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**Supply Chain Ambidexterity and Sustainability SCM: Moderator
Role of Knowledge Network Capability**



By:

Ma Liya

010-322212-010

Supervisor:

Asima Saleem

Department of Business Studies

Bahria University Islamabad

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Abstract

Purpose

This study seeks to evaluate the influence of knowledge network capability on supply chain ambidexterity and sustainability within Pakistan's agricultural sector. The research aims to identify the key variables that contribute to improving supply chain performance in this specific industry. Sustainability supply chain management (SCM) is the primary dependent variable under investigation, while the independent variables encompass supply chain exploitation and exploration. Additionally, the study explores the role of moderating as knowledge network capability within this relationship.

Design and Methodology

For the research, a quantitative research method was utilized, and data was gathered through distribution from questionnaire to agricultural professionals in Islamabad, employing random sampling techniques. A total of 100 respondents took part in the research. The collected data was subjected to statistical analysis, including descriptive, correlation and regression analysis, which were conducted using SPSS software.

Findings

The study's outcome demonstrate that both supply chain exploitation and exploration exert significant influences on sustainability in the supply chain of the agricultural. Supply chain exploitation encompasses the effective utilization of existing resources and capabilities, whereas supply chain exploration involves the pursuit on novel opportunities as well as the adoption of innovative practices. These dimensions are instrumental in advancing sustainability in the agricultural sector.

Practical Implication

By investing in knowledge network capability, organizations can leverage collaborative networks to foster innovation and improve supply chain ambidexterity. Policymakers and industry associations can also play a role by supporting initiatives that promote sustainable practices and providing resources and incentives for agricultural organizations to adopt these practices.

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Chapter 1

Introduction

1.1 Introduction

The simultaneous pursuit of gains from supply chain exploitation and exploration is referred to as supply chain ambidexterity. Achieving a suitable balance between these two strategies is crucial for firms to effectively address uncertainty, avoiding excessive reliance on outdated exploitation practices or solely relying on exploration processes.(Levinthal,1993).Exploitation entails optimising operational procedures by getting rid of unnecessary steps and enhancing supply chain technology effectiveness. On the other side, exploration means actively looking for fresh possibilities and creative responses to supply chain problems.(Kristal,2010). A business that mainly relies on exploitation may reap short-term rewards by efficiently using its available resources. However, placing too much emphasis on exploration can lead to instability as it may struggle to adapt to frequent changes and fail to embrace them (Levinthal,1993). Previous research has looked at the importance and effects of organisational ambidexterity on a number of crucial areas, including the discovery of new information. (Borzillo, 2012), improving firm performance (Junni, 2013), and innovation in product design and manufacturing (Zhang, X, 2014). Additionally, researchers have concentrated on relative ambidexterity and the conceptual nature of organisational ambidexterity and its relationship to innovation (Parikh, 2016) as well as relative ambidexterity (D'Souza, 2017).

According to the triple bottom line (TBL) concepts of economic, social, and environmental dimensions, sustainable supply chain management (SSCM) entails the efficient management of material, information, and capital movement among supply chain participants(Seuring and Muller, 2008). Extensive research has been conducted on SSCM, exploring its various aspects and dimensions (Ansari 2017; Brandenburg, 2014). However, supply chains are exposed to a number of dangers because of the complex and changing global economic environment. (Munir et al., 2020). Given the sustainability problems involved, researchers have emphasised the significance of creating interconnected systems that can proactively address, adjust to, heal from, and change to these threats (Linkov et al., 2018).

1.2 Research Background and Context

1.2.1 SC Ambidexterity and SSCM

According to two approaches that include both exploitation and exploration (Cao et al., 2009; He and Wong, 2004), integrated ambidexterity as well as balanced ambidexterity can be used to describe the idea of ambidexterity in the literature. Organisational flexibility was described by Patel et al. (2012) as the coordinated pursuit of both exploration as well as extraction activities. Exploitation seeks to improve on already-existing instruments and technologies, whereas exploration concentrates on acquiring a wide range of data and expertise to promote organisational growth (Guan and Liu, 2016; Phelps, 2010; Yan 2018). They discovered that the entrepreneurial mindsets and market orientations of medium- and small-sized businesses have a higher influence on exploratory activities than they do on exploitative ones. Gomes et al. (2020) explored how ambidextrous quality management practices, encompassing both exploitation and exploration, contribute to environmental sustainability in production. Their findings highlighted the significance of quality management ambidexterity in enhancing organizational capabilities and achieving sustainability goals.

