delivery speed and reliability, flexibility and customer relationships are other measures of SCP. Shepherd and Gunter (2012) proposed innovativeness in addition to the four types of performance (i.e., cost, time, flexibility and quality).

Swinehart and Smith (2005) clarified that customer satisfaction is becoming gradually recognised as a more suitable measure to determine how well an organisation is achieving its mission. They also suggested that valuable information provided by customer satisfaction surveys could be used to enhance an entire operation. Further, Liang et al. (2006) recommended that a suitable performance measurement system is a major requirement for a supply chain’s effective management. Shepherd and Günter (2006) investigated performance measurement schemes and supply chain metrics through a critical review of the present literature and suggested feasible opportunities
for future research. According to these authors, a number of major issues remain to be addressed, such as strategic supply chain dimensions that affect the successful implementation of SCP measurement schemes, forces that determine their evolution over time and constant maintenance issues (Ai-Chin et al. 2010).

Beamon (1999) categorised SCP measures into three categories: resource, output and flexibility measures. Beamon (1999) and Gelei (2006) suggested that consumer value includes two main components. First are the perceived benefits the customers receives, including the product’s quality and related services. Second is the perceived expense the customer pays to obtain the product, such as price and life cycle costs that emerge throughout the product’s life cycle. Profit is a supply chain member’s benefit for the effective common activity of covering the expenses and permitting sustainable operations (Albaloushi & Skitmore 2008). Three major SCP measures also identified through numerous studies include supply chain cost, flexibility, delivery and customer responsiveness.

In terms of perceived shared values among supply chain members, social capital theory affects SCE with respect to quality, cost, flexibility and delivery (Kim & Lee 2010). Gunasekaran et al. (2001) also suggested that SCE can be determined by measures such as delivery, cost, flexibility, and quality. It is necessary to determine the flexibility of a supply chain to estimate its responsiveness. As long as its flexibility is high, a supply chain’s responsiveness will be better. For example, once a supply chain is extremely flexible, it would constantly gather customers’ changing desires and assist customers to view the supply chain constructively (Beamon 1999; Gunasekaran et al. 2001; Quesada, Gazo & Sanchez 2012). According to fluctuations in customers’ demands, the delivery flexibility construct is set with respect to a supply chain’s capacity to amend or carry
orders (Sanchez & Perez 2005; Das & Abdel-Malek 2003; Neely at al. 1995; Kumar, Fantazy & Kumar 2006; Quesada, Gazo & Sanchez 2012).

The significance of supply chain cost reductions is broadly emphasised by many researchers, such as Gunasekeran et al. (2001) and Li et al. (2005). The issue of inventory holding and its related costs has received extensive consideration in the context of supply chains (Piplani & Fu 2005; Cohen & Lee 1988). Inventory levels from the standpoint of SCM must be optimised since inventory maintenance is costly and problematic (Piplani & Fu 2005; Quesada, Gazo & Sanchez 2012; Stewart 1995). The aspect of lower inventory costs consists of inventory costs related to the scrap and rework of inventory (Gunasekeran et al. 2002; Agarwal & Shanker 2002).

Beamon (1999) outlined some characteristics present in efficient performance measurement schemes: inclusiveness (i.e., evaluation of all relevant aspects), universality (i.e., permits for comparison under different operating situations), measurability (i.e., data need is measurable) and consistency (i.e., measures are consistent with organisation objectives and goals). Moreover, the strategic aims comprise of main components like resources measurement, output and flexibility (Quesada, Gazo & Sanchez 2012). Stevens (1990) identified that for development of an integrated supply chain, it is required to manage material flow from strategic, tactical and operational views. From these perspectives, the use of facilities, systems and individuals must be viewed as complete and must work in coordination. He also argued that SCP can be determined by the levels of inventory and service, throughput effectiveness, cost and supplier performance.

Likewise, Lear-Olimpi (1999) claimed that logistics plays a key role in following supply chain excellence to result in enhanced business performance. The analysis of the
supplier market is an additional important sub-factor of effective SCM (Purchasing 2007). According to Canbolat et al. (2008), outsourcing offers possibilities and threats that critical to SCM.

### 3.7 Dimensions of Supply Chain Performance

Estampe (2014) suggested three main criteria to evaluate SCP. These consist of efficacy, which is associated with the degree of customer satisfaction in terms of the resources devoted to purpose; efficiency, which is related to goal attainment at a lower cost; and effectiveness, which is linked to results satisfaction. According to Okongwu et al. (2012), SCP consists of three main dimensions: efficiency, effectiveness and responsiveness (see Table 3.2). They claimed that efficiency is negatively associated to cost and that responsiveness and effectiveness are positively associated with the level of customer service. Yusuf et al. (2014) indicated that increasing the efficiency of a supply chain will increase its leniency while effectiveness and responsiveness will increase its agility. Efficiency can be achieved by removing waste while responsiveness and flexibility can be achieved by quickly responding to changes in the market (Okongwu et al. 2012).

<table>
<thead>
<tr>
<th>Table 3.2: From Performance Dimensions to Decision Variables</th>
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</thead>
<tbody>
<tr>
<td><strong>Element</strong></td>
</tr>
<tr>
<td>Efficiency</td>
</tr>
<tr>
<td>Effectiveness</td>
</tr>
<tr>
<td>Responsiveness</td>
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</tbody>
</table>

Responsiveness is the rapidity with which a supply chain delivers its services or products to consumers (Ganga & Carpinetti 2011). According to Hayat et al. (2012), supply chain responsiveness is the ability of an organisation to react to changes in customers’ needs and requirements or to market conditions. It means how quickly an
organisation manages customer inputs (Okongwu et al. 2012). An agile supply chain is essential in the modern business environment (Li et al. 2006) and if an organisation wants to hold its competitive advantage in the market then it has to be unique in terms of its efficiency or responsiveness (Hult et al. 2007; Sharma & Yu 2010). The competition for market share is no longer between individual companies but largely between supply chains. The literature clearly implies that organisations no longer compete against each other; rather, it is the supply chain that competes against other supply chains (Hayat et al. 2012; Ketchen & Hult 2007).

Supply chain responsiveness suggests that an organisation’s ability to remain responsive comes from not only the organisation but its supply chain members (Kim et al. 2006). According to the literature, a collection of organisations could develop improved performance without further inputs, such as by more effectively shifting complementary resources within a supply chain (Richardson & Teece 1990). Thus, instead of relying on a single organisation’s effort, the whole supply chain’s effort is required for it to be capable to effectively respond to customer needs and environmental challenges (Mentzer et al. 2001). Supply chain responsiveness shows the capacity of an organisation and its supply chain members to respond to market demand in any competitive environment (Kim & Lee 2010).

Supply chain responsiveness is also described as a principal anticipated performance outcome from purchasing managers’ structured relationships with suppliers (Handfield et al. 2002). Handfield et al. (2002) also suggested that the primary relational requirement for improved responsiveness is the development of improved levels of trust between buyers and suppliers. Further, relationships are regularly tempered by the nature of trust and the product or service being provided and the characteristics of the market channel (Hayat et al. 2012). While structuring these relationships to enhance
responsiveness, executives expect suppliers to conform to certain requirements, including relationship governance via detailed written contracts, dedicated capital assets or dedicated human assets to support the relationship (Dyer & Singh 1998). Handfield and Bechtel (2002) suggested that buyer dependence, supplier involvement and trust are all positively associated with improved supply chain responsiveness. They further argued that these dimensions result in buyer understanding of supplier performance and capacity limitations, improved communication and information sharing, improved forecasts, continuous problem resolution and communication of information.

Researchers suggested that supply chain collaboration is a possible impetus of supply chain responsiveness and, consequently, organisation performance (see Kim et al. 2006). The distinction of inter-organisation collaboration at a strategic level is essential for understanding the role of collaboration in enhancing supply chain responsiveness and organisation performance (Kim & Lee 2010). Continuous collaboration in systems and strategies along with supply chain facilities enables supply chain partners to enhance supply chain responsiveness and improve market performance (Kim & Lee 2010). Collaborative initiatives and strategic foresights assembled by an organisation and its supply chain members are more likely to improve supply chain responsiveness (Berghman et al. 2006; Kim & Lee 2010; Möller 2006). Hayat et al. (2012) suggested that organisational factors have a significant relationship with supply chain responsiveness and there exists a significant relationship between supply chain responsiveness and the flow of information and decision-making.

Responsiveness in a supply chain ensures the timely delivery of products and services, a high level of customer service and innovation, the shortest lead time and accurate data forecasting (Hayat et al. 2012). Handfield and Bechtel (2002) claimed that managers should work to enhance levels of trust with their main suppliers and explore
opportunities for co-location and regular information sharing to improve supply chain responsiveness. They further argued that working with suppliers to improve levels of trust may be helpful in improving supply chain responsiveness.

Further, the measurement of the efficiency of a supply chain is critical to increase coordination both across and within partner organisations of a supply chain. The literature suggests that supply chain efficiency is often mistaken for effectiveness, with undue short-term focus on reducing cost at the expense of its contribution to high-level goals (Sharma & Yu 2010). Longer supplier–buyer interactions are beneficial to both parties and supply chain efficiency as well (Sharma & Yu 2010). Efficiency gains can be realised by sharing resources with other members to improve risk spreading and reduction (Fox et al. 2000).

Many scholars suggested that to consider profit making—the main aim of organisations—efficiency could be measured in financial terms (Bescos & Dobler 1995, Mas-Colell et al. 1995; Halley & Guilhon 1997). Further, Walters (2006b) proposed that efficiency could be measured from a comprehensive perspective that involves customer needs and reflects a supply chain’s short-term objectives of reducing cost. In other aspects of supply chain research, efficiency is measured using a variation of frontier estimation, especially by data envelopment analysis using multiple inputs and outputs (Reiner & Hofmann 2006). Sharma and Yu (2010) proposed four process cycles to evaluate supply chain efficiency: customer orders, manufacturing, replenishment and procurement process cycles.
3.8 Supply Chain Effectiveness

Performance measurement is described as the process of measuring the efficiency and effectiveness of the activities that are carried out (Leonczuk 2016). Neely et al. (1995) suggested that effectiveness is the level at which customers’ anticipations are met, whereas efficiency is a measure of the degree to which corporate assets are used to deliver a particular component of customer satisfaction. Realising both effectiveness and efficiency has been challenging for organisations (Singh 2016). Even though the benefits of evaluating performance are well known, supply chain members have not taken advantage of its full potential, as they have failed to maximise both efficiency and effectiveness (Arzu Akyuz & Erman Erkan 2010).

Therefore, another possible dimension in measuring SCP is SCE. The literature on SCP is full of measures for various purposes to support SCE and conceptual frameworks that produce a foundation for understanding the SCP phenomenon and achieving managerial information requirements (e.g. Chan et al. 2003; Selviaridis & Norrman 2014; Banomyong & Supatn 2011; Grosvold, Hoejmose & Roehrich 2014; Arzu Akyuz & Erman Erkan 2010; May et al. 2014). However, there appears to be little evidence on the effects of these tools on SCE. Table 3.3 presents a summary of the key literature that is discussed in the next sections. The table presents research gaps that informed the research questions and guided the research for this thesis.
<table>
<thead>
<tr>
<th>Author</th>
<th>Research topical issue</th>
<th>Results/outcomes</th>
<th>Reflection/gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leonczuk (2016)</td>
<td>Performance management and SCE</td>
<td>Performance measurement consists of effectiveness and efficiency</td>
<td>This research intends to bridge this knowledge gap by investigating how three supply chain practices affect SCE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Measuring SCE is essential for better SCM</td>
<td></td>
</tr>
<tr>
<td>Singh (2016)</td>
<td>SCM, SCE and efficiency</td>
<td>Effectiveness and efficiency of SCM are important</td>
<td></td>
</tr>
<tr>
<td>Arzu Akyuz &amp; Erman Erkan (2010)</td>
<td>SCM, SCE and efficiency</td>
<td>Organisations failed to maximise both efficiency and effectiveness</td>
<td>SCE a key aspect of SCP</td>
</tr>
<tr>
<td>Lockamy &amp; McCormack (2004)</td>
<td>SCM and SCP</td>
<td>Lack of research examining the relationship among particular SCM practices and SCP</td>
<td></td>
</tr>
<tr>
<td>Chen &amp; Paulraj (2004) and Cousins (2005)</td>
<td>SCP</td>
<td>Need to explore other factors contributing to SCP</td>
<td>Research is required into the factors contributing to SCP</td>
</tr>
<tr>
<td>Beamon (1999)</td>
<td>SCP</td>
<td>Models employing just one performance measure ignored other measures of performance</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Weaknesses existed with supply chain models employing just a single SCP measure</td>
<td></td>
</tr>
<tr>
<td>Sharma &amp; Yu (2010)</td>
<td>SCE</td>
<td>Research is required to examine how to measure SCE</td>
<td></td>
</tr>
<tr>
<td>Gunasekaran et al. (2001) and Kim et al. (2006)</td>
<td>SCE</td>
<td>SCE can be determined by measures such as delivery, cost, flexibility and quality</td>
<td>SCE is not fully explored in the mainstream SCM literature and research is required to explore SCE</td>
</tr>
<tr>
<td>Kim &amp; Lee (2010)</td>
<td>SCE</td>
<td>SCE is understudied in the literature</td>
<td></td>
</tr>
<tr>
<td>Kaplan, Norton &amp; Rugelsjoen (2010)</td>
<td>SCP and goal alignment</td>
<td>Determining the performance of a supply chain encourages consensus and alignment with the goals of a supply chain</td>
<td>Goal alignment might be significant to SCP</td>
</tr>
<tr>
<td>Bowersox et al. (1999)</td>
<td>Goal alignment</td>
<td>Supply chain members need to have strategic alignment</td>
<td></td>
</tr>
<tr>
<td>Lee &amp; Billington (1992)</td>
<td>SCM and commitment</td>
<td>SCM is built on a base of commitment and trust</td>
<td>Commitment to networking might be</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Author</th>
<th>Research topical issue</th>
<th>Results/outcomes</th>
<th>Reflection/gap</th>
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<tbody>
<tr>
<td>and Kumar (1996)</td>
<td></td>
<td></td>
<td>significant to SCP</td>
</tr>
<tr>
<td>Clark &amp; Lee (2000) and Min et al. (2005)</td>
<td>SCE and commitment</td>
<td>Collaboration in a supply chain increases its effectiveness</td>
<td></td>
</tr>
<tr>
<td>Soosay et al. (2008)</td>
<td>SCE and commitment</td>
<td>Working together with supply chain members improves effectiveness</td>
<td></td>
</tr>
<tr>
<td>Tyndall et al. (1998)</td>
<td>SCE and commitment</td>
<td>Commitment to networking in a supply chain is considered a key factor to manage supply chain networks effectively</td>
<td></td>
</tr>
<tr>
<td>Abdul-Jalbar et al. (2003)</td>
<td>SCM decision-making</td>
<td>Decentralisation to be more effective when there is a large number of retailers</td>
<td>Decentralisation is more effective for a supply chain</td>
</tr>
<tr>
<td>Deshpande (2012)</td>
<td>SCM and decision-making</td>
<td>A decentralised method is the favoured approach for decision-making of a supply chain network</td>
<td></td>
</tr>
<tr>
<td>Sahay &amp; Mohan (2003)</td>
<td>Supply chain strategy, goal alignment, commitment and SCE</td>
<td>The extent of commitment throughout a supply chain decides the overall SCE</td>
<td>The effect of goal alignment, commitment to networking and decision-making on SCE have not been empirically tested, especially in the UAE</td>
</tr>
<tr>
<td>Babbar et al. (2008)</td>
<td>SCM, goal alignment, commitment to networking, decision-making and SCE</td>
<td>Centralised structure makes it challenging to achieve the goals of a supply chain</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCM dimensions such as goal alignment, commitment to networking and decision-making have the potential to affect SCE</td>
<td></td>
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</table>

Note: SCE = supply chain effectiveness; SCM = supply chain management; SCP = supply chain performance.
Okongwu et al. (2012, p. 11) defined SCE as ‘the effectiveness to fulfil orders precisely as per customer’s request or in other words the completeness of customer orders and it can be measured in with respect to the percentage of the order that is completed within acceptable time frame by the customer’. SCE could be determined by various measures, such as access to markets, performance of delivery, total cost, flexibility in realising customer requirements, quality and return on interest (Gunasekaran et al. 2001). The performance of delivery could be combined with other measures, such as order completion lead time, request date delivery and commitment date delivery. Therefore, to satisfy customer needs, supply chains must exhibit a certain level of flexibility in the volume and range of services and products that can be accommodated (Shepherd & Gunter 2012). Another measure of effectiveness can be devised by service delivery at the correct quantity as determined by customers with optimum transactions among supply chain members (Cho et al. 2012).

Creating an effective supply chain requires the following main steps (Leonczuk 2016):

10. Develop strategic and tactical goals, as this will serve as the guide to the operations.
11. Integrate and coordinate activities in the inner part of a supply chain. Coordinate activities with suppliers and customers, including tackling issues related to supply and demand.
12. Coordinate organisation and implementation across a supply chain, which necessitates a system to transfer information across a supply chain and permits access to information for those who employ it in their operations.
13. Consider the possibilities of forming strategic partnerships.
Strategic partnerships are advantageous and happen when two or more organisations have integrated their goods or services, as they will receive the benefits of others who agree to join.

Leonczuk (2016) suggested that measuring SCE is essential for better SCM. Further, SCE as part of SCP influences the effective planning, monitoring and investigation of logistics processes. However, it is believed that SCE is understudied in the literature, leaving much unexplained to explore the outcomes of inter-organisation collaboration (Kim et al. 2006; Kim & Lee 2010). This research is an attempt to unearth the relationships that exist between organisations to have better SCP using SCE as a performance measure. This study contributes to the SCP literature by extending the analysis to SCE, a key aspect of SCP. This is a principally challenging issue in a networked environment in which organisations might have conflicting objectives and views of performance.