According to earlier studies, SSCM combines supply chain management and sustainable concept. (Masoumik 2012; Searcy, 2013; Morali 2013). However, research specifically limitations of concentrating on developing nations given the relatively underdeveloped nature of SSCM practices in these contexts (Min, 2011; Esfahbodi et al., 2016; Moneim, 2016). According to Silvestre (2015), supply networks in economies that are developing or emerging confront more sustainability challenges than those in industrialised nations. However, strengthening the sustainability of supply chains in developing nations is crucial for efforts to promote global sustainability considering their large representation among developing nations. These studies explore various SSCM practices adopted by firms and examine their impact on economic, governance, and social performance.

According to Klassen and Vereecke (2012) and Yawar and Seuring (2018), socially sustainable supply chain management (SSCM) behaviours are the methods and actions used by purchasing organisations to persuade their suppliers to work towards accomplishing social goals. The governance of global supply chains often involves managing operations remotely, but in the pursuit of sustainability and effective governance, certain initiatives seek to reduce geographical distances by shortening supply chains. This shift towards localization is exemplified by the

concept of eco-branding, as discussed by Chkanikova and Lehner. Eco-branding initiatives often involve sourcing products directly from local farmers, simplifying supply chains, improving communication with suppliers, and enhancing traceability.

According to Fabbe-Costes (2011), Brandenburg et al. (2014), and Schaltegger et al. (2016), interactions between organisations at the intra- and inter-organizational phases, involving the movement of products and financial resources within the boundaries of organisations, determine the economic sustainability of supply chains. However, the cost of delay has been rising, which has exacerbated problems with worldwide production and company connections as well as caused sharp rises in economic losses (Hughes et al., 2019; Senyo et al., 2019). In order to minimize the effects of disruptions and achieve economic and benefits in the marketplace, organisations are encouraged to adopt an inter-organizational orientation, focusing on processes that foster integration and resilience across supply chains (Saenz, 2017). Investing in the development of new product designs, innovative manufacturing models, and capacity to oversee new processes and technology reconfigurations can contribute to economic benefits (Smeda, 2017; Hajli et al., 2020). Companies should possess a thorough understanding of information technologies and technical architectures to harness their economic potential. Additionally, new business models should be formulated to create enhanced value across multiple dimensions. To thrive in today's dynamic business environment, organizations must move beyond traditional approaches and embrace innovative strategies that drive value creation in diverse ways.

1.2.2 The Moderator Role of Knowledge Network Capability(KNC)

According to Attia and Salama (2018), knowledge acquisition refers to the procedures used by an organisation to collect, extract, and arrange knowledge from multiple sources. Employees typically learn from inside sources like colleagues and coworkers, emphasising the value of good interpersonal relationships in boosting productivity(Qasrawi et al., 2017). Additionally, knowledge acquisition from external sources, including customers, competitors, suppliers, partners, and experts, allows organizations to understand customer needs, improve products and services, and ultimately achieve customer satisfaction for enhanced economic sustainability (Mothe et al., 2017; Wijethilake, 2017). An organization's financial performance is positively impacted by its capacity to learn and assimilate new information (Shahzad et al., 2019). Utilizing acquired knowledge in operations is crucial for firms to achieve their sustainable development

goals (Sztangret, 2017). By actively acquiring knowledge from both internal and external sources, organizations can leverage valuable insights to drive innovation, improve decision-making, and ultimately enhance their economic sustainability.

Sharing knowledge is a vital process in organizations that contains the communication of explicit or tacit knowledge to individuals or groups (Jarrahi, 2018). It facilitates problem-solving, fosters creativity, and supports decision-making and learning environments within the organization (Attia and Salama, 2018; Bratianu and Bolisani, 2018). Organisations can improve workers' explicit and tacit knowledge by encouraging information sharing, which decreases errors, increases operational effectiveness, as well as strengthens their financial viability (Maravilha and Martin, 2019). Knowledge sharing is seen as an ethical obligation by forward-thinking businesses, and they actively take part in initiatives to raise awareness (Khodadadi and Feizi, 2015). Learning organisations share their experimental findings openly for others to use creatively in the pursuit of communal innovation and a mutually beneficial culture (Al-Busaidi and Olfman, 2017). To enhance transparency and build customer trust, some businesses additionally provide specifics of their manufacturing procedures (Lucas, 2019).

The research findings show that knowledge storage has an important effect on supplier orientation in sustainable supply chains. Enterprises' storage knowledge, which viewed as a component of their the use of computers applications, enables them to organize and archive scattered data and information. This stored data not only facilitates effective communication with supply chain partners but also drives product and service innovation, thereby improving business performance and maintaining competitiveness.

1.3 Scope of the Study

The purpose of this study was to look into the idea of chain of custody ambidexterity and how it affects the management of sustainable supply chains in the agricultural industry. It specifically examined the three KNC dimensions of knowledge acquisition, knowledge sharing, and knowledge storage, as well as their impact on the supply chain's environmental, social, and economic performance. The moderating effect of KNC on the association between SC ambidexterity and SSCM was also investigated in the study. By examining these relationships, the study aimed to contribute to a deeper understanding of how KNC can enhance the SSCM in the agricultural context.

1.4 Statement of Research Problem

The idea of ambidexterity, encompassing on exploration and exploitation, is crucial for achieving long-term sustainability in supply chain management (SCM) (O'Reilly 2013; Yang 2014). While prior research has identified the importance of supply chain (SC) ambidexterity management operations (Blome, 2013; Aslam , 2018), disruption's relevance to sustainable supply chain management (SSCM) ambidexterity remains underexplored. The existing SC is inadequate in fully leveraging the benefits of SC ambidexterity, and limited attention has been given to the trade-offs involved in resolving these issues in the written word (Wamba et al., 2020). Studies examining beyond SSCM, disruption and ambidexterity are scarce, and the consequences can be particularly severe if disruptions are not adequately addressed (Rha, 2016; Quaddus, 2017). Therefore, there is an urgent need for a thorough, integrative evaluation to expand the current literature. This research aims to provide a literature review that is motivated by data offers a comprehensive overview of SSCM in relation to Unpredictability and ambidexterity, revealing barriers and potential for improvement.

Efficient knowledge management (KM) enables the storage and utilization of experience and best practices across supply chain operations. KM does a crucial role in driving supply chain development and facilitating innovation in supply chain management (SCM). However, managing the exchange of information between diverse groupings of partners within an organization or across the supply chain can be challenging (Samuel, 2011). A sustainable competitive advantage in the global market is now the capacity to swiftly and effectively develop, combine, configure, and exchange information (Sambasivan et al., 2009). Firms must have information about the many aspects of their supply chains in order to achieve SCM goals. The performance of the entire supply chain can be greatly impacted by the partners' lack of understanding. Therefore, fostering a culture of knowledge sharing and collaboration is essential for achieving sustainable SCM outcomes.

1.5 Research Questions

By analysing the impact of KNC on the relationship between SC ambidexterity and SSCM, this research intends to advance existing knowledge by examining the function of supply chain ambidexterity in supporting SSCM. The following research questions will be the primary focus of the study in order to fill the gaps in the literature:

1. What is the relationship between SC exploitation and SC performance ?
2. What is the relationship between SC exploration and SC performance ?
3. What is the relationship between KNC moderator and SC exploitation and SC performance ?
4. What is the relationship between KNC moderator the SC exploration and SC performance ?

1.6 Research Objectives

The next list of specific research goals is based on the study's overarching goal and research questions:

1. To explore the relationship between SC exploitation and SC performance.
2. To explore the relationship between SC exploration and SC performance.
3. To investigate the relationship between KNC moderator and SC exploitation and SC performance.
4. To investigate the relationship between KNC moderator the SC exploration and SC performance.

1.7 Research Hypothesis

H1: SC exploitation has significant impact on SC performance.

H2: SC exploration has significant impact on SC performance.

H3: KNC moderator has significant impact between SC exploitation and SC performance.

H4: KNC moderator has significant impact between SC exploration and SC performance.

1.8 Research Gaps

The concept of ambidexterity encompasses both exploration and exploitation in order to achieve long-term supply chain (SC) sustainability (O'Reilly and Tushman, 2011; Yang et al., 2014). While previous studies have recognized the importance of SC ambidexterity in operations management (Blome et al., 2013; Aslam et al., 2018), the relationship between disruption and ambidexterity in sustainable supply chain management (SSCM) has not been fully explored. The existing SC framework is insufficient to fully leverage the benefits of SC ambidexterity, and the literature lacks comprehensive solutions to address these challenges (Wamba et al., 2020).