### 3.9 Dimensions of a Strategic Supply Chain and Supply Chain Effectiveness

As discussed earlier, supply chains span developing countries because of organisational factors that stem from different characteristics of organisations. In the review of SCP and SCE, many scholarly articles were referenced that investigated different factors and challenges. Keeping these challenges in mind, this study identifies the main dimensions of a strategic supply chain that could influence SCP and its effectiveness in particular. Three relevant dimensions have been identified—goal alignment, commitment to networking and decision-making.
3.9.1 Goal Alignment

Coordination in supply chains ensures that its members perform as part of an integrated and aligned scheme that produces products or services (Arshinder et al. 2011). Ketchen and Hult (2007) suggested that alignment as an aspect of supply chain coordination is defined as a consistent fit among structures, activities and processes among supply chain members and regularly comprises organisational supply chain incentives that fit with an entire supply chain’s requirements. Supply chain synchronisation capacity defines how a chain functions proactively by coordinating, aligning and realigning relationships and activities to realise new market directions (Kambil 2008). This synchronisation in a supply chain is essential to confirm maximum effectiveness and efficiency within the chain. According to Simatupang and Sridharan (2005), consistently sustaining alignment determines how well a supply chain makes common decisions and effectively shares information. Synchronisation in a supply chain is a strategic ability among its members to realise enhanced supply chain efficiency and to produce higher returns (Storer et al. 2013).

The term ‘goal’ is a regularly used concept among academics and researchers and refers to the aims and objectives that organisations look to achieve. These are imitated in an organisation’s choices related to investment decisions, performance targets and action plans (Meier 1998; Read 2005; Latham et al. 2005). According to Miles and Snow (1978), for organisational goals to be successfully implemented, these goals need to be consistent with that organisation’s environment. Laihonen and Pekkola (2016) proposed that strategic focus enhances commitment to an organisation’s shared and own goals and improves understanding of the relationship between separate and network-level goals. The literature proposes that determining SCP encourages consensus and alignment with the goals of a supply chain (Kaplan, Norton & Rugelsjoen 2010). Flynn
et al. (2010) suggested that the function of a supply chain reinforces the principal issue of supply chain members, which is mitigated through supply chain alignment and integration.

Babbar et al. (2008) suggested that goal alignment is one of the dimensions of a strategic supply chain that influences SCE. They developed propositions that could serve as a foundation for future empirical research into this theory. Supply chain members need to have strategic alignment (Bowersox et al. 1999) for a supply chain to be effective. Determining SCE encourages alignment with the goals of a supply chain. In the following section, commitment to networking is investigated.

3.9.2 Commitment to Networking

In addition to strategic alignment, supply chain members need to have sufficient commitment to networking. Many researchers argue that commitment to networking includes understanding, information sharing and communication (Chandra et al. 2007; Chan & Chan 2009; Kampstra et al. 2006). In the context of this research, several dimensions of a supply chain such as commitment to networking, integration and collaboration are utilised interchangeably (Cao & Zhang 2011).

Commitment is a broad concept that refers to organisations being dedicated to task effectiveness and supply chain members being dedicated to tasks and to each other. It is argued that the support from top management for stability in operational policies and performance measures improves SCE (Sankaran & Ubgade 1994). Generally, the literature demonstrates that when employees are committed, organisational performance increases (Adler & Corson 2003; Molleman 2000) and systems are implemented to improve employee commitment and motivation (Schmerhorn et al. 2003). As stated, SCM is built on a base of commitment and trust (Lee & Billington 1992; Kumar 1996)
and successful long-term relationships are dependent upon them (Morgan & Hunt 1994). Morgan and Hunt (1994) suggested that shared trust and commitment mainly define the level of cooperation among supply chain members. Further, McAdam and McCormack (2001) added that supply chain members depend on inter-organisational networks to quickly respond to altering customer needs. Cooperation between members of the supply chain depends on the trust that results in supply chain performance improvement (Masudin et al. 2018). Supply chain members interact with each other to share resources (Fantazy, Tipu & Kumar 2016), resulting in flexibility, collaboration and cooperation between supply chain members (Barratt 2004; Mentzer et al. 2001; Kumar et al. 2006).

As Contractor and Lorange (1988) and Jongkuk and William (2010) suggested, cooperation and support in supply chain relationships typically involve variable levels of formal and informal partnerships that invoke wider collaboration among several supply chain members, as their focus converges as they attempt to develop shared advantage and results. These sorts of associations typically include medium to high degrees of alignment (Stevenson & Spring 2007). Storer et al. (2013) argued that cooperation and collaboration offer strategic significance that is typically related to high levels of sharing through practices, including the development of strategic activities, conduct of research and development of initiatives and planning supply chain processes.

Researchers argued that various practices, such as sharing information and synchronising decisions, are repeatedly related to collaboration and commitment between supply chain members (Cao & Zhang 2011; Simatupang & Sridharan 2005). Fantazy, Laihonen and Pekkola (2016) proposed that increased trust between network members results in strengthened collaboration through which members share information, benchmark operations and have more open discussions. Further, Fantazy,
Tipu and Kumar (2016) argued that the level of information sharing can influence performance. Freely sharing information enables effective decision-making by reducing uncertainty (Ketchen & Ireland 2007) because supply chain members receive information that is critical to the successful operation of a strategic supply chain. Ketchen and Ireland (2007) argued that effective communication offers information regularity, permitting supply chain members the opportunity to function inside the same frame of reference.

Morgan and Hunt (1994) suggested that regular and appropriate communication aids in the resolution of disagreements and aligns supply chain members’ expectations. Ketchen and Ireland (2007) argued that efficient communication is the only key element to an organisation’s success with strategic SCM. Organisations running successful businesses endorse communication that is strategic and share information with others. Singh (2016) suggested that integration is the best way to manage, implement and adopt new practices in a supply chain. Childerhouse and Towill (2011) suggested that supply chain integration is related to increased performance. According to Cooper et al. (1997) and Tyndall et al. (1998), cooperation among the members of a supply chain underlines cross-functional coordination, including shared planning and control activities. Lassar and Zinn (1995) argued that cooperation leads to enhanced performance, as it avoids overlaps in supply chain activities.

For a supply chain to be effective, it requires highly committed employees through its network (Gardner & Schermerhorn 2004; Alatrista & Arrowsmith 2004). Commitment can be instilled through the introduction of employee support programs (Gardner & Schermerhorn 2004), development of incentive schemes (Smilko & Van Neck 2004) and formulation of policies (Ketokivi & Castaner 2004) developed to improve employee commitment to SCE.
According to Barringer and Harrison (2000), several supply chain members fail to meet other members’ anticipations despite the benefit of collaboration within a supply chain. The members of a supply chain must carefully choose a coordinated mechanism because its affects overall SCP (Xu & Beamon 2006). Clark and Lee (2000) and Min et al. (2005) found in their research that collaboration in a supply chain increases its effectiveness.

Commitment to networking is a significant part of a supply chain and is considered a key dimension of the strategic supply chain to SCE (Tyndall et al. 1998). The extent of commitment throughout a supply chain decides overall SCE (Sahay & Mohan 2003; Wu et al. 2004). Researchers such as Clark and Lee (2000) and Min et al. (2005) argued that commitment in a supply chain in terms of collaboration increases its effectiveness. Further, Soosay et al. (2008) added that working together with supply chain members improves its effectiveness. Next, the role of decision-making is presented.

3.9.3 Decision-Making

Donlon (1996) claimed that organisations continually look for effectiveness in their supply chains to maintain profit and growth. In supply chains, thinking strategically is acknowledged as a means of effectively using aspects of power. Akdogan and Demirtas (2014) argued that SCM needs to be realised strategically by different organisations’ departments and members. According to Ellram and Carr (1994), strategic SCM refers to operational efficiency as well as the broader industry strategy. Nevertheless, the present competitive environment makes members of a supply chain think and act in a strategic way. Researchers have focused on the significance of strategically operated organisations in which employees possess the capacity to realise their organisation’s strategic intent and actively contribute to the organisation (Freeman & Cavinato 1990).
According to Moberg et al. (2002), thinking strategically must be realised with respect to both operational efficiency and as a business strategy.

*Decision-making* in organisations could be categorised as centralisation or decentralisation. The centralisation of *decision-making* refers to the degree to which the power and authority to make decisions are reserved for top management. In this process, the manager, who has the power to control resources as a dominant player in a supply chain, delegates important decisions. However, *decision-making* is decentralised when it is disseminated throughout an organisation so that lower and middle management are authorised to take responsibilities and make decisions. SCM decisions could be generally classified as strategic (i.e., long-term decisions that link to corporate strategies that concern an overall organisation) and operational (i.e., short-term decisions that emphasise the day-to-day activities of an organisation) (Chopra & Meindl 2009).

Further, Akdogan and Demirtas (2014) proposed three steps for an effective supply chain *decision-making* process. It starts with determining the strategies of a supply chain that define an organisation’s strategy while realising all steps to offer products or services to customers. The procurement, production and transportation of raw materials are a few of these strategies. This is followed by supply chain planning with the purpose of maximising a chain’s surplus while realising the decisions of the chain and remaining strategically competitive. The final step includes operations in which supply chain members perform their activities according to a decision. According to Chopra and Meindl (2009), this includes the determination of strategies, *decision-making* and the formation of plans in a supply chain.

In the supply chain literature, the importance of the role top management has been greatly emphasised (Hahn et al. 1990; Monczka et al. 1993; Ward et al. 1994; Krause
Top management priorities have a significant effect on a supply chain and the effectiveness of supply chain activities (Deshpande 2012). Top management has a clear understanding of SCM needs since they are aware of their organisation’s strategy to remain competitive in marketplace (Hahn et al. 1990). As stated by Monczka et al. (1993), top management provide the time, personnel and financial resources to support suppliers who are willing to stay in long-term partnerships with an organisation throughout supplier development. Previous research noted that top management has to be aware of competitive benefits that are able to be driven from strategic purchasing and information technology that affects supply relationships. Top management support is crucial to the implementation of innovative initiatives in an organisation (Daily & Huang 2001). For example, the support of an organisation’s top managers could influence new initiative success through assisting employee engagement or promoting an organisation’s cultural shift. Scholars suggested that senior management support is required for cross-functional programs and is linked to the success of environmentally preferable purchasing (Carter et al. 1998).

To achieve SCE, supply chain members need to understand the value of supply chain processes and its success needs to be included in their goals (Deshpande 2012). Supply chain members have to interact frequently with each other to coordinate decision-making (Ketchen & Ireland 2007) to ensure SCE. Decision-making is another strategic supply chain dimension that has a significant influence on SCE (Babbar et al. 2008), as it not only affects individual supply chain members but overall SCE (Deshpande 2012).

### 3.10 Gaps in the Literature

The review of the literature reveals a lack of research into the relationship between many strategic supply chain dimensions and SCE. A considerable number of studies has
been devoted to evaluating the implementation of strategic supply chain dimensions (see Gunasekeran, Patel & Tirtiroglu 2001; Anand & Grover 2015). However, an overall view of the implementation of dimensions of a strategic supply chain in terms of SCE is lacking in both the theoretical and empirical literature. Further, although being significant strategic supply chain dimensions and having potential effect on both supply chain performance and effectiveness, no research has considered the effect of implementing the three key dimensions of a strategic supply chain (i.e., goal alignment, commitment to networking and decision-making) on SCE. Additionally, none of the previous research has examined the effect of these practices on SCE in the Middle East. The reviewed literature showed that overall measures of effectiveness had not been reported, especially in this region.

This research is an attempt to fill these gaps by going beyond permitting academics to consider SCE as an important aspect of SCP. SCE is relevant in the context of SCM provided that effectiveness is a key part of SCP. It seems that academic investigators have identified many dimensions of a supply chain but have not sufficiently emphasised the comparative level of SCE. It is also believed that SCE is understudied in the literature, leaving much unexplained to explore its relationship with dimensions of a strategic supply chain (e.g., Kim et al. 2006; Kim & Lee 2010). Therefore, research is required to discover how to measure the effectiveness of a supply chain (Sharma & Yu 2010) by focusing on the three key dimensions of a strategic supply chain: goal alignment, commitment to networking and decision-making. Measuring SCE is the first step towards improving SCP. Supply chain members that can enhance their performance are more likely capable minimizing their operation costs and eventually to improve the effectiveness of the whole supply chain (Mafini & Loury-Okoumba 2018).
As mentioned earlier, the literature proposes an overall scarcity of investigation into SCE and systematic discussion of dimensions of a strategic supply chain that affect SCE (Kim et al. 2006; Kim & Lee 2010). The UAE is also under-represented in scholarly research on this subject. The supply chain literature has not adequately considered the significance of these strategic supply chain dimensions and has not been empirically tested in the context of SCE. The gap in the literature—the effect of strategic supply chain dimensions on SCE—will be addressed by this study’s proposed theoretical framework. This is the first study to empirically explore these three dimensions of the strategic supply chain with respect to SCE.

The overall purpose of this research is to examine the effect of dimensions of a strategic supply chain—goal alignment, commitment to networking and decision-making—on SCE within a UAE context. Specifically, these dimensions are explored in terms of their relationship with four aspects of SCE. This research contributes to industrial practice by enriching our understanding of which dimensions of a strategic supply chain have a direct effect on SCE. The research methodology used offers academics a direction to pursue to obtain a richer understanding of the drivers of SCE. From a theoretical perspective, this literature review confirmed how dimensions of a strategic supply chain such as goal alignment, commitment to networking and decision-making affect SCE.

There is a lack of research examining the relationship among particular strategic supply chain dimensions and SCE (Lockamy & McCormack 2004). There is a need to investigate the linkage between these dimensions and SCE, which this research intends to undertake. This study could also be perceived as a response to the call for further research into the external and internal factors contributing to SCP as a whole (Chen & Paulraj 2004; Cousins 2005).
Chapter 4: Conceptualisation

4.1 Introduction

Currently, SCM tends to be a critical strategic aspect to an organisation’s effectiveness. According to Storer et al. (2013), the time for market globalisation and outsourcing has already begun and organisations now choose supply chains and logistics to handle their operations. This chapter provides a discussion of the research framework and conceptualisation. The relationships between the study’s key variables are presented and the development of the research hypotheses is discussed in detail.

4.2 Theoretical Framework and Hypotheses Development

When understanding a phenomenon, it is useful to develop a framework within which to work and from which research hypotheses can be established. A theoretical framework allows for estimations of the degree to which dimensions of a strategic supply chain influence SCE.

4.2.1 Theoretical Framework

This study’s theoretical framework is based on existing theory and research and is presented in Figure 4.1, which shows the main components of this study and the possible interrelationships. Various theoretical viewpoints were used in this investigation; however, the model was informed by four key theories. To explain, both goal alignment and commitment to networking practices were drawn from network theory and relationship marketing theory, as these theories emphasise the establishment of long-term relationships between supply chain members. These theories clarify the various dimensions of a strategic supply chain, including commitment and collaboration.
that are critical to investigate the relationships between supply chain members (Jraisat 2011). Network relationships allow supply chain members to gain access to resources, resulting in long-term relationships (Mikkola 2008). A game theory approach is critical to analyse supply chains with inconsistent objectives to assist with strategic decision-making (Chicks et al. 2012), which justifies the use of the decision-making dimension on SCE. Conversely, in terms of perceived shared values among supply chain members, social capital theory affects SCE with respect to quality, cost, flexibility and delivery. Social capital actually allows resources to flow without restriction to where they are required, leading to enhanced performance (Tsai & Ghoshal 1998).

The framework presented recognises the significance of strategic supply chain dimensions and their influence on SCE. The effects of these dimensions on SCE have not been empirically investigated before. This study is considered the first research to empirically test these effects. Based on the review of the previous literature, there appears to be ambiguity about whether dimensions such as goal alignment, commitment to networking and decision-making enhance SCE. Undoubtedly, there is a lack of agreement on the effect of dimensions of a strategic supply chain on SCE. Therefore, this study aims to bridge this knowledge gap by exploring the effect of three dimensions of a strategic supply chain on SCE. The significance of this research would add value, especially to an emerging economy like the UAE.
To measure the effect of dimensions of a strategic supply chain on SCE, a framework describing the relationships between dimensions of a strategic supply chain and SCE was established (see Figure 4.1). This research tried to answer the research question, ‘What are the effects of strategic supply chain’s goal alignment, commitment to networking and decision-making on SCE?’ The underlying principle for this theoretical framework is that a strategic supply chain’s three dimensions can potentially affect SCE.

Figure 4.1 exhibits the research model and describes the main constructs discussed in the literature review, consisting of the three independent variables—goal alignment, commitment to networking and decision-making—and SCE, the dependent variable used in this study. The framework establishes direct, positive relationships between goal alignment, commitment to networking and decision-making and SCE. In the subsequent section, a more detailed discussion of dimensions of a strategic supply chain is provided. The relevance of each strategic supply chain dimension is systematically established based on the related literature and a hypothesis connecting the dimensions to SCE is formulated.
4.2.2 Effect of Goal Alignment on Supply Chain Effectiveness

The extant literature suggests that for organisations to ensure that both overall business and supply chain objectives are being achieved, it is essential for these organisations to align their general business strategies with their supply chain strategy (Sahay & Mohan 2003). They also need to develop general organisation-wide metrics to evaluate SCP (Deshpande 2012). Many scholars recognise the role of SCM organisational goals and emphasise the significance of top management on an organisation’s overall effectiveness (Chen et al. 2004; Chen & Paulraj 2004a; Chen & Paulraj 2004b).

Wong (1999) suggested that shared or common goals within a supply chain contribute to shared goals, as they serve as a basis for strong relationships between supply chain partners and establish partnership obligations and commitments through investment in resources, technical support and advice to other partners. Partners will be in open discussions when their issues are solved through shared or common goals. Since all parties can participate in open and frank discussions, it is easier for all parties to address any contradictions and protect compatible and consistent relationships. Shared or common goals also contribute to low buying prices, best quality and fast delivery, which are the benefits of organisations from effective supply chain relationships. In addition, supply partners can receive benefits from these partnerships through increased and continued requests from customers, less production costs and improved production quality. Conversely, ineffective organisational relationships lead to bad relationships and a reduction in order requests from the supply partner.

An organisation’s goals could have a crucial effect on supply chain activities, including network and outsourcing decisions (Cross et al. 2005; Yan & Child 2004; Michalak & Williams 2005). Organisations that face financial issues find it more challenging to
concentrate on and make supply chain concerns a priority and, thus, not realise SCE (Nollet et al. 1994). Bowersox et al. (1999) suggested that supply chain members need to have strategic alignment. Xu and Beamon (2006) suggested that there is a need for the coordination of supply chain members’ actions in response to strategic issues. Lee (2004) suggested that alignment is regarded as a key attribute of a supply chain. Based on the findings of the current literature, this study proposed the following hypothesis:

H1. The alignment of top management goals with the needs of a supply chain has a positive influence on SCE.