Additionally, research on disruption and ambidexterity beyond SSCM is limited, and the consequences of disruptions can be more severe when organizations are not adequately informed (Lee and Rha, 2016; Chowdhury & Quaddus, 2017). Therefore, there is an urgent need for a comprehensive integrated assessment to extend the current literature. This study aims to provide a data-driven literature review that offers a clear overview of SSCM in relation to disruption and ambidexterity, thus revealing the factors that hinder enhancement in this area.

It is significant to notice some restrictions that this research study faced, particularly when attempting to measure supply chain ambidexterity. Due to the possibility that the effects of supply chain ambidexterity may not be equally distributed between both exploration and exploitation, the study was unable to examine the differential impact of ambidexterity on Global Supply Chain Management (GSCM). The research was unable to determine the degree of differentiation among the two processes in supply chain ambidexterity since it treated it as a single construct. To facilitate a more thorough examination, future scholars may think about treating supply chain ambidexterity as a first-order construct. Additionally, there exist conflicting viewpoints among researchers regarding the concept of ambidexterity, including the dynamic versus static perspective (Khan, 2021).

The connection between supply chain financing and long-term supply chain management (SCM) in the context of disruptions and ambidexterity during crises remains unclear and requires further comprehensive investigation. The limited number of studies addressing this relationship can be attributed to the relative novelty of the concept, which has yet to garner significant attention. While studies on goods and information flow management within the supply chain have been more prevalent, finance stream management ideas and practises in SSCM fall behind. (Wang et al., 2019).

It is crucial to recognize that effective management of financial flows is essential for ensuring uninterrupted goods flow along the supply chain. Insufficient management of financial flows can lead to disruptions and hinder the smooth flow of goods (Wuttke et al., 2013). In future studies, it is recommended to explore cooperation and coordination across supply chain partners in financial stream, over instance, advance payment funding, to better understand their impact on SSCM.

Technological advancements play a significant role in empowering integration and innovation in the supply chain, including in the field of the supply chain finance. Embracing technological advances such as the Internet of Items, cloud computing, big data, and cryptocurrencies opens up several options to improve financial flows throughout the supply chain.(Chen et al., 2020b). These technology innovations have the potential to increase income generation while also contributing to the overall enhancement of the supply-side finance system.

In summary, more research is required to investigate the connection between supply chain funding, SSCM, and disruptions, and ambidexterity during crises. Advancing our understanding in this area will lead to improved financial flow management throughout the supply chain, ultimately enhancing sustainability and contributing to overall economic growth and resilience.

1.9 Research Contributions

The purpose of this study is to provide a contribution by investigating the interrelationships across various traits in the backdrop of supply chain ambidexterity with sustainable supply chain management. It will concentrate on three essential elements in particular: knowledge network capability, information acquisition, knowledge storage, as well as knowledge sharing.

By investigating these dimensions, the study seeks to uncover how they are interconnected and how they collectively influence the development of the supply chain ambidexterity and practises for sustainability. It will explore how organizations' ability to establish and leverage a knowledge network, acquire relevant knowledge, store and manage knowledge effectively, and facilitate knowledge sharing impacts their capacity to accomplish ambidexterity in supply chain activities. Additionally, the study will draw attention to the relevance of these elements in fostering sustainable supply chain practises.

This study will add to the existing body of knowledge by explaining the links between knowledge network capabilities, knowledge acquisition, knowledge storage, information sharing, supply chain ambidexterity, and the sustainability of supply chain management. It will provide you a thorough grasp of how these dimensions interact and their importance in achieving successful supply chain outcomes. The findings will offer practical implications for organizations aiming to enhance their supply chain performance and sustainability by leveraging knowledge-related practices.

Theory contribution

Theory contribution observed in the following aspects:

Advancing the Theory of SC Ambidexterity: This work contributes to the advancement of SC ambidexterity theory by giving tangible proof of the relationship amongst SC ambidexterity with sustainability. The research additionally highlights the essential function of knowledge network capability being a moderator across the two dimensions, providing a more nuanced view of how SC ambidexterity promotes sustainability.

Expanding the Conceptualization of Sustainability in SCM: The study expands the conceptualization of sustainability in SCM by highlighting the organisations must participate in both exploratory and exploitative to do activities promote sustainability. The study suggests that sustainability in SCM is not just about reducing environmental impacts but also about achieving both economic and social sustainability through a balanced approach to innovation and efficiency.