Next, the role of network commitment on SCE is presented.

4.2.3 Effect of Commitment to Networking on Supply Chain Effectiveness

Supply chain relationships, information sharing and cooperation are major determinants of supply chain performance (Mafini & Loury-Okoumba 2018) thus more likely supply chain effectiveness. Commitment to networking in a supply chain is essential and cooperation between supply chain members is considered a key dimension to the effective management of supply chain networks (Tyndall et al. 1998). An essential feature of supply chains is the interdependence among its members and it is essential for multinational companies to show a genuine commitment to other supply chain members (Deshpande 2012). Commitment suggests that trading members are prepared to dedicate energy to sustaining supply chain relationships (Dion et al. 1992), such as devoting resources to sustain and further the objectives of a supply chain. To a large extent, commitment ensures that partners do not act in ways that could negatively influence overall SCP. Improved collaboration between members of the supply chain and determining decision variables lead to increased supply chain performance (Dubey, Gunasekaran, & Papadopoulos, 2017, Masudin et al. 2018). Besides, Mafini and Loury-
Okoumba (2018) argue that continuous information sharing can be a key determinant of supply chain performance. Commitment ensures that supply chain members are integrated into their key customers’ processes and tied effectively to their goals. The extent of both internal and external commitment throughout a supply chain decides overall SCE (Sahay & Mohan 2003; Wu et al. 2004). Researchers have demonstrated that if an organisation is not devoted to its downstream suppliers then communication activity throughout its supply chain could be impractical and inadequate (Prahinski & Benton 2004) and the transaction’s quality could be inadequate. Conversely, having a supplier committed to its upstream customer is just as significant. The literature suggests that supply chain partners must be committed to each other for their supply chains to be successful (Sahay & Mohan 2003).

In SCM, the global environment is complex for an individual organisation to have adequate capability to efficiently manage value-adding practices from upstream activities to consumers. According to Surana et al. (2005), coordination that permits a supply chain network to be flexible, adaptable and consistent could be difficult and the research indicates this to be particularly true in countries with developing economies (Deshpande 2012). According to Mafini and Loury-Okoumba (2018), a key indicator of a performing supply chain is its effective integration and flexibility of different supply chain units. Zsidisin and Ellram (2001) recommended that network relationships should be cultivated by frequent information flows. However, Mefford and Bruun (1998) suggested that multinational companies must dedicate more time and effort to nurture supplier partnerships to guarantee the success of their supply chains.

Much research shows that commitment to networking, including understanding, information sharing and communication (Chandra et al. 2007; Chan & Chan 2009; Grossman 2004) is critical to the efforts of supply chain alignment with shared
objectives. It is argued that collaboration and working together in a supply chain increase its effectiveness (Clark & Lee 2000; Min et al. 2005; Soosay et al. 2008). Taking into account the present literature, this study proposed the following hypothesis:

\[ H2. \text{Commitment to networking throughout a supply chain has a positive influence on SCE.} \]

In the following section, the role of decision-making on SCE is investigated.

4.2.4 Effect of Decision-Making on Supply Chain Effectiveness

It is important that coordination among organisations and supply chains is carefully orchestrated while they are configuring their facilities around the world (Babbar et al. 2008). Throughout a supply chain, coordination necessitates the flow of both information and materials. Supply chains in global environment are long and complex and this might result in various possible outcomes. Coordinating the activities of organisations that are geographically dispersed could be challenging and difficult to achieve. However, making decisions in a timely manner is crucial for supply chain partners to maximise the benefits (Deshpande 2012). Decision-making includes many variables at an organisation’s level, including employee empowerment, the extent to which all individuals in an organisation participate in the process of decision-making and the degree to which employees are supported to assess and report issues and matters in a critical manner (Deshpande 2012). With a traditional approach throughout competition, each organisation creates independent and immediate decisions that are clearly designed to maximise the benefits to its own organisation and affect other organisations.

Ketchen and Ireland (2007) proposed that supply chain partners have to interact regularly with each other to organise decision-making. They further argued that
individuals have to make decisions that help with their direct needs and their chain as well as their organisation’s general long-term goals. Thinking strategically, the evaluation and continual development of chain members stand to benefit the most from strategical communication, as every practice and function includes planning and **decision-making** grounded on critical information (Ketchen & Ireland 2007).

At the strategic level, **decision-making** is focused on the general direction of an organisation and it is anticipated that such decisions should be centralised to permit greater control (Chopra & Meindl 2009). However, operational decisions related to daily functions have to be decentralised to allow members of a supply chain to make decisions in a fast and timely manner and to be able to handle local uncertainty. Hence, it is unsurprising that organisations try to find a balance between centralising and decentralising **decision-making** (Sabath & Autry 2001). Further, according to Sahay and Mohan (2003), in most developing countries, one of the main operational challenges reported is that a centralised structure makes it challenging to achieve the goals of a supply chain. The strategically made decisions are critical and supply chain managers need to have job knowledge as well as a comprehensive, strategic vision of the entire system (Akdogan & Demirtas 2014). The literature indicates that decentralisation is more effective when there is a large number of retailers (Abdul-Jalbar et al. 2003). At an operational level, a decentralised method is favoured for **decision-making** in a supply chain network (Deshpande 2012). In light of the literature presented, this study proposed the following hypothesis:

**H3. An effective decision-making mechanism has a positive influence on SCE.**
4.3 Conclusion

The shared theme in theoretical development is that goal alignment, commitment to networking and decision-making influence SCE. Theoretical development considers the relationships among comprehensive ranges of acknowledged variables and classifies goal alignment, commitment to networking and decision-making as potential variables that may influence SCE.

Figure 4.2: Final Conceptual Framework

The final conceptual framework (see Figure 4.2) exhibits the research model describing the main constructs discussed in the literature review. The framework establishes direct, positive relationships between goal alignment, commitment to networking, the centralisation of decision-making and SCE. The dependent variable, SCE, will be measured through four measurement metrics consisting of cost, flexibility, delivery and quality. The next chapter discusses the research method employed to statistically test the hypotheses and conceptual model.
Chapter 5: Research Methodology

5.1 Introduction

This chapter discusses the research methodology used to explore the relationship between SCE and the antecedent variables goal alignment, commitment to network and decision-making. The research design, sample selection, data collection and questionnaire administration are also discussed. This is followed by the analytical design.

5.2 Justification of the Research Paradigm

Before discussing the research method employed in this study, it is important to realise the ultimate aim of this study and develop an adequate paradigm. Neuman (2003) and Punch (1998) suggested that explanatory research examines the behaviour or reason of a specific relationship and is different from descriptive and exploratory research. The model in the current study was developed to investigate a nomological network of anticipated relationships or, more specifically, the effect of goal alignment, commitment to networking and decision-making on SCE. In this study, the researcher diverged from the traditional method to test the research model by adding statistical rigour via exploratory model testing.

5.3 Research Methods

To conduct research, an appropriate research method needs to be chosen. In the literature, there are two main approaches to research: qualitative and quantitative. Quantitative methods involve surveys, questionnaires, statistical methods and data
analysis, while qualitative research method consists of action research, case study research and ethnography. Quantitative research is a hard, objective research approach that aims to generalise results, whereas a qualitative approach is soft and descriptive (Reichardt & Cook 1979). These two methods are considered complementary rather than competitive (McPhail & Perry 1999). Neuman (1997) argued that quantitative research is the preferred approach for scientific research, as it uses statistical data analysis, while Perry (1998) argued that qualitative research provides better insight into and understanding of the phenomenon being studied.

According to Mintzberg (1979), quantitative and qualitative approaches are mutually dependent. He argued that quantitative data analysis helps uncover the relationship between different variables and a descriptive qualitative approach helps explain the findings from quantitative data. Qualitative research provides the words from which meaning can be derived and adds value to the collected data, which alone does not convey any meaning to readers.

Continuing the debate on which research approach is ideal, Yin (1994) argued that a qualitative approach is superior, as it enables a researcher to study in more detail the nuances surrounding the phenomenon being studied. However, Guba and Lincoln (1994) suggested that a quantitative approach is the best approach to research, as it uses surveys, experimental design and statistical analysis and is more scientifically rigorous and objective. Hence, they argued that a quantitative approach is far superior over a qualitative approach, as it has greater validity, generalisability and makes a greater contribution to theory.

Figure 5.1 provides an overview of the research plan, which highlights the sequential steps involved in executing the research.
5.4 Research Design

To test the research hypotheses, a cross-sectional research method was employed based on a self-administered questionnaire. Sudman, Bradburn and Schwarz (1996) argued that self-administered questionnaires are employed widely and surveys are considered the most popular form in which to collect data. Kerlinger (1992) suggested that this approach is beneficial in collecting a great deal of information and when excessive time limits on data gathering do not exist. Surveys are appropriate and realistic compared to experimental research designs (Kerlinger 1992) and are more cost effective (Dillman 1978). Thus, this approach was considered an appropriate choice for this research to gather the required data.
This research addressed the relationships between SCE and its antecedents. The constructs measured included goal alignment, commitment to network, decision-making and SCE. The following section discusses the essential measures that were followed in the administration of the online surveys.

5.5 Design Selection

Based on the proposed research model and hypotheses, the questionnaire design, variable measurements, testing and analysis were done as discussed below.

5.5.1 Sampling

A non-probability sampling technique was the practical choice for this study. According to Babbie (2007), this sampling technique is selected because it is adequate when absolute accuracy is not significant but frequently results in a sample very similar to the population of interest.

Researchers have recommended that the calculation of a sample size be undertaken by multiplying by 20 times the number of variables (Weiss 1972; Lindeman, Merenda & Gold 1980; Stevens 1996). Therefore, the sample size for the survey used in this study should be 140 (i.e., seven variables x 20). The likely variables were the three independent variables (i.e., goal alignment, commitment to networking and decision-making) and one dependent variable, SCE, which consists of the four sub-variables of quality, cost, flexibility and delivery.

5.5.2 Target Participants

The respondents were the senior officer or executive in charge of SCM practice in the targeted organisations. These participants, such as managers of logistics, supply chains,
materials, operations, purchasing and procurement or sales and marketing, were expected to have the best knowledge about the operation and management of supply chain practices in their organisation.

5.6 Questionnaire Design

The following instrument development technique was used to measure the dependent and independent variables.

5.6.1 Cover Letter

A covering letter was attached to all questionnaires to describe the aim of the study, ensure confidentiality and anonymity and encourage respondents to answer the questions.

5.6.2 Survey Instrument Development

To achieve high levels of reliability and validity, a scale development process was used to develop the questionnaire (see Table 5.1). The questionnaire was developed by reviewing the related literature and collected as a self-administered structure disguised as a questionnaire (Moser & Kalton 1981). The questionnaire had a set of written questions to be answered by the participants (Baumgartner, Strong & Hensley 2005).

Based on a recommendation by Frazer and Lawley (2000), the questionnaire was simple and to the point, while keeping with a self-administered structure. Respondents were requested to complete questions about SCE and the antecedent variables of goal alignment, commitment to networking and decision-making. Based on Dillman’s (1978) recommendation, the length of the questionnaire was taken into account and was six pages long. Apparent instructions that employed simple language headed all question
groups (Frazer & Lawley 2000). As suggested by Sudman et al. (1996), the start of the questionnaire consisted of direct questions that took minimal completion time, followed by major item groups in the middle of the questionnaire.

The design of the questionnaire was believed to have an effect on the response rate as well as reliability and validity. Hussey and Hussey’s (1997, p. 162) guidelines were followed to ensure an adequate questionnaire with high reliability and validity:

- Each question had to be carefully designed and worded.
- The questionnaire form had to be carefully designed.
- The purpose of the questionnaire had to be coherently explained in an attached cover letter.

Instrument development went through five steps (see Table 5.1). In the first stage, a comprehensive review of the literature was conducted related to strategic supply chain dimensions that were expected to affect SCE to generate a pool of items that reflected the study’s constructs. A list of items was gathered to cover all aspects of these variables. The questionnaire is featured in Appendix B.

<table>
<thead>
<tr>
<th>Stage</th>
<th>State of scale development</th>
<th>Source of data</th>
<th>Provides evidence for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Defining the constructs and generating an item pool</td>
<td>Literature review</td>
<td>Face and content validity Understanding the concepts</td>
</tr>
<tr>
<td>Stage 2</td>
<td>Determining the format for measurement</td>
<td>Literature review</td>
<td>Reliability (internal)</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Judging of items by experts</td>
<td>Experts judges (n = 3)</td>
<td>Face and content validity</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Designing a scale and pilot test</td>
<td>Pilot study (n = 25)</td>
<td>Face and content validity</td>
</tr>
<tr>
<td>Stage 5</td>
<td>Assessing and finalising the scale</td>
<td>Survey (n = 140)</td>
<td>Dimensionality (factor analysis) and reliability (Cronbach’s α)</td>
</tr>
</tbody>
</table>

Note: Cronbach’s α = Cronbach’s alpha.
The instrument to measure SCE (i.e., dependent variable) was adopted from previous valid and reliable studies with slight modifications (Miguel & Brito 2011; Yim & Leem 2012). The constructs goal alignment, commitment to networking and decision-making (i.e., independent variables) were newly developed in this research. Thus, the instrument used to measure these constructs was developed based on the critical review of the relevant literature.

The items based on the theoretical constructs were developed from an extensive literature review (see Table 5.2). They were measured using a five-point Likert scale with anchors ranging from very low (1) to very high (5) to ensure high statistical variability among the survey responses (Mitchell & Jolley 2004). The questionnaire was developed with reference to existing questionnaires, the literature review and a number of existing pre-established scales and focused on various SCM issues that were applicable to the SCE construct. With respect to the dependent variable, respondents were asked to indicate the importance of the performance measures: cost, flexibility, delivery and quality (Germain et al. 2001; Miguel & Brito 2011). These indicators were measured using five-point Likert scales with anchors ranging from below average (1) to above average (5).
Table 5.2: Questionnaire Item Descriptions

<table>
<thead>
<tr>
<th>Construct</th>
<th>No.</th>
<th>Question</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexibility</td>
<td></td>
<td>In your opinion, which of the following are the main elements that reflect supply chain effectiveness?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Service flexibility</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Product and process flexibility</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Level of customisation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Supply chain flexibility</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Supply chain agility</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Use of technology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Government rules and regulations</td>
<td></td>
</tr>
<tr>
<td>Quality</td>
<td>1</td>
<td>Product and service performance</td>
<td>Miguel &amp; Brito (2011)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Number of non-conformity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Conformance to design specification</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Customer complaints</td>
<td>Yim &amp; Leem (2012)</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Time to solve customer complaints</td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td>1</td>
<td>Supply chain cost</td>
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<td></td>
<td>2</td>
<td>Inventory turnover</td>
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<td>3</td>
<td>Capacity utilisation</td>
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<td>4</td>
<td>Productivity</td>
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<td>5</td>
<td>Government incentives</td>
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<td>Delivery</td>
<td>1</td>
<td>Delivery performance</td>
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<td></td>
<td>2</td>
<td>On-time delivery</td>
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<td>Construct</td>
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<tr>
<td>Goal</td>
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<td>alignment</td>
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<td>3</td>
<td>Delivery delay</td>
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<td>4</td>
<td>Access to market</td>
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<td>5</td>
<td>Customer order processing time</td>
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<tr>
<td>1</td>
<td>Our organisation shares our goals for business with supply chain partners</td>
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<tr>
<td>2</td>
<td>Our organisation and supply chain partners often agree on what is in the best interest of the relationship</td>
<td></td>
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<tr>
<td>3</td>
<td>Our organisation is enthusiastic about pursuing collective goals and missions with supply chain partners</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>Our organisation works together to achieve common goals with supply chain partners</td>
<td></td>
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<tr>
<td>5</td>
<td>Our organisation measures our success as directly dependent upon the success of supply chain partners</td>
<td></td>
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<tr>
<td>6</td>
<td>Our organisation has compatible goals with supply chain partners</td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td>Our organisation goals are well aligned with overall supply chain goals</td>
<td></td>
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<tr>
<td>8</td>
<td>There is a mismatch existing between our organisation goals and supply chain goals</td>
<td></td>
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<tr>
<td>9</td>
<td>Our organisation’s top management has a clear understanding of supply chain needs and requirements</td>
<td></td>
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<tr>
<td>10</td>
<td>Our organisation’s top management gives the time and resources to support suppliers who are willing to stay in a long-term partnership with the company</td>
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<tr>
<td>11</td>
<td>Our organisation’s top management understands the value of supply chain processes and its outcome</td>
<td></td>
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<tr>
<td>12</td>
<td>To ensure overall business and supply chain objectives are being achieved, it is essential for organisations to align their individual business strategies with their supply chain strategy</td>
<td></td>
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<tr>
<td>13</td>
<td>Our organisation’s top management’s priorities have an important effect on organisation’s overall effectiveness</td>
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<tr>
<td>14</td>
<td>Organisation’s goals have a crucial effect on supply chain activities, such as network, procurement and outsourcing decisions</td>
<td>Newly developed</td>
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<tr>
<td>Construct</td>
<td>No.</td>
<td>Question</td>
<td>Source</td>
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<td>---------------------------------------------------------------------------</td>
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<tr>
<td>Commitment to</td>
<td>1</td>
<td>Our organisation’s relationship with its supply chain partners is long-term in nature</td>
<td></td>
</tr>
<tr>
<td>networking</td>
<td>2</td>
<td>Our organisation has a strong sense of loyalty to its supply chain partners</td>
<td></td>
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<tr>
<td></td>
<td>3</td>
<td>Our organisation has a cooperative relationship with its supply chain partners</td>
<td></td>
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<td></td>
<td>4</td>
<td>Our organisation and supply chain partners have frequent contact on a regular basis</td>
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<td>5</td>
<td>Our organisation and supply chain partners influence each other’s decisions through discussion rather than request and learning</td>
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<td></td>
<td>6</td>
<td>Our organisation and supply chain partners jointly work on promotional events, demand forecasts, inventory, etc</td>
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<td></td>
<td>7</td>
<td>Our organisation and supply chain partners share criteria to evaluate performance</td>
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<tr>
<td>Commitment to</td>
<td>8</td>
<td>Our organisation and supply chain partners share performance evaluate</td>
<td></td>
</tr>
<tr>
<td>networking</td>
<td>9</td>
<td>Our organisation does not mislead supply chain partners</td>
<td>Newly developed</td>
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<td></td>
<td>10</td>
<td>Our organisation keeps its word with supply chain partners</td>
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<td></td>
<td>11</td>
<td>Our organisation negotiates fairly with supply chain partners by following ethics</td>
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<td></td>
<td>12</td>
<td>Our supply chain partners do not always share sufficient information</td>
<td></td>
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<td></td>
<td>13</td>
<td>Our organisation views supply chain partner as our ally against competition</td>
<td></td>
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<td></td>
<td>14</td>
<td>Our organisation believes supply chain partners’ behaviours are trustworthy</td>
<td></td>
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<td></td>
<td>15</td>
<td>Our organisation’s top management get involved in the collaboration process with supply chain partners</td>
<td></td>
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<td></td>
<td>16</td>
<td>Our organisation considers supply chain partners important</td>
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<td></td>
<td>17</td>
<td>Our organisation is committed to a relationship with supply chain partners</td>
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<td></td>
<td>18</td>
<td>Our organisation intends to keep good (long-term) relationships with supply chain partners</td>
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<tr>
<td></td>
<td>19</td>
<td>Our organisation shares very little internal information with supply chain partners</td>
<td></td>
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<tr>
<td>Construct</td>
<td>No.</td>
<td>Question</td>
<td>Source</td>
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<tr>
<td></td>
<td>20</td>
<td>Successful long-term relationships are dependent on trust and commitment to networking between supply chain members</td>
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<td></td>
<td>21</td>
<td>It is essential for organisations to show a sincere commitment towards their various supply chain partners</td>
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<td></td>
<td>22</td>
<td>Supply chain members should dedicate efforts to sustain quality supply chain relationships</td>
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<td></td>
<td>23</td>
<td>The extent of commitment throughout the supply chain decides the overall supply chain effectiveness</td>
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<td></td>
<td>24</td>
<td>Supply chain partners have to be committed to each other for their supply chains to be successful</td>
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<tr>
<td>Decision-making</td>
<td>1</td>
<td>It is essential for organisations to have centralised decision-making with a focus on a win-win scenario</td>
<td></td>
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<tr>
<td></td>
<td>2</td>
<td>The authority makes decisions for various functions in the supply chain</td>
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<td></td>
<td>3</td>
<td>It is essential for organisations to have highly decentralised decision-making but the common goals should be taken into consideration</td>
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<td></td>
<td>4</td>
<td>The authority and power to make decisions for various functions in the supply chain department should be retained by top management</td>
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<td></td>
<td>5</td>
<td>Supply chain management decisions could be generally classified as strategic long-term decisions that link to overall corporate strategy</td>
<td></td>
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<td></td>
<td>6</td>
<td>Our organisation has centralised decision-making authority for various functions, including supply chain management</td>
<td>Newly developed</td>
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<td></td>
<td>7</td>
<td>Final decisions concerning supply chain management should be retained by top management</td>
<td></td>
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<tr>
<td></td>
<td>8</td>
<td>Our organisation’s strategy is usually decided by senior executives</td>
<td></td>
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<td></td>
<td>9</td>
<td>Our organisation’s strategy is usually made in consultation with functional managers</td>
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<td></td>
<td>10</td>
<td>All staff in our organisation are involved in the strategy process to some degree</td>
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<tr>
<td></td>
<td>11</td>
<td>All staff in our organisation are involved in the decision-making process to some degree</td>
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<tr>
<td></td>
<td>12</td>
<td>Most staff in our organisation have input into decisions that directly affect them</td>
<td></td>
</tr>
</tbody>
</table>