Advancing the Concept of Knowledge Network Capability (KNC): This research advances the idea of KNC by emphasising its role of a moderator in the interaction between supply chain ambidexterity with sustainability. According to the findings, KNC is critical in helping organisations to properly balance exploratory and exploitative operations while encouraging sustainability in their supply chains. The study enhances our awareness of the way knowledge-related competencies can promote supply chain performance and sustainability by throwing light on the role of KNC.

Providing a Framework for Understanding the Relationship: Furthermore, this study offers a framework that enhances our comprehension of intricate the supply chain's relationship ambidexterity, sustainability, KNC. The framework serves as a guide for future research endeavors, providing a structured approach for investigating and analyzing the interplay among these critical dimensions. It provides a detailed perspective which can aid Practitioners and academics collaborate to create strategies and interventions to improve the efficiency of supply chains and sustainability.

By advancing the concept of KNC and providing a framework for understanding the connection between supply chain ambidexterity and, sustainability, KNC, the study contributes to the existing knowledge base in the subject of supply chain management. It offers valuable insights

and directions for further research, facilitating the development of effective practices and strategies to achieve sustainable and resilient supply chains.

Practical study significance

The practical significance of this research can be observed through the following investigation contributions:

Enhancing Supply Chain Performance: The study advances to the supply chain management literature through offering substantial insight into the variables that determine supply chain performance. According to the study, businesses may improve their supply chain performance by investigating the links between supply chain ambidexterity, sustainability, as well as network competency. This information can assist managers to make more educated decisions to enhance their supply chain operations and overall performance.

Understanding the Importance of Knowledge Network Capability: The research illuminates the essential function of knowledge network capabilities in promoting the link of supply chain ambidexterity and sustainability. It emphasises the importance of organisations developing and maintaining strong knowledge networks to enable equally exploratory and exploitative operations while ensuring supply chain sustainability. This insight can assist organisations in prioritising the development of knowledge network capabilities and allocating resources accordingly in order to maximise supply chain performance.

Providing Insights for the Managers: The study's findings have practical relevance for managers looking to improve supply chain effectiveness. This research suggests that the managers should target on fostering robust knowledge network capabilities within their organizations to enable effective knowledge acquisition, sharing, and storage. By doing so, managers can promote supply chain ambidexterity and sustainability, leading to improved overall performance and competitiveness.

Suggesting Future Research Directions: The paper suggests numerous potential research paths to help us better understand the impact of knowledge network capacity for supply chain ambidexterity and sustainability. It emphasises the importance of additional empirical investigations to validate and extend the conclusions of this study. Additionally, this research emphasizes the significance of developing clear and consistent measures for assessing supply chain ambidexterity, sustainability, and knowledge network capability in future research

endeavors. These suggestions can guide future researchers in conducting in-depth investigations and expanding the knowledge base in the subject of supply chain management.

Overall, the study provides practical insights and suggestions that can assist managers in making informed decisions, improving supply chain performance, and fostering sustainability. It also offers valuable directions for future research, driving further exploration and understanding of the complex dynamics within supply chain management.

Industry implications

Agriculture is important in Pakistan's economy, generating a considerable share of that country's GDP and employing a significant section of the people. However, the agricultural sector faces challenges related to fluctuating demand and prices for fresh produce, as well as increasing consumer concerns about food safety. Therefore, it is crucial to explore the connection between supply chain ambidexterity, sustainability in the supply chain management, as well as the function of knowledge network capability in the agricultural sector of Pakistan.

The goal of this research is to analyse and comprehend how supply chain ambidexterity and supply chain sustainability are interconnected in the context of Pakistan's agriculture sector. Furthermore, the study intends to investigate the potential moderating influence of knowledge network capability in this connection. The ability of organisations in the agriculture industry to build and exploit networks of knowledge and experience, enabling innovation and continuous improvement in supply chain management practises, is referred to as knowledge network capability.

A quantitative method of investigation will be used to attain these study aims. Data will be obtained from agricultural supply chain professionals across Pakistan and analysed using structural equation modelling methodologies. This study aims to contribute to the theoretical understanding of these ideas in Pakistan's agriculture sector by exploring the relationship amongst supply chain ambidexterity, sustainability in supply chain management, and the mediating function of knowledge network capabilities.

The study's conclusions will have practical ramifications for agriculture-related businesses. The findings of this study can assist these organisations in developing strategies to attain supply chain ambidexterity and sustainability in their supply chain oversight practises. Organisations

can improve their competitiveness, profitability, and general sustainability by implementing such techniques, thereby benefiting the agriculture industry as a whole.

1.10 Rational of Study

The study attempts to fill a research vacuum in the body of literature by exploring the relationship between supply chain ambidexterity, which involves the pursuit of exploratory with exploitative tactics at the same time, and supply chain sustainability. It aims to shed light on how organisations can effectively combine economic, social, and environmental goals in their supply chain management practises to attain sustainability.

Furthermore, the study aims to examine the moderator role of the knowledge network capability in this connection. It recognizes that knowledge sharing, collaboration, and the development of robust networks are crucial for organizations to implement sustainable practices throughout their supply chains. By exploring how knowledge network capability influences the link among supply chain ambidexterity with sustainability, the research can provide valuable insights into the mechanisms through which firms can achieve SSCM.

This study holds significant importance as organizations worldwide are increasingly recognizing the need for SSCM. To remain competitive with meet expectations of various stakeholders, firms must adopt strategies that allow them to include sustainability principles into the supply chain activities. By understanding the affect of supply chain ambidexterity and as knowledge network capability, organizations can develop effective strategies that create long-term value and contribute to the achievement of sustainability goals.

1.11 Significance of study

This study on "Supply Chain Ambidexterity and Sustainability SCM: Moderator Role of Knowledge Network Capability" holds substantial implications for firms aiming to achieve sustainable supply chain management (SCM) while effectively balancing explorative and exploitative strategies. The important of the research can be observed in the below ways:

Enhancing Firms' Competitiveness: By providing insights into the integration of exploration, exploitation, and sustainability in supply chain strategies, the study enables firms to improve their competitiveness. Firms that can effectively balance these dimensions can gain a competitive edge in the market and differentiate themselves from their competitors.

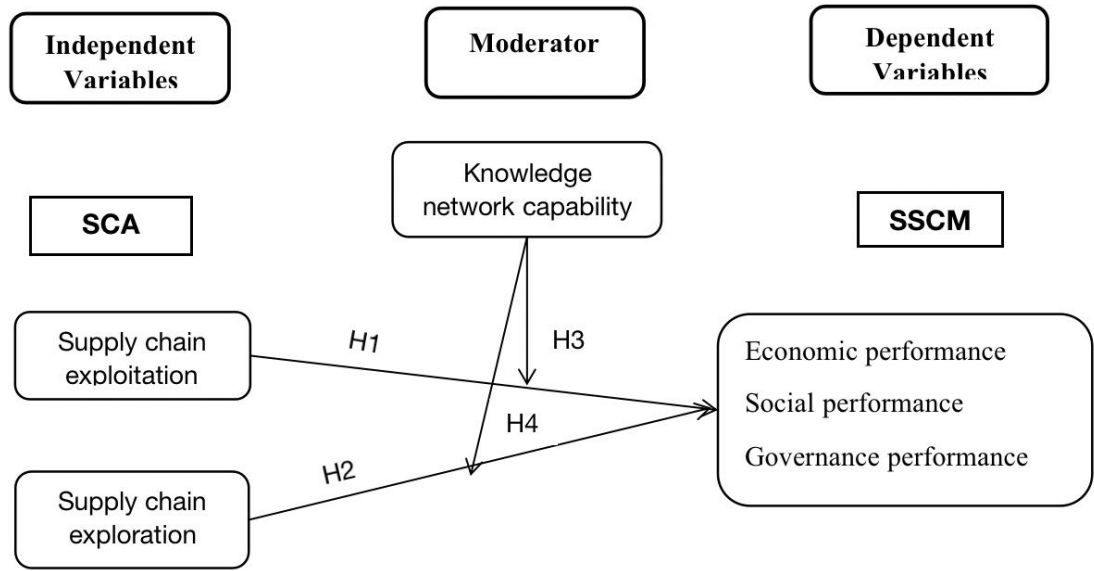
Improving Supply Chain Performance: The study's findings contribute to improving supply chain performance by guiding firms towards achieving sustainable SCM. By adopting supply chain ambidexterity and knowledge network capability, firms can enhance their operational efficiency, responsiveness, and overall performance, resulting in better customer satisfaction and cost-effectiveness.

Addressing the Sustainability Challenge: Sustainable SCM is a critical challenge faced by firms globally. This study addresses this challenge by offering insights into how firms can successfully integrate sustainability practises throughout their supplier networks while pursuing explorative and exploitative strategies. It provides guidance on implementing environmentally and socially responsible practices while maintaining economic viability.