80
5.6.2.1 Control Variables

The study also collected data related to other factors that could affect the variables being investigated to analyse additional extraneous factors. Three more variables were introduced into the analytical framework as control variables: organisation size, organisation age and the industrial sector (Hult et al. 2007). This study adopted these control variables because they may affect the relationship between dimensions of a strategic supply chain and SCE (e.g., Amburgey & Rao 1996; Sanchez & Perez 2005; Hult et al. 2007).

The existing literature proposes that larger organisations are under more public scrutiny and are expected to be involved in innovative environmental practices (Hettige et al. 1996). Larger organisations are also likely to have superior resources. Organisation age and size may also influence flexibility because of the availability of resources in large organisations and the ability to adapt more quickly than in smaller organisations (Sanchez & Perez 2005).

5.7 Data Collection

5.7.1 Primary Data

The required data for the analysis were collected using the following methods and procedures. As discussed above, a review and synthesis of the relevant literature was performed and emerging issues were identified and gathered specifically to answer the study’s research question. A questionnaire was designed for this purpose. The questionnaire was administered to organisations in different industries in Dubai to understand the determinants of SCE across selected industries. A questionnaire is the most popular and widely used research tool for gathering information from study
participants, as it is convenient to administer and economical. The target respondents were directors, managers and senior staff of supply chain, operations, purchasing, logistics or marketing departments, as these personnel were believed to possess supply chain knowledge.

5.7.2 Measurement Scales

The measurement principles are the scales employed to measure the variables and assess the reliability and validity of the questionnaire (Mitchell & Jolley 2004). Cavana, Delahaye and Sekaran (2001) suggested that there are several scales frequently used in social science research, such as dichotomous, numerical, categorical and Likert.

The Likert scale was the most appropriate choice for this research, as it yields interval data, allowing for influential statistical tests to analyse the responses to such items (Mitchell & Jolley 2004). The Likert scale helps to compare the given responses to questions for both the participants and researchers (Babbie 2007). In our study, a five-point Likert scale was adopted, using a scale of strongly agree, agree, neutral, disagree and strongly disagree.

5.7.3 Validity and Reliability Testing

Reliability and validity were taken into account in the design of the research to increase the quality of the measurements and the study’s findings. Bagozzi and Phillips (1982) suggested that for an instrument to be valid and reliable, it must have content and construct validity and reliability. Salkind (2008) stated that ‘the assessment tools used to test the hypothesis must be reliable and valid; otherwise the researcher may act incorrectly in supporting or rejecting the research hypothesis’.

82
5.7.3.1 Validity

The validity of a measurement can be assessed as face, content and construct validity (Cavana, Delahaye & Sekeran 2001). Content validity can be improved by ensuring that the construct domain is covered (Churchill 1979). Content validity is assessed by conducting a comprehensive review of the present literature to define the constructs and variables and ensuring that the construct domain is covered by generating an initial list of items (Nunnally 1978). Prior to data collection, the content validity of this study’s instrument was established by grounding it strongly in the existing literature and conducting pre-tests. Validity was also assessed during the pilot study.

5.7.3.2 Reliability

In terms of reliability, an established measures technique was used to verify the reliability of the study’s instrument. The questionnaire was established from the previous literature since this research adopted proven measures from previous studies for the SCE construct. The reliability of the items was measured using Cronbach’s alpha (\(\alpha\)). As suggested by Nunnally (1978), a Cronbach’s \(\alpha\) of greater than .70 is considered an acceptable measure of reliability.

5.7.4 Survey Pilot Study

Pilot testing of a questionnaire makes it easier to be completed and more appropriate for the participants’ range of responsibility and knowledge (Flynn et al. 1990; Forza 2002). Feedback received from a pilot study ‘ensures the validity and reliability of measures’ (Flynn et al. 1990, p. 262). The questionnaire was translated from English to Arabic by professional translators. This research employed the back-translation method to find and adjust inconsistencies between the English and Arabic versions of the questionnaire.
The questionnaire was developed in English, translated into Arabic and then retranslated into English.

The purpose of a pilot study is to enhance each question’s clarity. A pilot survey can result in important enhancements to a questionnaire and increase the efficiency of the inquiry (Cooper & Schindler 1998). A pilot study reveals and highlights potential issues related to the clarity and wording of the questionnaire as well as the survey administrative process (Forza 2002). To determine the internal reliability of the instrument and ensure its clarity and readability, a pilot study was conducted.

5.7.4.1 Validity

The survey instrument was pilot tested in two stages for face and content validity. In the first stage, three experienced researchers were approached to critique the questionnaire for ambiguity, clarity and appropriateness of the items used to operationalise each construct (DeVellis 1991). The experts aided in the instrument’s pre-testing and was achieved by a judgement of experts (Cavana, Delahaye & Sekeran 2001). Expert views were sought from other researchers with interest in the same field of research. A member of the faculty reviewed the draft questionnaire as well as two industry managers to ensure the face validity and readability of the measures. These experts were asked to assess the extent to which the indicators sufficiently addressed the subject area (Dillman 1978). Based on the feedback received from those who examined the questionnaire, the instrument was modified to enhance the clarity and appropriateness of the measures purporting to tap the constructs. In the second stage, a face-to-face survey of the questionnaire was conducted with 25 participants to identify issues related to its design and instrumentation. As a result, the questionnaire was revised to improve its
face and content validity. The constructs were accepted if Cronbach’s $\alpha$ was greater than .70.

With respect to construct validity, both discriminant and convergent validity were tested and the required changes were made. According to Bagozzi and Phillips (1982), discriminant validity means the independence of factors that measure one construct and convergent validity is ‘the extent to which the measurement items converge into a theoretical construct’. The traditional technique used for assessing construct validity is confirmatory factor analysis (CFA). However, in this research, both convergent and discriminant validity were measured using a multi-level SEM (MSEM) methodology (Bagozzi & Phillips 1982).

It took 30 to 45 minutes to complete the questionnaire. Based on the recommendation of Sekran (2000), the questionnaire started with broad questions followed by detailed and focused questions in a later section of the questionnaire. Pre-testing of the questionnaire found no obvious problems with order bias. Further, according to Frazer & Lawley (2000), the instructions and wording of items were judged suitable.

5.8 Final Measurement

5.8.1 Ethical Considerations

To conduct this research, the researcher sought approval from the University of Wollongong’s ethics committee. The application explained issues of privacy and confidentiality as well as the potential risks that participants might face. A supporting cover letter provided to the participants explained the research objectives of the pilot and main study to meet the requirements of informed consent to voluntary participate in the research (Neuman 2006). Further, anonymity and confidentiality were stressed.
throughout the data collection process and all suitable actions taken to ensure that these were upheld. Data (i.e., questionnaires and surveys) will be kept during the project and for a minimum of five years afterwards in accordance with the research guidelines and requirements of the University of Wollongong in Dubai (UOWD).

5.8.2 Distribution and Collection

To achieve a high response rate and accurate data from the questionnaires, several techniques were used that many researchers have suggested are effective (Byrman 2003; Sekaran 2003; Zikmund 2003).

α response rate increases when respondents feel comfortable completing the questionnaire. Thus, the questionnaire was designed in a simple, logical sequence, avoiding technical terms and ambiguous expressions (Mitchell & Jolley 2004). After obtaining approval from the UOWD and the participating organisations, participants from these organisations were approached for the data collection. Clear and concise directions on how to fill out the questionnaire were provided. A cover letter with the letterhead of the UOWD was attached to the questionnaire and introduced the researcher, research objectives and summary of the ethical considerations related to survey participation. The cover letter assured the confidentiality of the participants’ responses and explained the importance of the respondents’ contribution to the research.

Both online and paper-based versions of the questionnaires were distributed. The questionnaires with the cover letter and participant information sheet were emailed to a representative of each organisation to distribute to the target respondents. The cover letter described two ways that participants could send their response. The first was by the immediate online completion and submission using a web link of the online version of the questionnaire. The second option was to download a hard copy of the
questionnaire, as a link to a PDF file of the questionnaire was attached to the email, which participants could return by email or submit it to a representative of their organisation.

The questionnaire was directed to several organisations and key informants—senior managers, managers or senior employees of logistics, supply chain, materials, operations, purchasing or marketing with experience in supply chain activities—within the organisations. The main investigator delivered the questionnaires by hand to the nominated representative of each organisation. The representatives were informed that the completed questionnaires would be collected within two weeks of their distribution. An email to participate in the survey was sent from the researcher to potential candidates through the representative of their organisation, including a link to the online questionnaire.

The email included a statement ensuring confidentiality, voluntary participation and anonymity of results. It also outlined details about the research objectives and aims. Many researchers have suggested that the rate of response increases when a researcher is involved in the distribution of a questionnaire (Cavana, Delahaye & Sekaran 2001). A follow-up email was sent to respondents to ensure a higher response rate from the participants.

### 5.8.3 Key Informant Technique

The quality of participants is an important factor that influences the quality of empirical research. The key informant method is an effective technique in which key informants are selected from the responding organisations to collect data using surveys (John & Reve 1982).
According to Seidler (1974, p. 816), the key informant technique is a method in which ‘a small number of knowledgeable participants are asked to act in an informant role that involves giving reports about patterns of behaviours and think in terms of the organization’. This technique is widely used in social science research in which ‘the study of organizations and the use of informants are compatible’ (Cambell 1955; Seilder 1974).

Nevertheless, this technique has weaknesses since it could return quantitative rather than qualitative data and can introduce key informant bias (Seidler 1974). To overcome this bias, Hughes and Preski (1997) suggested that the identification of potential sources of bias could enhance the contextual variables when using an organisation’s key informants. Informant-associated bias includes, for instance, position and attributes of the informant (Hughes & Preski 1997). Key informant bias was minimised by requesting only the most experienced voluntary informants to complete the questionnaire (Kumar et al. 1993; Phillips 1981). Accordingly, this study collected data from selected managers from logistics, supply chain, materials, operations, purchasing and marketing departments who had experience in business operations or supply chain activities. Additionally, it was suggested that key informants could complete the survey with other knowledgeable individuals. Carefully selecting informants along with internally consistent scales could result in reliable and valid data (John & Reve 1982).

5.9 Multi-Level Structural Equation Modelling

In SEM, all latent variables are assumed to be independent across units, but this is not true in multi-level settings since within-cluster dependence exists because units are nested in clusters (Rabe-Hesketh, Skrondal & Zheng 2012). Therefore, MSEM was used to analyse the research model. While traditional statistical models can only test a
single relationship, the MSEM method greatly expands an investigator’s ability to concurrently examine several interrelated relationships.

The MSEM method is also a hybrid form of path and factor analysis (Anderson & Gerbing 1988) that provides researchers with more flexibility. It was suitable for this study for many reasons (e.g., Mesquita et al. 2008). First, some of the research’s main variables were multi-dimensional with complex interrelationships (Hardy & Bryman 2004; Shook et al. 2004), allowing the capture of intangible latent variables (Godfrey & Hill 1995). MSEM uses a variable’s measurement errors in its model, permitting the attainment of unbiased parameter estimations (Iacobucci et al. 2007). Second, in MSEM, the fit of an incorporated set of dependent relations is examined simultaneously, rather than individually testing coefficients in separate equations, permitting complex model configuration analysis, including path analysis. Last, MSEM permits the confirmatory testing of covariance structures (Herrmann et al. 2006). Significantly, Rabe-Hesketh, Skrondal and Zheng (2012) suggested that MSEM is a mixture of multi-level and SEM and is needed for effective statistical inference when a set of items or fallible instruments are used to measure the units of some constructs. They argued that MSEM also allows investigators to examine exciting research questions that could not otherwise be validly investigated.

The first step in MSEM is to identify the measurement and structural models. MSEM specifications need to be built on sound theories from the present literature. In MSEM, theoretical justification is very important and required to specify dependent relationships and modify the anticipated relationships and various other aspects related to model estimation (Hair et al. 1998). A two-step approach based on Anderson and Gerbing (1988) was used to implement MSEM for this study. In the first step, the
measurement model was tested using CFA. In the second step, the main research model was computed based on the previously analysed measurement model.

5.10 Analytical Methods

According to Hair et al. (1995), SEM is a dependence technique used to test complex models. Further, Chin and Todd (1995) suggested that SEMs are considered appropriate when a researcher has to indirectly test unobserved latent variables. In SEM, the measurement (outer) model is estimated to test the relationships between the constructs and develop acceptable validity and reliability (Fornell & Cha 1994). The structural (inner) model is employed to test the anticipated relationships between constructs based on the research hypotheses.

The following section will highlight the strengths and weaknesses of two SEM methods and justifies the selection of a suitable analytical technique for this research. These two analytical techniques are PLS (Wold 1975) and covariance-based SEM (CBSEM) (Jöreskog 1971). Falk and Miller (1992, p. 3) stated that for PLS, ‘the mathematics underlying the PLS system are rigorous, but the mathematical model is soft in the sense that it makes no measurement, distributional, or sample size assumptions’. They added that these two techniques are labelled as soft versus hard modelling and complement each other. Further, Jöreskog and Wold (1982, p. 270) indicated that ‘the ML (maximum likelihood) and PLS approaches to path models with latent variables are complementary rather than competitive’, adding that ‘ML is theory-oriented, and emphasizes the transition from exploratory to confirmatory analysis. PLS is primarily intended for causal-predictive analysis in situations of high complexity but low theoretical information.’
5.10.1 Covariance-Based Structural Equation Modelling

CBSEM compares the difference between estimated and observed data matrices. Bollen (1989) argued that the difference between an algorithm’s estimated matrix and an observed sample covariance matrix indicates if the proposed model fits the data being investigated. According to Jöreskog (1971) and Steenkamp and van Trijp (1991), each loading in CBSEM is either fixed or assigned to a particular variable before estimation happens. In CBSEM, the covariance matrix of observed measures is reproduced by parameters of the estimated model (Jöreskog & Sörbom 1996). CBSEM requires the theoretical development to be strong as suggested by Falk and Miller (1992). Bollen (1989) suggested that this is because CBSEM intends to reproduce an observed data matrix against the estimated covariance matrix. Conducting CBSEM necessitates that particular fundamental assumptions are realised. According to Wold (1981), normally observed constructs need to have a particular multivariate distribution and independence of data observations.

Bollen (1990) and Kline (1998) suggested that the advantages of employing the CBSEM technique include having several fit statistics that could be assessed to test models. McArdle and Aber (1990, p. 157) argued that CBSEM necessitates ‘relatively high-quality data and the need for relatively strong developmental ideas’. However, CBSEM estimation is challenging when distributional issues exist for the data of complex models (Chin 1998; Wilson 2010). In the next section, the second SEM technique is discussed.

5.10.2 Partial Least Squares Structural Equation Modelling

According to Chin, Marcolin and Newsted (1996), although being equal to ordinary least squares regression, PLS is a components-based SEM method. It is perceived as a
precursor to forthcoming CBSEM analyses (Chin & Newstead 1993). Lee (2000) and Fornell and Bookstein (1982) suggested that PLS has many benefits, in particular its ability to cope with multicollinearity and converging to a result.

According to Chin & Newsted (1999), linear structural relations have limitations when employed for testing complex models that have sample size restraints. Conversely, PLS is capable of examining complex models (Chin 1998) and converges almost every time (Wold 1981). Cassel, Hackl and Westlund (1999) suggested that PLS is vigorous against deviances from a normal distribution. Unlike CBSEM, PLS deals with factor indeterminacy issues, copes better with formative measures and handles small sample sizes (Falk & Miller 1992; Fornell & Bookstein 1982; Wittingslow & Markham 1999).

This section presents the justification for selecting and using PLS modelling.

As this study is exploratory in nature, investigates a complex model with higher-order abstract relationships and comprises a smaller sample size than what a covariance-based model could manage, it was considered practical to choose the technique that best managed these issues:

- The exploratory nature of the research suited PLS modelling (Bagozzi & Yi 1994; Chin 1998).
- The complexity of a model is intensified when testing relationships that are classified as having higher-order abstract relationships.
- PLS can better deal with formative measures (Anderson & Gerbing 1988). In this study, SCE was a second-order formative measure that required the use of PLS.
- This study emphasised causative predictive investigation; that is, the effect of *goal alignment, commitment to networking* and *decision-making* on SCE.
• PLS can deal with smaller sample sizes (Whittaker, Ledden & Kalafatis 2007). The sample size in this study was only 154 cases, which is smaller than a covariance-based model could manage.

• PLS tackles non-normal distributions well, as it does not demand any normality assumptions (Bontis & Booker 2007).

• PLS results are robust against multicollinearity (Cassel, Hackl & Westlund 2000).

Selecting PLS as a modelling method was justified by the current research, which shows that predictive and theory building studies are usually challenged by small sample sizes and can be prone to incorrect outcomes (Reinartz, Haenlein & Henseler 2009). SmartPLS is a program that offers many different statistics that could be employed to assess the hypothesised model and recommend means to adapt the model given adequate theoretical justification.

5.11 Summary

In this chapter, the data collection methodology involving a self-administered questionnaire was presented. This chapter discussed a SEM approach before justifying the selection of PLS modelling for this research. In the next chapter, the descriptive statistics are outlined along with the results of the measurement and structural models.
Chapter 6: Data Analysis and Results

6.1 Introduction

The purpose of this study was to investigate the influence of goal alignment, commitment to networking and decision-making on SCE. Analysis is an essential aspect of research design and after completing data gathering, it has to be compiled, checked and analysed to derive suitable conclusions. This chapter presents the statistical techniques used in the data analysis, including descriptive statistics of the sample and the results of the SEM analysis for testing the hypotheses.

This chapter begins with an explanation of the data preparation process, which focused on the suitability of the attained data relative to the data analysis. Descriptive statistics were employed to present the personal demographic characteristics of the participants. Descriptive analysis is widely used in academic research to measure central tendency and the dispersion of data. Descriptive statistics help to draw appropriate observations about the data collected and provide a basis for reporting the trends and patterns within the data and to compare different variables (Lawrence 2006). The collected data were entered into an Excel sheet and appropriate statistical tests conducted. SmartPLS was used to analyse the data using statistical methods and to assess the MSEM and test the hypotheses. SPSS was used to screen the results for the violation of assumptions and to conduct factor analysis to test the construct validity. The reliability of scales was assessed by measuring Cronbach’s $\alpha$.
6.2 Data Presentation and Analysis

A total of 154 complete surveys were collected. Data screening included inspecting descriptive statistics as well as detecting out-of-range values (Pallant 2011). Missing data and outliers were screened for and cleaned from the data. Key multivariate assumptions were tested, including a normality test, homoscedasticity inception and linearity test. Corresponding means were used to replace missing data and, as no outliers were detected, there were no issues with any outliers.

Data screening included inspecting descriptive statistics, enabling the researcher to synthesise and summarise the quantitative data. The descriptive statistics included frequencies, means and standard deviations and were used to present the data from the sample. PLS was employed to test the research hypotheses. The completed questionnaires were edited to check for consistency and reliability of the data and necessary alterations were made to ensure completeness and consistency before coding the data. In cases in which respondents did not answer some of the questions, an interval-scale midpoint item was assigned as the response (Cavana et al. 2001).

6.3 Sample Characteristics

This section presents the sample characteristics in terms of the respondents (i.e., gender, age, education level, position in organisation and years worked in the organisation) and the organisations (i.e., industry, employment size, organisational age and number of employees in the supply chain). The results are shown in Table 6.1.
<table>
<thead>
<tr>
<th>Category</th>
<th>Per cent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>71</td>
</tr>
<tr>
<td>Female</td>
<td>29</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
</tr>
<tr>
<td>Less than 25</td>
<td>25.4</td>
</tr>
<tr>
<td>26–30</td>
<td>23.5</td>
</tr>
<tr>
<td>31–40</td>
<td>30.7</td>
</tr>
<tr>
<td>41–50</td>
<td>16.3</td>
</tr>
<tr>
<td>51–60</td>
<td>3.9</td>
</tr>
<tr>
<td>Greater than 60</td>
<td>0</td>
</tr>
<tr>
<td>Job classification</td>
<td></td>
</tr>
<tr>
<td>Upper level management</td>
<td>17.1</td>
</tr>
<tr>
<td>Middle level management</td>
<td>35.5</td>
</tr>
<tr>
<td>First-line supervisor</td>
<td>21.7</td>
</tr>
<tr>
<td>Employee</td>
<td>25.6</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
</tr>
<tr>
<td>Secondary or less</td>
<td>0.6</td>
</tr>
<tr>
<td>Diploma</td>
<td>6.5</td>
</tr>
<tr>
<td>Higher diploma</td>
<td>1.3</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>39.5</td>
</tr>
<tr>
<td>Postgraduate degree</td>
<td>50.7</td>
</tr>
<tr>
<td>Others</td>
<td>1.3</td>
</tr>
<tr>
<td>Years of experience with current organisation</td>
<td></td>
</tr>
<tr>
<td>1 to &lt;5</td>
<td>63.6</td>
</tr>
<tr>
<td>5 to &lt;10</td>
<td>21.2</td>
</tr>
<tr>
<td>10 to &lt;15</td>
<td>6.6</td>
</tr>
<tr>
<td>15 to &lt;20</td>
<td>4.6</td>
</tr>
<tr>
<td>20 to &lt;25</td>
<td>3.3</td>
</tr>
<tr>
<td>&gt;25</td>
<td>0.7</td>
</tr>
<tr>
<td>Supply chain employees (total number of employees)</td>
<td></td>
</tr>
<tr>
<td>1–10</td>
<td>34.2</td>
</tr>
<tr>
<td>11–50</td>
<td>30.2</td>
</tr>
<tr>
<td>501–100</td>
<td>10.7</td>
</tr>
<tr>
<td>101–200</td>
<td>10.1</td>
</tr>
<tr>
<td>201–500</td>
<td>6.0</td>
</tr>
<tr>
<td>&gt;500</td>
<td>8.7</td>
</tr>
<tr>
<td>Organisation size (Total number of employees)</td>
<td></td>
</tr>
<tr>
<td>1–100</td>
<td>23.5</td>
</tr>
<tr>
<td>101–500</td>
<td>22.8</td>
</tr>
<tr>
<td>501–1000</td>
<td>9.1</td>
</tr>
<tr>
<td>1001–5000</td>
<td>19.6</td>
</tr>
<tr>
<td>Category</td>
<td>Per cent (%)</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Organisation age (years)</td>
<td></td>
</tr>
<tr>
<td>5001–10000</td>
<td>9.8</td>
</tr>
<tr>
<td>More than 10000</td>
<td>15.0</td>
</tr>
<tr>
<td>&lt;5</td>
<td>21.1</td>
</tr>
<tr>
<td>5–10</td>
<td>23.0</td>
</tr>
<tr>
<td>10–20</td>
<td>15.1</td>
</tr>
<tr>
<td>&gt;20</td>
<td>40.8</td>
</tr>
<tr>
<td>Industry</td>
<td></td>
</tr>
<tr>
<td>Government entity</td>
<td>9.2</td>
</tr>
<tr>
<td>Food and beverage products</td>
<td>3.9</td>
</tr>
<tr>
<td>Textile products</td>
<td>1.3</td>
</tr>
<tr>
<td>Chemical and allied products</td>
<td>16.6</td>
</tr>
<tr>
<td>Petroleum-related industries</td>
<td>7.9</td>
</tr>
<tr>
<td>Primary metal industries</td>
<td>0.6</td>
</tr>
<tr>
<td>Industrial and commercial</td>
<td>1.9</td>
</tr>
<tr>
<td>Electronics and allied</td>
<td>5.3</td>
</tr>
<tr>
<td>Automobile</td>
<td>4.6</td>
</tr>
<tr>
<td>Third-party logistics</td>
<td>1.9</td>
</tr>
<tr>
<td>Retail</td>
<td>5.9</td>
</tr>
<tr>
<td>Other</td>
<td>25.2</td>
</tr>
</tbody>
</table>

More than two thirds of respondents were male, mostly younger than 40 years old and about 90 per cent had a university degree, indicating they were well educated. However, more than two thirds of respondents had fewer than five years’ experience with their current employers. Regardless of whether organisations were large and well established for many years, most organisations had fewer than 50 employees working in their supply chain or related areas.

6.3.1 Job Classification

More than half of the respondents were classified as managers, while 25 per cent stated they were senior employees with no managerial roles. The remaining respondents were at a supervisory level. Thus, 75 per cent of respondents were high-level employees,
implying a high reliability of the responses received because of their wider job responsibilities and administrative knowledge.

Since the majority of respondents were at a managerial level, it could be assumed that the data are reliable.

6.4 Statistical Analysis

6.4.1 Data Cleaning

Both the online and paper-based questionnaires were distributed and several follow-up calls were made at a later month to the participating organisations. The results showed that the data were normally distributed. The results also showed homoscedastic relationships between the constructs. As for the linearity test, the results showed that the constructs were not highly correlated.

6.5 Descriptive Statistics

The first stage in analysing the collected data was measuring the descriptive statistics of the sample. Table 6.2 shows the means and standard deviation for all constructs. With respect to SCE, on average, the delivery sub-construct was considered the strongest with a mean of 4.19 and standard deviation of 0.80, followed by quality with a mean of 4.18 and standard deviation of 0.74. The next strongest sub-construct was flexibility with a mean of 3.97 and standard deviation of 0.69. Finally, the cost sub-construct had a mean of 3.96 and standard deviation of 0.84. The results indicate that participants perceived higher levels of quality and delivery compared to cost and flexibility.

Similar tests were conducted in terms of goal alignment, commitment to networking and decision-making. First, in terms of goal alignment, the mean was 3.69 with a standard
deviation of 0.81. For commitment to networking, the mean was 3.84 with a standard deviation of 0.78. Finally, the mean for decision-making was 3.16 with a standard deviation of 0.99.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexibility</td>
<td>3.97</td>
<td>0.69</td>
</tr>
<tr>
<td>Cost</td>
<td>3.96</td>
<td>0.84</td>
</tr>
<tr>
<td>Quality</td>
<td>4.18</td>
<td>0.74</td>
</tr>
<tr>
<td>Delivery</td>
<td>4.19</td>
<td>0.80</td>
</tr>
<tr>
<td>SCE</td>
<td>4.10</td>
<td>0.66</td>
</tr>
<tr>
<td>Goal alignment</td>
<td>3.69</td>
<td>0.81</td>
</tr>
<tr>
<td>Commitment to networking</td>
<td>3.84</td>
<td>0.78</td>
</tr>
<tr>
<td>Decision-making</td>
<td>3.16</td>
<td>0.99</td>
</tr>
</tbody>
</table>

Note: Scale = 1–5; SCE = supply chain effectiveness.

6.5.1 Normality

Testing the effect of the normality assumption violation is very important, as it can affect the final results and, as suggested by Kerlinger and Lee (2000), result in questionable conclusions drawn from the sample. The skewness and kurtosis tests are used to validate normality (Pallant 2011). In the current research, the distribution was normal, the absolute values of skewness were below two and the absolute values of kurtosis were below three (Newsom 2005).

6.6 Construct Validity and Reliability

Instrument assessment is a critical step to test the research model. To avoid any interactions between the structural and measurement models, the measurement model is tested prior to feeding it into the structural model (Gerbing & Anderson 1988). It was essential to evaluate the validity and reliability of the questionnaire within a UAE context because it was developed from the literature. To verify the internal consistency
of the constructs, Cronbach’s $\alpha$ was used to measure the reliability of the scales (see Table 6.3 and Table 6.4). All factors had acceptable scale reliabilities based on Cronbach’s $\alpha$ (1951), suggesting a coefficient of .70 or above as acceptable. Reliability coefficients were .92, .92 and .89 for goal alignment, commitment to networking and decision-making, respectively. Reliability coefficients for the SCE constructs were .79, .85, .75 and .86 for flexibility, cost, quality and delivery, respectively.

<table>
<thead>
<tr>
<th>Item</th>
<th>Goal setting</th>
<th>Commitment to networking</th>
<th>Decision-making</th>
</tr>
</thead>
<tbody>
<tr>
<td>GS1</td>
<td>.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GS2</td>
<td>.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GS3</td>
<td>.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GS4</td>
<td>.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GS5</td>
<td>.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GS6</td>
<td>.76</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CN4</td>
<td>.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CN10</td>
<td>.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CN11</td>
<td>.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CN16</td>
<td>.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CN17</td>
<td>.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CN18</td>
<td>.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM10</td>
<td>.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM11</td>
<td>.87</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM12</td>
<td>.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>7.919</td>
<td>1.911</td>
<td>1.326</td>
</tr>
<tr>
<td>Cumulative variance explained</td>
<td>52.8%</td>
<td>65.5%</td>
<td>74.4%</td>
</tr>
<tr>
<td>Cronbach’s $\alpha$</td>
<td>.92</td>
<td>.92</td>
<td>.89</td>
</tr>
</tbody>
</table>

Note: Cronbach’s $\alpha$ = Cronbach’s alpha.
Table 6.4: Component Matrix for Supply Chain Effectiveness

<table>
<thead>
<tr>
<th>Item</th>
<th>Flexibility</th>
<th>Cost</th>
<th>Quality</th>
<th>Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_F1</td>
<td>.808</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E_F2</td>
<td>.730</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E_F4</td>
<td>.706</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E_F5</td>
<td>.630</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E_C2</td>
<td></td>
<td>.808</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E_C3</td>
<td></td>
<td>.803</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E_C4</td>
<td></td>
<td>.682</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E_Q1</td>
<td></td>
<td></td>
<td>.728</td>
<td></td>
</tr>
<tr>
<td>E_Q3</td>
<td></td>
<td></td>
<td>.730</td>
<td></td>
</tr>
<tr>
<td>E_Q5</td>
<td></td>
<td></td>
<td>.625</td>
<td></td>
</tr>
<tr>
<td>E_D1</td>
<td></td>
<td></td>
<td>.723</td>
<td></td>
</tr>
<tr>
<td>E_D2</td>
<td></td>
<td></td>
<td>.718</td>
<td></td>
</tr>
<tr>
<td>E_D4</td>
<td></td>
<td></td>
<td>.688</td>
<td></td>
</tr>
<tr>
<td>E_D5</td>
<td></td>
<td></td>
<td>.846</td>
<td></td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>6.635</td>
<td>1.335</td>
<td>1.128</td>
<td>1.008</td>
</tr>
<tr>
<td>Cumulative variance explained</td>
<td>47.4%</td>
<td>56.9%</td>
<td>64.3%</td>
<td>70.5%</td>
</tr>
<tr>
<td>Cronbach’s α</td>
<td>0.79</td>
<td>0.85</td>
<td>0.75</td>
<td>0.86</td>
</tr>
</tbody>
</table>

Code: E_F = effectiveness measure from flexibility; E_C = effectiveness measure from cost; E_Q = effectiveness measure from quality; E_D = effectiveness measure from delivery; Cronbach’s α = Cronbach’s alpha.

6.6.1 Factor Analysis

According to Hair et al. (2006), factor analysis is used to extract information from a large database and classify the interrelated data. In the current research, before conducting any other statistical analyses, factor analysis employing principal components analysis (PCA) was used to extract information from the original data into a smaller number of factors.

To explore the factor structure of the measures in this research, both exploratory factor analysis (EFA) and CFA were conducted. Factor analysis is ‘an interdependent technique whose purpose is to define the underlying structure among the variables in the analysis’ (Hair et al. 2010). Another purpose for using these methods was to reduce the
large number of variables to a manageable number. EFA was used to extract factors that
served as the anticipated measurement model in the CFA. CFA then was used to test the
fitness of the proposed model with the acquired data.

6.6.1.1 Exploratory Factor Analysis of Goal Alignment, Commitment to Networking
and Decision-Making

Given the exploratory nature of this research and to find the underlying factor structures
of the variables in the study, the collected data were subjected to EFA to identify the
key factors. EFA was conducted on the set of measures for the three independent
variables that were derived from the literature. Factor analysis explains the correlation
pattern among a set of observed variables, reveals underlying factors and identifies what
they conceptually represent (Hair et al. 2010). The analysis was completed using SPSS
23 using the principal components factoring technique with varimax rotation. Some of
the items had small loadings or did not load to any factor. Two criteria were employed
with regards to the decision of including or excluding items in the scales.

First, according to Hair et al. (2014), items with a loading score of < .40 were perceived
as weak and were excluded from further analysis. Items cross loading on two separate
factors with a loading score of < .40 on one factor were also excluded. Eight of the 14
goal alignment items, 18 of the 24 items of commitment to networking and nine of the
12 decision-making items were excluded from the analysis.

Fabrigar et al. (1999) suggested that the principal axis method is a more robust
extraction method to test the violation of the normality assumption. Hence, it was used
for the factors extraction.
The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett test of sphericity were employed to determine sampling adequacy (Kim & Mueller 1978). The KMO method tests whether the values are distributed in a manner suitable to conduct EFA. KMO values close to one indicate the appropriateness of the factor analysis. The Bartlett test of sphericity values should be <.05 to suggest significant relationships between the constructs.

After excluding items that did not load to any factor, the other items were soundly represented by the three factors. The factors identified were internally consistent and well identified by their corresponding items. The item loadings on factors and the explained variance are presented in Table 6.3. The KMO measure was equal to .911 and Bartlett’s test of sphericity was significant (chi-square = 1768.108, df = 105, p < .001). These measures were regarded as acceptable to proceed with factor analysis. Principal axis factoring of extracting factors revealed the presence of three factors with eigenvalues of >1, accounting for 74 per cent of the variance as shown in Table 6.3. Factor one consisted of six items from the goal alignment variable, factor two consisted of six items from the commitment to networking variable and factor three consisted of three items from the decision-making variable.