Filling the Research Gap:By investigating the connection among supply chain ambidexterity, sustainable SCM, as well as knowledge network capabilities, the study addresses a research need. The subject of research has previously gotten little interest, and the study adds to the current literature by giving a complete knowledge of how all these components affect and interact with one another.

Enhancing Stakeholder Value: Adopting sustainable practices and achieving both exploration and exploitation objectives can create long-term value for stakeholders. The study's findings enable firms to align their supply chain strategies with stakeholder expectations, including customers, suppliers, employees, communities, and regulatory bodies. This alignment leads to improved stakeholder satisfaction and the development of a positive brand image.

1.12 Framework of the study



CHAPTER 2

LITERATURE REVIEW

2.1 Theoretical concepts: definition of variables

The concept of supply chain (SC) ambidexterity has garnered significant attention in organizational theory (Turner et al., 2013; Stettner and Lavie, 2014; Wamba et al., 2020). It pertains to the endeavors of a firm to both refine and extend its existing resources while simultaneously developing new SC competencies. This pursuit of ambidexterity aims to yield performance benefits, particularly for large manufacturing firms (Kristal et al., 2010; Aoki and Wilhelm, 2017; Partanen et al., 2020). Recognizing the long-term environmental, social, and economic benefits it can generate for all stakeholders and society, supply chain sustainability is increasingly being acknowledged as a crucial factor for organizations to gain a competitive advantage (Rourke, 2014).

According to Seufert et al., a Knowledge Network is characterized as a collective of individuals, resources, and the relationships among them, brought together to accumulate and utilize knowledge through knowledge creation and transfer processes, with the ultimate goal of creating value. The capability of a knowledge network refers to an organization's aptitude in effectively generating, disseminating, and harnessing knowledge across different units and stakeholders within its procurement function.

2.1.1 Supply Chain Ambidexterity :Supply chain exploitation and exploration

In contrast, organizations strive to achieve supply chain ambidexterity by finding a balance between two key dimensions: exploitation and exploration. Exploitation involves maximizing the value obtained from existing resources, markets, and competencies, ensuring immediate practicality. Alternatively, exploration, entails venturing into fresh products, markets, as well as opportunities to ensure future viability. The pursuit of a balanced ambidexterity approach is aimed at maintaining equilibrium and has been found to positively impact business performance (Liu, 2016; Khan, 2019; Wang et al., 2014; Guan, 2018).

However, it can be difficult to strike this equilibrium, especially when considering environmental sustainability. Strategic decision-making for ambidextrous operations must take into account

both internal resource and capability support and external environmental changes. Small businesses, for instance, might place more of an emphasis on exploration than on properly bringing the two dimensions into balance, particularly in supply chain settings that fluctuate constantly and influenced by technological advances, legislation, and consumer needs (Gualandris et al., 2018). Furthermore, In contrast to exploitative innovation, exploratory innovation not only advances existing knowledge as well as also creates fresh materials or technologies (Zhao et al., 2021). Managing the transition of resources between exploitation and exploration can pose challenges to operational duties of businesses (Sahi et al., 2020).

Examining the effects of antecedents and different outcomes related to ambidexterity has proven to be challenging in previous studies. The managerial perspective on effectively controlling exploration and exploitation for optimizing profitability remains uncertain due to resource limitations. This uncertainty hampers the utilization of resources, skills, and capabilities. Improving performance in Sustainable Supply Chain Management (SSCM) provides a substantial challenge in finding a careful bring exploration and exploitation into balance.

Additionally, supply chain exploration is distinguished by embracing not sure, fostering studying, and promoting innovation within supply chains (Ojha, Acharya, and Cooper, 2018; Adler, Goldoftas, and Levine, 1999; Patel et al., 2012). It is within these networks that new ideas and innovations often emerge, with suppliers playing a critical plan a role in facilitating such innovation (Song and Benedetto, 2008). Industries that produce goods can adopt a holistic strategy that enables them to take benefit from their current capabilities while also building new competencies use in the future by embracing the complimentary nature of exploitation and exploration in their supply chains (Kristal et al., 2010, p. 416).