6.6.1.2 Exploratory Factor Analysis of Supply Chain Effectiveness

Similarly, with a cut-off point of .40, three of the seven items for flexibility, two of the five items for cost, two of the five items for quality and one of the five items for delivery were excluded from the analysis. The KMO measure was equal to .896 and the test of sphericity was significant (chi-square = 1103.7, df = 105, p < .001). Both these measures suggested that it was suitable to proceed with the factor analysis. Principal axis factoring of extracting factors revealed the presence of four factors with
eigenvalues of >1, accounting for 70 per cent of the variance as shown in Table 6.4. Factor one included four items from flexibility, factor two included three cost items, factor three included three quality items and factor four included four items from delivery.

6.7 Data Analysis Process

The data analysis was performed using a two-step method suggested by Anderson and Gerbing (1988). They proposed that the model building should be performed through the analysis of two separate models. CFA was first used to test constructs validity and to confirm the fit of the hypothesised factor structure against the collected data (Arbuckle 2003). The second step was the structural model that identified the relationships between the constructs.

6.7.1 Sample Size

Many researchers have argued that PLS can converge and handle smaller sample sizes (Chin & Newsted 1999; Hulland 1999). According to Kline (1998), a 10:1 ratio is desired. A rule of thumb for PLS analysis was recommended by Chin (1998), who suggested that the size of a sample has to be set upwards of 10 times the largest number of paths in a structural model directed at a single construct. Moreover, Hair et al. (2010) suggested that a sample size should be 100 or larger. The sample size in this study was 154, which was larger than the required 100, fulfilling the sample size condition for performing the factor analysis.

6.7.2 Two-Step Modelling Approach

Barclay, Higgins and Thompson (1995) suggested that the two-step modelling technique requires a measurement model to be estimated prior to performing the
structural model analysis. According to Chin 1998 and Fornell and Cha (1994), a measurement model has to be tested to establish the unidimensionality and validity of the variables in the study. In case indicators for a variable are not relating to a particular variable, the variable has to be considered for suitable adjustment prior to undertaking EFA and PCA of a structural model (Grace & O’Cass 2003). A structural model is carried on only after the measurement model is considered appropriate. Venaik (1999) argued that when measures and models are not well developed, the two-step modelling technique is employed. In the next section, some related PLS characteristics are discussed.

6.7.3 Statistics for PLS Model Evaluation

PLS is a component-based path modelling technique (Chin 1998) that allows for the testing of relationships among multi-item latent constructs indicated through structural equations (Gefen et al. 2000). According to Barclay et al. (1995), prediction is the key purpose of PLS to maximise explained variance. Bootstrapping is used to test the significance of paths, loadings and the stability of the estimates (Falk & Miller 1992).

6.7.3.1 Measurement Model

In PLS, the loadings reflect the relationships and the indicators represent the variable (Tenenhaus et al. 2005). Chin and Newsted (1999) proposed that for first-time research, loadings of indicators on constructs can be .5 and Falk and Miller (1992) suggested loadings to be >.55. In this research, the threshold was set to ≥.6.

Cronbach’s α (Cronbach 1951) is a measure of internal consistency with a cut-off point of .7 (Nunnally 1978). Raykov and Shrout (2002) argued that additional credibility has to be offered to the composite reliability (CR) statistic. According to Raykov (2001),
high reliability signals a lesser effect of error variance. Unlike Cronbach’s $\alpha$, a CR estimate proportionally weights indicant contribution (Werts, Linn & Jöreskog 1974). According to researchers such as Fornell and Larcker (1981) and Holmes-Smith and Rowe (1994), this is occasionally referred to as construct validity. The cut-off for CR is suggested to be .7 (Chin 1998).

Conversely, Campbell and Fiske (1959) suggested that discriminant validity signifies the degree to which a construct’s indicators diverge from indicators of another construct. To measure discriminant validity, cross loadings should be examined and a lack of association among indicators of unrelated variables suggests the existence of validity (DeVellis 2003). According to Agarwal and Karahanna (2000), to claim discriminant validity, the measures of a variable have to load higher on the anticipated variable compared to another less relevant variable.

The average variance extracted (AVE) measure was developed by Fornell and Larcker (1981) and is used to examine convergent validity. According to Fornell and Larcker (1981), the AVE value should be >.5 to demonstrate that the variance captured by a variable is higher in comparison to the amount of variance caused by measurement error. According to Chin (1998), bootstrapping is a resampling technique used to test the significance of parameter estimates. Based on the recommendation by Efron and Tibshirani (1993), 500 was the number of samples set for the bootstrapping.

6.7.3.2 Structural Model

According to Stone (1974), the statistics used to test the structural model consisted of parameter estimates with respect to their size, sign and statistical significance, $R$-square and the Stone-Geisser Q-Square test. PLS statistics have to fit the research hypotheses in terms of sign and significance. Additionally, it is essential to evaluate the predictive
capability of the research model employing the Q-square estimate, which, according to Geisser (1975) and Stone (1974), assesses the capability of the research model as a whole.

6.8 The Measurement Model

The measurement model was assessed to check if it held for the sample (see Figure 6.1). Various diagnostics revealed that the constructs were sufficiently explained. Internal consistency was assessed employing Cronbach’s α and CR scores. As shown in Table 6.5, reliability scores for all constructs in the model were above the threshold of .70 for Cronbach’s α (Nunnally 1978). As for CR, the values exceeded the threshold of .8, establishing high internal consistency (Hair et al. 1998).

The factor structures resulting from the EFA assisted in identifying an empirically based factor structure for following CFA testing. The PLS method of CFA was executed to test both discriminant and convergent validities (Gefen & Straub 2005). Convergent validity was tested using the AVE and CR scores. It is proposed that AVE scores have to exceed a threshold of .5 (Fornell & Larcker 1981; Hair et al. 1998), which was the case for all variables in this study (i.e., all variable ranged from .63 to .80). Moreover, the indicators showed significant variable loadings, suggesting high convergent validity.
Figure 6.1: Measurement Model
<table>
<thead>
<tr>
<th>Construct</th>
<th>Item code</th>
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<th>IC</th>
<th>AVE</th>
<th>Cronbach’s α</th>
</tr>
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<tr>
<td></td>
<td>E_F2</td>
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<td>E_F5</td>
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<tr>
<td>Cost</td>
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</tr>
<tr>
<td></td>
<td>E_C4</td>
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<tr>
<td></td>
<td>E_D2</td>
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<tr>
<td></td>
<td>E_D4</td>
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<td>E_D5</td>
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<tr>
<td></td>
<td>GS2</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>DM11</td>
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<td>CN10</td>
<td>.82</td>
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</tr>
<tr>
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<td>.94</td>
<td>.72</td>
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</tr>
<tr>
<td></td>
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<tr>
<td></td>
<td>CN18</td>
<td>.87</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Note: E_F = effectiveness measure from flexibility; E_C = effectiveness measure from cost; E_Q = effectiveness measure from quality; E_D = effectiveness measure from delivery; CR = composite reliability; AVE = average variance extracted; Cronbach’s α = Cronbach’s alpha.

For constructs to have adequate discriminant validity, the square root of the AVE for each of the variables has to be greater than the correlation between the variable and another variable in the model (Fornell & Larcker 1981). All the indicators loaded higher on their relative variables than on any other variable in the model, suggesting satisfactory discriminant validity (Gefen & Straub 2005). These are shown in Table 6.6.
Table 6.6: Shared Variance and Average Variance Extracted

<table>
<thead>
<tr>
<th>Construct</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Organisational commitment</td>
<td>.70</td>
<td>.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Decision-making</td>
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<td>.36</td>
<td>.90</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4 Flexibility</td>
<td>.40</td>
<td>.32</td>
<td>.25</td>
<td>.79</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>5 Cost</td>
<td>.30</td>
<td>.21</td>
<td>.24</td>
<td>.59</td>
<td>.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Quality</td>
<td>.35</td>
<td>.37</td>
<td>.30</td>
<td>.60</td>
<td>.60</td>
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<tr>
<td>7 Delivery</td>
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<td>.59</td>
<td>.62</td>
<td>.65</td>
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<td></td>
</tr>
<tr>
<td>8 SCE</td>
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<td>.28</td>
<td>.80</td>
<td>.84</td>
<td>.88</td>
<td>.70</td>
<td></td>
</tr>
</tbody>
</table>

Note: Square root of AVE on diagonal and construct correlations below diagonal; SCE = supply chain effectiveness.

6.9 Structural Model

As suggested by Geisser (1975) and Stone (1974), the predictive power of the model was evaluated using the Stone-Geisser test. The Q-square statistics has to be >0 for the model to have a predictive power. The Q-square was .04 for SCE, suggesting that the model possessed satisfactory predictive relevance.

The structural model result is presented in Table 6.7. The significance of the path coefficients were estimated and tested to measure the structural model. Hypotheses testing involved exploring the PLS results and the relative amount of variance explained by the variables (R-square). The explanatory power of the structural model was evaluated by the R-square score in the ultimate dependent variable (i.e., SCE) (Keil et al. 2000). The dependent variable had R-square values of .20, which exceeded the minimum criterion of 10 per cent for any meaningful interpretation of the results. Cohen and Cohen (1983) defined an R-value of .25 to be large and the model’s R-square was almost as large as this value.
6.9.1 Control Variables

The findings of this study are consistent with and without the control variables. None of the three control variables (i.e., organisation age, organisation size and industry) had a statistically significant effect ($p < .05$) on SCE.

6.10 Hypothesis Review

The data analysis process continues with establishing and testing three operational hypotheses developed from the literature review. The statistical technique to test each of the three hypotheses is described and the test results are then reported. The hypotheses, H1, H2 and H3, tested the effect of goal alignment, commitment to networking and decision-making on SCE.

Hypotheses seek either to describe a phenomenon or a probable correlation between multiple phenomena (Gravetter & Wallnau 2007). In this study, three hypotheses were established (see Chapter 4) and tested through various statistical techniques at a 95 per cent confidence level ($\alpha = .05^*$) and 99 per cent confidence level ($\alpha = .01^{**}$). The hypotheses were tested using a SEM approach and SmartPLS 3.1 software. Table 6.7 and Figure 6.2 present the hypotheses testing outcomes.

<table>
<thead>
<tr>
<th>Table 6.7: PLS Results of the Hypotheses Testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Path coefficient $\beta$</td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td>SCE</td>
</tr>
<tr>
<td>Goal alignment</td>
</tr>
<tr>
<td>Organisational commitment</td>
</tr>
<tr>
<td>Decision-making</td>
</tr>
</tbody>
</table>

Note: ** $p < .05$, *** $p < .00$; SCE = supply chain effectiveness.
All three hypotheses were supported. The following sections will discuss the hypotheses statements, chosen statistical technique, test results and interpretations.

6.10.1 Hypothesis 1

Hypothesis 1 investigated the relationship between goal setting and SCE:

*H1: The alignment of top management goals with the needs of a supply chain has a positive influence on SCE.*

In terms of the relationship between *goal alignment* and SCE, the results indicated that *goal alignment* was significantly and positively correlated with SCE. The path between *goal alignment* and SCE was statistically significant (p < .01) and in the hypothesised direction, supporting H1. As expected, *goal alignment* had a significant positive influence on SCE (β = .23, t = 2.70). The result is consistent with H1 that goal setting is positively associated with SCE.
6.10.2 Hypothesis 2

Hypothesis 2 examined the relationship between job satisfaction and SCE:

\[ H2: \text{Commitment to networking throughout a supply chain has a positive influence on SCE.} \]

In terms of the relationship between commitment to networking and SCE, the results indicated that commitment to networking was significantly and positively correlated with SCE. The path between commitment to networking and SCE was statistically significant (\( p < .01 \)) and in the hypothesised direction, supporting H2. As expected, commitment to networking had a significant positive influence on SCE (\( \beta = .19, \ t = 3.22 \)). The result is consistent with H2 that commitment to networking is positively associated with SCE.

6.10.3 Hypothesis 3

Hypothesis 3 investigated the relationship between decision-making and SCE:

\[ H3: \text{An effective decision-making mechanism has a positive influence on SCE.} \]

In terms of the relationship between decision-making and SCE, the results indicated that decision-making was significantly correlated with SCE. The path between decision-making and SCE was statistically significant (\( p < .01 \)) and in the hypothesised direction, supporting H3. As expected, decision-making had a significant positive influence on SCE (\( \beta = .12, \ t = 2.37 \)). The result is consistent with H3 that decision-making is positively associated with SCE.
6.11 Summary

This chapter offered findings from analysis of data related to dimensions of a strategic supply chain affecting SCE. The analysis focused on the adequacy of the acquired data and reported the procedures carried out to measure construct validity and reliability. To test the research hypotheses, PLS explored the relationships between three independent variables (i.e., goal alignment, commitment to networking and decision-making) and a dependent variable (i.e., SCE). The results of the SEM revealed that all three variables were statistically significant predictors of SCE. The results showed that the relationship between strategic supply chain dimensions (i.e., goal alignment, commitment to networking and decision-making) and SCE were in the expected direction. Thus, supply chains can obtain greater effectiveness when attention is given to setting common goals, commitment to networking and having a centralised decision-making process. In the next chapter, the results are discussed in detail within the context of prior research.
Chapter 7: Discussion

7.1 Introduction

Today, many organisations understand the significance of the effective implementation of SCM and begin to develop the required steps for advancement. Researchers have stressed a strong significant effect of dimensions of a strategic supply chain on SCP and the increasing importance of SCE. Despite progress in this field of research, there is still a gap in the literature with regards to SCE and associated dimensions of a strategic supply chain (see Section 1.2). Consequently, this study sought to develop an understanding on this issue by investigating the research question, ‘What are the effects of goal alignment, commitment to networking and decision-making on SCE?’ This chapter discusses the findings of this study in relation to the research question and begins by discussing the research question.

This research examined SCE with an emphasis on the contributing dimensions of a strategic supply chain that have, to date, received inadequate attention from researchers in the field. Consequently, several dimensions contributing to SCE were considered in the supply chain process. This research aimed to explore the effect of strategic supply chain dimensions on SCE. It employed a quantitative method, using a survey questionnaire to collect data from participating organisations in the UAE logistics and supply chain industry. The data collected were used to test this study’s hypotheses. It is essential to mention that all three proposed hypotheses were supported, indicating that within the UAE supply chain industry, dimensions of their strategic supply chain influenced SCE.
This research was concerned with potential relationships between three dimensions—goal alignment, commitment to networking and decision-making—of a strategic supply chain that were found to be highly associated with SCE. These dimensions were individually measured by previous supply chain researchers and adopted for this study. Four SCE elements—flexibility, cost, quality and delivery—were included in this study because they were found to be the most frequently adopted in the literature. Additionally, organisation size, organisation age and industry had been intensively used in previous SCM research as control variables and were included in this research. Based on the review of the relevant literature, the model in this research was constructed to structure the relationships between the key constructs in this study. In the proposed model, goal alignment, commitment to networking and decision-making were believed to play a key role in affecting SCE. The relationships between these variables were determined through testing of the research model. The results offer evidence of the significant effect of goal alignment, commitment to networking and decision-making on the SCE. Details of the key findings are presented in detail in the following sections.

7.2 Research Question

What are the effects of goal alignment, commitment to networking and decision-making on SCE?

The current study attempted to investigate the research question concerning the influence of goal alignment, commitment to networking and decision-making on SCE. Addressing this question advances the current understanding of dimensions of strategic supply chains and is expected to fill the research gap. The theoretical and practical research implications are presented in detail in the following sections.
7.3 Discussion of Findings

7.3.1 Goal Alignment

The literature supports a positive relationship between goal alignment and SCE (Deshpande 2012; Laihonen & Pekkola 2016; Miles & Snow 1978). Sahay and Mohan (2003) proposed that it is necessary for organisations to align their general business and supply chain strategies to ensure that both overall business and supply chain objectives are being achieved. This research proposed that goal alignment would be positively related to SCE. The finding of this research was consistent with the literature, confirming an established positive relationship between goal alignment and SCE. The results of the current study show that goal alignment was positively related to SCE (β = .23, p < .5).

Goal alignment had some effect on SCE, indicating that aligning the goals of organisations with the goals of a supply chain positively affects SCE. In this research, the result for goal alignment was consistent with the perspectives of both network and relationship marketing theory (Toften & Olsen 2003; Jraisat 2011). This research found that goal alignment had a significant effect on SCE. In fact, goal alignment was found to be the most influencing supply chain practice.

From the perspectives of both network and relationship marketing theory and as claimed by Jraisat (2011), clarifying the various dimensions of a strategic supply chain, including commitment and collaboration may be critical to investigate the relationships between supply chain members. To be more explicit, organisations that share and align their goals with other supply chain members will increase their SCE. This is consistent with previous research such as that recently reported by Laihonen and Pekkola (2016),
who proposed a strategic focus on a commitment to shared goals and a better understanding of the relation between individual goals and network-level strategies. This proves that goal alignment plays an important role in SCE and is a key aspect towards supply chain success. Bowersox et al. (1999) suggested that supply chain members need to have strategic alignment.

Empirically confirming the role goal alignment plays in SCE is unique to this study, supports the previous literature and adds empirical support to this relationship. The extant literature suggests that for organisations to ensure that both overall business and supply chain objectives are being achieved, it is essential for these organisations to align both of these strategies (Sahay & Mohan 2003). Miles and Snow (1978) argued that for organisational goals to be successfully implemented, these goals need to be consistent with an organisation’s environment. As suggested by the literature, these findings might be because determining the performance of a supply chain encourages consensus and alignment with its goals (Kaplan, Norton & Rugelsjoen 2010). Further, the function of a supply chain reinforces the principal issue of supply chain members, which is rectified through supply chain alignment and integration (Flynn et al. 2010).

7.3.2 Commitment to Networking

Many studies have shown that commitment to networking is critical to the alignment of a supply chain with shared objectives (Chandra et al. 2007; Chan & Chan 2009) and increases its effectiveness (Clark & Lee 2000; Min et al. 2005; Soosay et al. 2008). The literature demonstrates support for a positive relationship between commitment to networking and SCE (Deshpande 2012; Prahinski & Benton 2004; Sahay & Mohan 2003; Wu et al. 2004). The finding of this research is consistent with the literature, confirming the established relationship between commitment to networking and SCE.
Barringer and Harrison (2000) argued that despite the benefits of collaboration in a supply chain, many supply chain members fail to meet other members’ expectations. The coordination between supply chain members allows them to be flexible, adaptable and consistent but is found to be difficult, particularly in countries with developing economies (Deshpande 2012; Surana et al. 2005). However, the results of this study show that this was not the case. Commitment to networking was significantly related to SCE. Similar to goal alignment, from both a network and relationship marketing theory and as claimed by Jraisat (2011) and Mikkola (2008), clarifying the various dimensions, including commitment and collaboration is critical to investigate the relationships between supply chain members. Network relationships allow supply chain members to gain access to resources, resulting in long-term relationships (Mikkola 2008). The results of the study suggest that there was a significant relationship between commitment to networking and SCE. This result is not surprising because commitment to networking is regarded as essential and a key factor to effectively manage supply chain networks (Tyndall et al. 1998). Prahinski and Benton (2004) argued that for a supply chain to be successful, the members of that supply chain have to be committed to each other. Sahay and Mohan (2003) and Wu et al. (2004) suggested that the extent of both internal and external commitment throughout a supply chain decides its overall effectiveness. Moreover, researchers such as Clark and Lee (2000), Min et al. (2005) and Soosay et al. (2008) found that commitment in terms of collaboration in a supply chain increases its effectiveness. The result of this study suggests that commitment to networking plays a role in SCE. This result is unique to this study, supports the previous literature and adds empirical support to this relationship.

It is argued that many attributes, such as sharing information and synchronising decision-making, are repeatedly related to collaboration and commitment between
supply chain members (Cao & Zhang 2011; Simatupang & Sridharan 2005). Zsidisin and Ellram (2001) recommended that network relationships should be cultivated by frequent information flows. Xu and Beamon (2006) suggested that a coordination mechanism affects SCP; thus, members of a supply chain have to carefully choose these mechanisms.

7.3.3 Decision-Making

With regards to decision-making, Sahay and Mohan (2003) argued that in countries with developing economies, a centralised structure makes it a key operational challenge to achieve the goals of a supply chain. Decision-making is centralised when it is retained by top management. However, SCM decisions at an operational level are related to daily functions and if these decisions are centralised then supply chain members will not be able to make decisions in a fast and timely manner to handle local uncertainty. The literature supports a positive relationship between effective decision-making and SCE (Deshpande 2012; Sahay & Mohan 2003). Hence, this research proposed that decision-making would be positively related to SCE. This research found that decision-making had an effect on SCE, which is consistent with the literature (Deshpande 2012; Sahay & Mohan 2003).

In this study, decision-making was found to have an effect on SCE. From a game theory approach, the results of the study suggest that there was a significant positive relationship between decision-making and SCE. As suggested by Chicksand et al. (2012), a game theory approach justifies this relationship. This is not surprising because Sahay and Mohan (2003) argued that in countries with developing economies, a key challenge to operations is a centralised structure. The authors suggested that this might be because organisations fail to create independent and immediate decisions that
maximise the benefits to the organisation and effect other organisations. The centralisation of decision-making retains the power and authority to make decisions to top management and this does not support employee empowerment (Chopra & Meindl 2009). As a result, individuals in an organisation do not participate in the process of decision-making and are not supported to assess and report issues and matters in a critical manner (Deshpande 2012). Babbar et al. (2008) suggested that coordination among organisations and supply chains should be carefully orchestrated while they are configuring their facilities around the world. Decision-making in organisations could be categorised as centralised or decentralised and organisations should try to balance decision-making between centralised and decentralised organisations (Sabath & Autry 2001). However, if decision-making is not disseminated throughout an organisation in which lower and middle management are authorised to take responsibilities and make decisions then it is going to affect SCP. Making decisions in a timely manner is crucial for supply chain partners to maximise the benefits. Decentralised decision-making at an operational level is more effective and favoured for decision-making in a supply chain network (Abdul-Jalbar et al. 2003; Deshpande 2012). The role decision-making plays in SCE was empirically confirmed, which is unique to this study, supports the previous literature and adds empirical support to this relationship.

7.3.4 Supply Chain Effectiveness

Prior research has presented that the three dimensions of a strategic supply chain, namely goal alignment, commitment to networking and decision-making, have the potential to influence SCE (Deshpande 2012) but have not been investigated empirically. The results of this study suggest that these dimensions have variable effects on SCE. As predicted, SCE was positively influenced by goal alignment. SCE was influenced by commitment to networking and decision-making as well. The effect of
goal alignment on SCE was large (β = .23), confirming it is necessary for organisations to align both their general and supply chain goals to ensure that both the overall business and supply chain are effective. The effect of commitment to networking on SCE was positive (β = .19). This is consistent with the literature that commitment in terms of collaboration and networking throughout a supply chain increases its overall effectiveness (Clark and Lee 2000; Min et al. 2005; Sahay & Mohan 2003; Soosay et al. 2008; Wu et al. 2004). The effect of decision-making on SCE was positive (β = .12), confirming that if decision-making is not disseminated throughout an organisation at different levels then it will affect SCP (Deshpande 2012). The effect of goal alignment on SCE was stronger than the effects of commitment to networking or decision-making (β = .12). The overall effectiveness of a supply chain has been shown to be reduced if there is a lack of alignment between the goals of individual members and the whole supply chain (Deshpande 2012). Such results enhance the network and relationship marketing theories by proving that goal alignment is an important dimension of a strategic supply chain that affects SCE.

The overall results show that organisations need to better align their goals with supply chain goals. Organisations need to enhance their networking by collaborating closely with the other members of a supply chain and have a more effective decision-making mechanism to improve SCE. To be more explicit, supply chain members who share their goals and align them with other supply chain members’ goals positively influence the effectiveness of that supply chain. This indicates that if the goals of supply chain members and the overall goals of a supply chain are sufficiently aligned, SCP is in general more likely to be effective. Working together as a network was positively related to SCE. To be more explicit, supply chain members who work together as a network with other supply chain members positively influence the effectiveness of that
supply chain. This indicates that if supply chain members work together as a network, SCP is in general more likely to effective. Moreover, decision-making was also positively related to SCE. To be more explicit, members of a supply chain who have an effective decision-making process positively influence the effectiveness of that supply chain. This indicates that with an effective decision-making mechanism, the performance of that supply chain is in general more likely to effective. This is not surprising, as these dimensions of a strategic supply chain were found to be the most adopted SCP. Such results are consistent with the network, relationship marketing and game theories.

The results of this research offer a detailed understanding of the effects of strategic supply chain dimensions and practices by finding positive relationships between all three dimensions (i.e., goal alignment, commitment to networking and decision-making) and SCE. Being able to empirically test and prove the effects of these three dimensions is considered unique to this study. Further, this is considered the first study to test all three variables together. The output of this research presents researchers in the supply chain field with a novel way to measure SCE by establishing a model of dimensions of a strategic supply chain that contribute to SCE. A unique feature of this model is that it is the selection stage of these dimensions that drives SCE. A key contribution of this research is the development of a comprehensive theoretical framework and validation of hypotheses that recognise the relationships between strategic supply chain dimensions and SCE. The empirical results that the three dimensions had a direct effect on SCE support the network, relationship marketing, game and social capital theories. Hence, this research identifies that these theories can offer theoretical foundations to explain and illustrate how dimensions of a strategic supply chain influence SCE. Further, this
research offers a newly developed questionnaire with measuring scales for all three dimensions that were measured in this study.

7.4 Overall Discussion

The connection and shared dependence between collaborating organisations that operate in an industry and value creation is increasingly crucial to the existence and dynamism of organisations and industries and the competitiveness and economic development of various nations (Leonczuk 2016). This is essential for oil-reliant economies such as the UAE that seek to diversify and grow their economies, maximising their attractiveness and industry performance (eGovernment 2012). Organisations hardly succeed in isolation; rather, they are reliant on larger entities within their field of business (Deshpande 2012). It is obvious that UAE sectors have been successful because value creation has been dependent on an intensive infrastructure approach but this value might be critical, as it is replicable by other countries seeking to adapt a similar model (Frost & Sullivan 2011). It is on this premise that this research seeks to examine the role of goal alignment, commitment to networking and decision-making, emphasising the UAE supply chain and logistic sector.

The framework for this research was inspired by the network, game, relationship marketing and social capital theories that were used to support the understanding of the effect of SCM practices on SCE (Toften & Olsen 2003; Jraisat 2011; Chicksand et al. 2012). Goal alignment, commitment to networking and decision-making were the three SCM practices that were found to have the most potential to contribute to SCE and were included in this research. SCE remains a matter that has serious effects on both members of a supply chain and the supply chain as a whole (Singh 2016). Enhanced performance of supply chain members is important and a lack of effectiveness is an
issue because of its effect on the success of supply chain initiatives. The results of this research suggest that SCE was advanced when there existed a better alignment of goals, enhanced networking between supply chain members and an effective decision-making mechanism.

The results specify that dimensions of a strategic supply chain significantly influence its effectiveness. To make a supply chain effective, the focus should be on effective and efficient goal alignment, commitment to networking and decision-making. This can be realised by aligning an individual organisation’s goals with the goals of other supply chain members, working together as a network by collaborating and cooperating and having an effective decision-making mechanism. Researchers have argued that supply chain members need to have strategic alignment by aligning both their general business and supply chain strategies (Bowersox et al. 1999; Sahay & Mohan 2003). Many researchers considered commitment to networking in terms of collaboration a key dimension to effectively manage supply chain networks and to increase its effectiveness (Clark & Lee 2000; Min et al. 2005; Soosay et al. 2008; Tyndall et al. 1998; Prahinski & Benton 2004). Conversely, researchers such as Sahay and Mohan (2003) argued that a centralised structure makes it challenging to realise the goals of a supply chain.

Based on the research model, it is suggested that the use of dimensions of a strategic supply chain—goal alignment, commitment to networking and decision-making—increase SCE and, thus, enhance its performance. The findings of this research show that enhanced networking between supply chain members, an effective decision-making system and, most importantly, better alignment of goals, will enhance SCE. It is argued that for a supply chain to be effective, its members have to align their goals with the overall goals of the supply chain (Deshpande 2012). Realising long-term relationships between supply chain members as suggested by network and relationship marketing
theories will enhance commitment and collaboration (Jraisat 2011), which will enhance SCE (Babbar et al. 2008). Similarly, game theory justifies strategic decision-making between supply chain members (Chicksand et al. 2012). Having an effective decision-making mechanism will enhance decision-making and, consequently, SCE.

As discussed earlier, goal alignment and commitment to networking are the key to improving SCE and, thus, SCP. These two strategic supply chain dimensions added a distinctive variance to the results in relation to SCE. The findings of this study undoubtedly show that goal alignment and commitment to networking are significantly related to SCE, which affects overall SCP. Setting common goals, aligning individual goals and collaborating and cooperating effectively throughout a supply chain lead to enhanced SCE. This confirms the need for supply chain members to focus on goal alignment and commitment to networking to make their supply chain more effective, including those operating in the UAE.

As outlined in the literature review, there is scare research on strategic supply chain dimensions that contribute to SCE. This study enriches the body of knowledge by suggesting that dimensions of a strategic supply chain do affect SCE. This research also adds to the literature concerning supply chain practices, organisational factors (Bowersox et al. 1999; Clark & Lee 2000; Deshpande 2012; Min et al. 2005; Sahay & Mohan 2003; Soosay et al. 2008; Tyndall et al. 1998; Prahinski & Benton 2004), SCE (Leonczuk 2016; Gunasekaran et al. 2001; Kim et al. 2006; Kim & Lee 2010; Sharma & Yu 2010; Singh 2016) and SCP (Chan et al. 2003; Selviaridis & Norrman 2014; Banomyong & Supatn 2011; Grosvold, Hoejmose & Roehrich 2014; Arzu Akyuz & Erman Erkan 2010; May et al. 2014) by suggesting that critical to supply chain success is the recognition of which strategic supply chain dimensions are influential. The findings of this study extend the literature relating to dimensions of a strategic supply
chain by evidencing the significant role these practices play in affecting SCE. For example, to measure SCE, a full understanding is required of what dimensions of a strategic supply chain affect its effectiveness. Drawing on the network, relationship marketing, game and social capital theories, this research found that the key drivers of SCE were *goal alignment*, *commitment to networking* and *decision-making*. These findings echo Deshpande’s (2012) suggestion that dimensions of a strategic supply chain lead to improvement in SCE. According to the results of this study, the way to achieve this is by viewing the whole supply chain as one large entity. When all supply chain members work together with common goals, the chance for success increases. To be capable of working together as a network, collaboration between supply chain members is required because it permits long-lasting relationships and common goals. *Goal alignment* is critical, as it directs the efforts of supply chain members towards their common goals. Supply chain members who align their goals with other supply chain members’ goals work together as a network and have an effective *decision-making* mechanism. This will increase overall SCE, increase SCP and lead to improved chances of a successful supply chain.

It is significant to consider what factors enhance SCE. Several methods exist to select these key factors. In this study, three dimensions of a strategic supply chain were selected as good drivers of SCE—*goal alignment*, *commitment to networking* and *decision-making*—because they are all significant aspects of a supply chain and essential for a supply chain to be effective. Overall, the findings of this study support the role of dimensions of a strategic supply chain in enhancing SCE. The findings of this research furthers the network, game, relationship marketing and social capital theories that were used to support the understanding of the effect of SCM practices on SCE (Toften & Olsen 2003; Jraisat 2011; Chicksand et al. 2012).
In short, effective *goal alignment*, enhanced networking between members of a supply chain and a workplace free of a centralised *decision-making* system will help to develop SCE. Each of these strategic supply chain dimensions contribute to SCE and can be applied to the supply chain system. However, every dimension might not be suitable for each supply chain. The research framework is beneficial in identifying which supply chain attribute should be offered to enhance the performance of a supply chain. Further, the framework highlights that supply chain members need to consider these dimensions of to assess SCP. The findings indicate that this study’s model has key analytical ability for future work.

**7.5 Conclusion**

This chapter aimed to provide the main findings of this research and a thorough discussion of the findings. This study provided empirical support for the effect of dimensions of a strategic supply chain on SCE. In the next chapter, the conclusion, research contributions, limitations and future research directions are offered.
Chapter 8: Conclusions and Implications

8.1 Introduction

This chapter presents a summary of the study’s findings, a brief summary of the implications and contributions of the research. Then, the limitations of the study are discussed as well as avenues for future research. In the final section of this chapter, concluding remarks are provided.

8.2 Summary of Findings

This research was guided by the research objective to examine the effect of dimensions of a strategic supply chain on SCE. The following are the key findings attained from analysing the collected data. With regards to strategic supply chain dimensions, it was found that goal alignment, commitment to networking and decision-making were positively related to SCE. The results of this research indicate that participants perceived higher levels of goal alignment and commitment to networking compared to decision-making. Therefore, it is recommended that supply chain members should focus on quality and delivery aspects, as they are primarily used to meet SCE.

8.3 Contribution of the Research

This research addressed the gap in research regarding the use of performance information by emphasising knowledge processes. The findings were promising and verified the expected assumptions that goal alignment, commitment to networking and decision-making have an effect on SCE. The key contribution of the research is its analysis of these three dimensions on SCE. This study adds to the research area by
offering an explanation of the effect of dimensions of a strategic supply chain and its results extend on prior theoretical and empirical research initiatives.

Overall, the results show that *goal alignment, commitment to networking* and *decision-making* affect SCE. The discussion in Chapter 7 generally leads to several key conclusions. First, all three strategic supply chain dimensions had a significant effect on SCE. Second, these dimensions were found to be positively related to SCE. The alignment of goals between organisations and their supply chain was positively related to SCE and was the strongest of the three dimensions to affect SCE. To be more explicit, supply chain members who share and align their goals with other supply chain members positively influence the effectiveness of that supply chain.

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.

Collaboration can build and maintain competitive advantage but requires that all members are encouraged to advance SCP (Laihonen & Pekkola 2016). Despite its weaknesses, this research introduced evidence of the importance of dimensions of a strategic supply chain such as *goal alignment, commitment to networking* and *decision-making* in SCE.

### 8.4 Implications of the Study

Supply chain members must improve their SCM by putting greater effort into the implementation of key dimensions of a strategic supply chain that improve its overall effectiveness. Specifically, the practices of *goal alignment, commitment to networking*
and *decision-making* should be improved. The conceptual framework and empirical findings provided by this research not only advance the understanding of SCE but also offer direction for supply chain experts to enhance SCE through better *goal alignment*, improved networking through the chain and effective *decision-making*. Ketchen and Hult (2007) suggested that communication between supply chain members is increasingly significant to continue to be competitive in the market. The comparative level of SCE mainly relies on strategic supply chain dimensions. Supply chain managers need to align and share their goals with the other supply chain members. This ultimately identifies the relative SCE. The empirically tested framework points out the key attributes to consider when managing SCP and making decisions concerning the relative SCE.

The suggested framework has the potential to facilitate the development of a holistic view of a supply chain and measure its relative effectiveness, accounting for the empirical foundations of the relationships between its dimensions and effectiveness of its strategic supply. By linking dimensions of a strategic supply chain with SCE, the framework will assist supply chain practitioners to better understand the significance and difficulties of managing these dimensions.

**8.5 Limitations of the Research**

There were several possible limitations of the research. First, the research tried to set a preliminary theoretical base for mapping the effect of relative dimensions of a strategic supply chain on SCE. With regards to the methodology, the sample responses were from supply chain companies operating in Dubai only. The inclusion of companies from other emirates would have resulted in a more representative sample. Further,
quantitative data analysis is not enough for the findings to be generalised and utilisation of qualitative case studies could help triangulate the results of the study.

8.6 Future Research Directions

Several future research directions exist. The research findings suggest that direct relationships do exist between various practices of a supply chain and SCE however indirect relationships such as moderation and mediation can further enrich the findings. However, additional investigation is required to more thoroughly inspect the complexities of the relationships. Future research can be directed to developing an instrument to measure the comparative degree of SCE. Detailed discussions on dimensions of a strategic supply chain as presented in this research can facilitate the identification of potential measures for these dimensions. Innovative statistical methods, including SEM can be applied to recognise which attribute further influence SCE.

Future research will highly benefit from reviewing previous studies with respect to the determinants of supply chain strategy and its relationship with performance dimensions considered in this research study and in depth meta-analysis of theories considered to bridge the link between strategy, process and performance. Besides, the fact that the chosen dimensions are not exhaustive suggests that further research into strategic supply chain dimensions is required. Future research is also possible by extending the findings of this study to determine other aspects of SCE. Additionally, this study’s results offer valuable understanding for supply chain experts, who should focus on realising how to strategically manage a supply chain through goal alignment, enhanced networking and an effective decision-making system.
Many future research questions can arise to progress the understanding of SCE, such as, ‘Which dimensions of a strategic supply chain are more likely to have a strong effect on the level of SCE when they are interrelated?’ Furthermore, future research can consider arbitration of effectives in achieving certain dimensions and it advancement to conventional theories that has been previously studied to gain competitive advantage. Moreover, investigating the unique influence of each strategy attribute in supply chain effectiveness and supply chain performance is considered as another potential area for future research.

8.7 Conclusions

SCM represents a significant paradigm shift in modern business management by acknowledging that competition is no longer between organisations but, rather, supply chains (Lambert & Cooper 2000). It is imperative to investigate various strategic supply chain dimensions involved in SCP. This study has synthesised the large body of knowledge into external and internal dimensions affecting SCE. It has provided evidence that most supply chain literature has emphasised the importance of only few supply chain elements (Deshpande 2012). Therefore, understanding the real SCM dynamics is more complex than the literature has offered.

The comparative significance and interrelationships of different SCM initiatives, practices, activities and constructs as well as their direct effects on SCP in general and SCE in particular have not been adequately investigated and are not well understood. Yet to be fully adopted by supply chain members is the adoption of dimensions of a strategic supply chain as key practices that affect SCE. The conceptual framework offered in this research has provided a good basis for the theoretical development of alternative models, permitting academics to test relationships between the various
supply chain activities along with their effect on SCE. In terms of implications, for a supply chain to be implemented successfully, all parts of SCM should be completely embraced and recognised in the strategy. Finally, the theoretical framework combined with the MSEM model results provides SCM managers with a means for better supply chain decisions.

A comprehensive framework conceptualising SCE and the contributing dimensions of a strategic supply chain was presented in this research. This research extends the present supply chain literature on cooperation between supply chain members and stresses the necessity to investigate SCE. This contribution is significant with the advent of notions of SCM in the last two decades. Accordingly, the comparative level of effectiveness and related dynamics continue to be under-explored. To address this research gap, the present research accounted for the notion of effectiveness within the context of a supply chain. The suggested framework points out various attributes of a supply chain and future research could operationalise this to examine the comparative level of SCE.

The suitable selection of dimensions of a strategic supply chain that affect SCE could help to recognise problematic areas and is essential in managing supply chains in a turbulent environment and competitive global markets. In turn, this offers the required information for decision-makers. The suggested set of strategic supply chain dimensions—goal alignment, commitment to networking and decision-making—can be used to assess the effectiveness of a supply chain.
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Appendices

Appendix A: Multi-Level Structural Equation Modelling (MSEM)

DV: Supply Chain Effectiveness (SCE)

Quality
Q1: Product/service performance
Q2: Number of non-conformity
Q3: Conformance to design specs
Q4: Customer complaints
Q5: Time to solve customer complaints

Cost
C1: Supply Chain cost.
C2: Inventory turnover
C3: Capacity utilization
C4: Productivity
C5: Government incentives

Flexibility
F1: Service flexibility
F2: Product and Process flexibility
F3: Level of Customization
F4: Supply Chain agility
F5: Use of Technology
F6: Government rules and regulations

IV1: Alignment of Goals (AG)
AG1: lack of alignment
AG2: moderate alignment
AG3: perfect alignment

IV2: Commitment to Network (CN)
CN1: lack of commitment
CN2: moderate commitment
CN3: greater commitment

IV3: Decision Making (DM)
DM1: highly decentralized
DM2: mix decision making
DM3: highly centralized
Appendix B: The Questionnaire

Participant Information Sheet

Impact of Goals Alignment, Organizational Network and Decision Making on Supply Chain Effectiveness

PURPOSE OF THE RESEARCH
This study aims to investigate factors contributing to supply chain effectiveness. Particularly this study will investigate the impact of goals alignment, organizational network and decision making on supply chain effectiveness. The information provided to us will enable me to understand the factors contributing to supply chain effectiveness.

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METHOD AND DEMANDS ON PARTICIPANTS
If you choose to participate, you will be asked to spare up to 30 minutes of your time to complete the questionnaire. This questionnaire will require you to state your opinion on the factors contributing to supply chain effectiveness. This study aims to investigate factors contributing to supply chain effectiveness. It will investigate the impact of goals alignment, organizational network and decision making on supply chain effectiveness.
POSSIBLE RISKS, INCONVENIENCES & DISCOMFORTS

Apart from 30 minutes of your time, we can foresee no risks for you. Your involvement in this study is voluntary and you may withdraw your participation at any time during the survey without your responses being recorded. Once you have completed the survey your responses will be recorded and will not be able to be withdrawn. Should you decide not to participate in this study your decision will not influence your relationship with the University of Wollongong in Dubai and/or the researchers. Your survey responses will be anonymous and confidential and you will not be identified in any part of the research. Findings and results from the study will be published in scholarly journals. No identifying information will be published.

ETHICS REVIEW AND COMPLAINTS

This study has been reviewed by the Human Research Ethics Committee (Social Science, humanities and Behavioral science) of the University of Wollongong, Australia. If you have any concerns or complaints regarding the way this research has been conducted, you can contact the UoW Ethics Officer through phone at (02) 4221 4457 or by mail at rso-ethnic@uow.edu.au

INSTRUCTIONS FOR COMPLETING THIS SURVEY

1) Please answer all the survey questions to the best of your ability.
2) The written answers have been numbered opposite to each of the statements contained in the questionnaire by using the numbers from 1 to 5; kindly complete the questionnaire by choosing the number of the answer that suits each statement.
3) By completing this survey you consent to participate in this research.

DEFINITIONS

1) Supply Chain: Network of companies, organizations or independent business units (their facilities, functions, and activities), sharing production and delivery of a product or service, beginning with key raw materials supplier and ending with the final customer.
2) Goals Alignment: Setting organization’s goals in alignment with supply chain partners.
3) Organizational Networking: Organization’s commitment to networking with supply chain partners.
4) Decision Making: Degree to which authority and power to make decisions are retained to top management at organization.

Please ensure you answer all questions. برجي التأكد من الإجابة على جميع الأسئلة
**Part A: INFORMANT DATA**

**INSTRUCTION:** Please mark (X) in appropriate space provided.
Confidentiality is assured, and you will not be identified in any part of the research. No identifying information will be recorded or published.

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. **Education level**
   - □ Secondary school or less
   - □ Diploma
   - □ Higher Diploma
   - □ Bachelor degree
   - □ Postgraduate degree
   - □ Others (Please specify): ........................................

4. **Number of years the organization has been in existence?**
   - □ Less than 5 years
   - □ 5 – 10 years
   - □ 10 - 20 years
   - □ More than 20 years

5. **How long have you been working for the company? (Years)**
   - □ 1 year to below 5
   - □ 5 years to below 10
   - □ 10 years to below 15
   - □ 15 years to below 20
   - □ 20 years to below 25
   - □ 25 years or more

6. **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)
7. How long have you been working in the above position? (Years)
   - 1 year to below 5
   - 5 years to below 10
   - 10 years to below 15
   - 15 years to below 20
   - 20 years to below 25
   - 25 years or more

8. How many total employees are working in your company?
   - 1 – 100
   - 101 – 500
   - 501 – 1000
   - 1001 – 5000
   - 5001 – 10000
   - More than 10000

9. 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

10. What is the title of the most senior functionary in your supply chain department?
    - Manager
    - Senior Manager
    - Director
    - Vice President
    - Senior Vice President
    - Other (Please specify): ...........................................

11. Indicate the industry that best reflects your company’s operation?
    - Government Entity
    - Food and Beverage Products
    - Textile Products
    - Chemical and Allied Products
    - Petroleum Related Industries
    - Primary Metal Industries
    - Industrial and Commercial Machinery
    - Electronics and Allied Products
    - Automobile
    - Third Party Logistics
    - Retail
    - Other (Please specify): ..........................................

8. How many total employees are working in your company?
   - 100 – 1
   - 500 – 101
   - 1000 – 501
   - 5000 – 1001
   - 10000 – 5001
   - More than 10000

9. 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.
   - 10 – 1
   - 50 – 11
   - 100 – 51
   - 200 – 101
   - 500 – 2001
   - More than 500

10. What is the title of the most senior functionary in your supply chain department?
    - Manager
    - Senior Manager
    - Director
    - Vice President
    - Senior Vice President
    - Other (Please specify): ...........................................

11. Indicate the industry that best reflects your company’s operation?
    - Government Entity
    - Food and Beverage Products
    - Textile Products
    - Chemical and Allied Products
    - Petroleum Related Industries
    - Primary Metal Industries
    - Industrial and Commercial Machinery
    - Electronics and Allied Products
    - Automobile
    - Third Party Logistics
    - Retail
    - Other (Please specify): ..........................................

7. منذ متى وانت تعمل في الوظيفة أعلاه؟ (سنوات)
   - 1 سنة إلى أقل من 5 سنوات
   - 5 سنوات إلى أقل من 10 سنة
   - 10 سنة إلى أقل من 15 سنة
   - 15 سنة إلى أقل من 20 سنة
   - 20 سنة إلى أقل من 25 سنة
   - 25 سنة أو أكثر

8. كم العدد الإجمالي للموظفين العاملين في مؤسستك؟
   - 1 – 188
   - 181 – 1888
   - 1881 – 18888
   - 18818 – 188888
   - أكثر من 188888

9. كم عدد الموظفين الذين يعملون حاليا في قسم سلسلة التوريد ؟ إذا لم يكن لدى شركتك قسم سلسلة التوريد، يرجى الإشارة إلى عدد الموظفين الذين يقومون بأنشطة ذات الصلة بسلسلة التوريد.
   - 1 – 10
   - 11 – 50
   - 51 – 100
   - 101 – 200
   - 201 – 500
   - أكثر من 500

10. ما هو الاسم الوظيفي لاعلى منصب في إدارة سلسلة التوريد الخاصة بمؤسساتك؟
    - مدير
    - مدير أول
    - المدير
    - نائب الرئيس
    - نائب الرئيس الأول
    - أخرى (يرجى التحديد): ..........................................

11. حدد القطاع الذي يعكس مجال عمل مؤسستك؟
    - المؤسسات الحكومية
    - المواد الغذائية والمشروبات المنتجات
    - منتجات النسيج
    - المنتجات الكيميائية ومنتجات ذات صلة
      بترول والمنتجات ذات الصلة
    - صناعة المواد المعدنية الأولية
    - الصناعية والآلات التجارية
    - الإلكترونيات ومنتجات ذات صلة
    - السيارات
    - لوجستيات كطرف ثالث
    - التجارة
    - أخرى (يرجى التحديد): ........................................
**Part B: Please use the scale below to rate the statements that follow (circle the number of your choice on the scale).**

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strongly disagree</strong></td>
<td>Disagree</td>
<td>indifferent</td>
<td>agree</td>
<td>Strongly agree</td>
<td></td>
</tr>
<tr>
<td><strong>لا أوافق بشدة</strong></td>
<td>لا أوافق</td>
<td>محيد</td>
<td>أوافق</td>
<td>أوافق بشدة</td>
<td></td>
</tr>
</tbody>
</table>

A. **Goals setting and alignment:** This section relates to your company’s goals setting and alignment with your supply chain partners.

<p>| | | | | | |</p>
<table>
<thead>
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</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>Our organization shares our goals for business with supply chain partners</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>Our organization and supply chain partners often agree on what is in the best interest of the relationship</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td>Our organization is enthusiastic about pursuing collective goals and missions with supply chain partners</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>Our organization works together to achieve common goals with supply chain partners</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>Our organization measures our success as directly dependent upon the success of supply chain partners</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>6</strong></td>
<td>Our organization has compatible goals with supply chain partners</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>7</strong></td>
<td>Our organization goals are well aligned with overall supply chain goals</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>8</strong></td>
<td>There is a mismatch existing between our organization goals and supply chain goals</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>9</strong></td>
<td>Our organization’s top management has a clear understanding of supply chain needs and requirements</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>10</strong></td>
<td>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</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>11</strong></td>
<td>Our organization’s top management understands the value of supply chain processes and its outcome</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>12</strong></td>
<td>Organization’s goals have crucial effect on supply chain activities such as network, procurement and outsourcing decisions</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>
**B. Commitment to Networking:** This section relates to your company’s commitment to networking with your supply chain partners.

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Our organization relationship with the supply chain partners is long-term in nature.</td>
</tr>
<tr>
<td>4</td>
<td>Our organization has a strong sense of loyalty to the supply chain partners.</td>
</tr>
<tr>
<td>3</td>
<td>Our organization have a cooperative relationship with the supply chain partners.</td>
</tr>
<tr>
<td>2</td>
<td>Our organization and supply chain partners have frequent contacts on a regular basis.</td>
</tr>
<tr>
<td>1</td>
<td>Our organization and supply chain partners share criteria to evaluate performance.</td>
</tr>
</tbody>
</table>
|     | | **Notes:**
| 6     | Commitment to Networking: Our organization and supply chain partners jointly work on promotional events, demand forecasts, inventory, etc.  
| 7     | Our organization and supply chain partners share performance evaluate. |
| 8     | Our organization do not mislead supply chain partners. |
| 9     | Our organization keeps its word with supply chain partners. |
| 10    | Our organization negotiates fairly with supply chain partners by following ethics. |
| 11    | Our supply chain partners do not always share sufficient information. |
| 12    | Our organization view supply chain partner as our ally against competition. |
| 13    | Our organization believes supply chain partner’s behavior is trustworthy. |
| 14    | Our organization’s top management get involved in the collaboration process with supply chain partners. |
| 15    | Our organization considers supply chain partners important. |
| 16    | Our organization is committed to the relationship with supply chain partners. |
| 17    | Our organization intends to keep good (long term) relationships with supply chain partners. |
| 18    | Our organization shares very little internal information with supply chain partners. |
| 19    | Successful long-term relationships are dependent on trust and commitment to networking between supply chain members. |
| 20    | Supply chain members should dedicate efforts to sustain quality supply chain relationship. |
| 21    | The extent of commitment throughout the supply chain decides the overall supply chain effectiveness. |
| 22    | It is essential for organizations to show a sincere commitment towards their various supply chain partners. |
| 23    | Supply chain partners have to be committed to each other for their supply chains to be successful. |

**Note:** This section relates to your company’s commitment to networking with your supply chain partners. It is essential for organizations to show a sincere commitment towards their various supply chain partners, especially in long-term relationships. Our organization is committed to the relationship with supply chain partners and shares criteria to evaluate performance. We believe in the importance of our supply chain partners and consider them our allies against competition. We keep our word with supply chain partners, negotiate fairly, and do not mislead them. Our organization’s top management is involved in the collaboration process, and we share enough information with our supply chain partners. Successful long-term relationships depend on trust and commitment to networking between supply chain members.
C. Degree of decision making: This section relates to the degree to which authority and power to make decisions are retained to top management at your organization.

<table>
<thead>
<tr>
<th>Number</th>
<th>Statement</th>
<th>Rating</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>It is essential for organizations to have centralized decision making having focus on win-win scenario</td>
<td></td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>The authority makes decisions for various functions in the supply chain</td>
<td></td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>It is essential for organizations to have highly decentralized decision making however the common goals to be taken into consideration</td>
<td></td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>The authority and power to make decisions for various functions in the supply chain department should be retained by top management</td>
<td></td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Supply chain management decisions could be generally classified as strategic long-term decisions that link to overall corporate strategy</td>
<td></td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Our organization has centralized decision making authority for various functions including supply chain management</td>
<td></td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Final decisions concerning supply chain management should be retained by the top management</td>
<td></td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Our organization’s strategy is usually decided by senior executives</td>
<td></td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Our organization’s strategy is usually made in consultation with functional managers</td>
<td></td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>All staff in our organization are involved in the strategy process to some degree</td>
<td></td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>All staff in our organization are involved in the decision making process to some degree</td>
<td></td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Most staff in our organization have input into decisions that directly affect them</td>
<td></td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
D. Below are elements that can indicate overall supply chain effectiveness. In your opinion, which of the following are the main elements that reflect supply chain effectiveness? On a scale of 1=least significant to 5=most significant, please indicate the degree of importance of each statement (circle the number of your choice on the scale).

<table>
<thead>
<tr>
<th>Flexibility</th>
<th>مرونة</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service flexibility</td>
<td>5</td>
</tr>
<tr>
<td>Product &amp; process flexibility</td>
<td>4</td>
</tr>
<tr>
<td>Level of customization</td>
<td>3</td>
</tr>
<tr>
<td>Supply chain flexibility</td>
<td>2</td>
</tr>
<tr>
<td>Supply chain agility</td>
<td>1</td>
</tr>
<tr>
<td>Use of technology</td>
<td></td>
</tr>
<tr>
<td>Government rules &amp; regulations</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quality</th>
<th>الجودة</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product/ Service performance</td>
<td>8</td>
</tr>
<tr>
<td>Number of non-conformity</td>
<td>9</td>
</tr>
<tr>
<td>Conformance to design specification</td>
<td>10</td>
</tr>
<tr>
<td>Customer complaints</td>
<td>11</td>
</tr>
<tr>
<td>Time to solve customer complaints</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost</th>
<th>التكلفة</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply chain cost</td>
<td>13</td>
</tr>
<tr>
<td>Inventory turnover</td>
<td>14</td>
</tr>
<tr>
<td>Capacity utilization</td>
<td>15</td>
</tr>
<tr>
<td>Productivity</td>
<td>16</td>
</tr>
<tr>
<td>Government incentives</td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Delivery</th>
<th>التسليم</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery performance</td>
<td>18</td>
</tr>
<tr>
<td>On-time delivery</td>
<td>19</td>
</tr>
<tr>
<td>Delivery delay</td>
<td>20</td>
</tr>
<tr>
<td>Access to market</td>
<td>21</td>
</tr>
<tr>
<td>Customer order processing time</td>
<td>22</td>
</tr>
</tbody>
</table>

Thank you very much for taking the time to complete this survey. Your help in providing this information is greatly appreciated. If there is anything else you would like to tell us about please do so in the space provided below.

Thank you for your time and co-operation in completing this survey.