The literature recognizes the importance of organizational ambidexterity, which involves establishing successful desorptive capability through the cohabitation of exploratory and exploitative learning styles (Schulze , 2014). The adoption of both exploratory and exploitative learning styles at the same time inside an organisation is known as organisational ambidexterity (Lewis, 2008; Gibson , 2004; Wong, 2004;Guo, 2014). Further study is required to fill this knowledge gap about how organisational ambidexterity affects the organization's capability to profit from desorptive capacity (Hu, 2015). According to numerous studies (Wei et al., 2014; Tamayo et al., 2014; O'Reilly, 1996; Alexandre, 2009), businesses that support both exploratory

and exploitative learning styles are more likely to prosper under ambidexterity. This notion is particularly relevant in the field of provide china and operations management, where there is increasing recognition of the importance of harnessing both learning styles to achieve optimal outcomes (Blome et al., 2013; Herzallah, 2017).

In line with this perspective, In order to better understand the relationship among desorptive capacity as well as supply chain competence, our study will investigate the potential impact of concurrent exploratory and exploitative learning. By examining this connection, we add to the body of knowledge and advance knowledge about how ambidexterity affects an organization's potential to utilise desorptive capacity when it comes to supply chain management.

2.1.2 Sustainability Supply Chain management

The United Nations World Commission on Environment and Development's (WCED, 1987) commonly accepted concept of sustainability places an emphasis on development that satisfies current demands while preserving the capacity of future generations to satiate their own needs. In the literature, this definition has garnered a lot of support. However, because of its scope, modern organisations face a number of difficulties. These limitations include the inability to accurately recognise and address present and future needs and practises, as well as difficulties determining a company's specific function within the broader macroeconomic framework (Carter & Rogers, 2008).

The three basic pillars of sustainability—economic, social, and governance—have also been the subject of discussion. Economic growth, social equality, and respect for governance are the three guiding principles Bansal (2002) suggests as a framework for evaluating corporate sustainability.

According to Chardine-Bauman and Botta-Genoulaz (2014), supply chain management (SCM) entails the efficient management of material and information exchanges throughout the logistics process, from the acquisition of raw materials through the final delivery of products to clients. As a result of these connections, stakeholders come together in the supply chain. SCM is a tool for comprehending and improving the efficacy and efficiency of different business activities, from the original purchase through the creation of the finished product (Vasileiou & Morris, 2006). The increasing globalization of supply chains has underscored the significance of SCM as a ways of acquiring an advantage over its rivals, given its effect on supply management,

operational proficiency, as well as a firm's economic performance (Hollos , 2012). Implementing SCM able challenging to organizations, and the integration of sustainability goals and policies further complicates the process.

Sustainability is an integral aspect of SCM, and researchers have explored the concept of the sustainable supply chain management (SSCM) as approach to incorporate sustainability into current supply chain practices (Ansari & Qureshi, 2015). SSCM entails managing the stream of materials, arranged data, and capital while fostering collaboration amongst companies along the supply chain. It takes into account the three facets of sustainable development—economic, governance, and social—that result from stakeholder and customer demands (Seuring, 2008). The strategic and open integration of an organization's social, governance, and economic aims defines SSCM. Its goal is to improve the supply chain as a whole and the long-term economic achievement of each particular organisation (Carter & Rogers, 2008).

The interactions that occur at the intra- as well as inter-organizational levels, also the broader industrial context, involving the flow of goods and funds and the utilisation of natural, social, and economic resources within an organization's boundaries, determine the economic sustainability of a supply chain (Fabbe-Costes et al., 2011; Brandenburg et al., 2014; Schaltegger et al., 2016). However, the effects of supply chain disruptions on global manufacturing and business connectivity have accelerated recently and increased economic losses (Senyo et al., 2019). To minimize the effects of disruptions and gain economic and competitive advantages, organizations are advised to adopt an inter-organizational orientation in their processes, enabling integration and collaboration across supply chains (Saenz, 2017; Munir, 2020). This entails making investments in the creation of fresh product concepts, cutting-edge production techniques, and the development of skills for handling novel technology and process redesign.

To achieve economic benefits in supply chain management, a comprehensive understanding an information technologies and technical architectural compositions is necessary (Hajli et al., 2020). It is essential to develop a deep knowledge of these tools and systems to effectively leverage them for economic advantages.

Even while research into the connections between sustainable supply chain management (SSCM) and economic sustainability has advanced, there are currently few studies that have looked at

social and environmental sustainability metrics. A competitive advantage in achieving economic performance, however, can be gained through enhancing social and environmental sustainability performance. According to Beske-Janssen et al. (2015) and Walker et al. (2014), social systems and environmental resources play a crucial role in the intra- and interorganizational supply chain and the overall economic system.

To address these issues, it is important for organizations to give organizational support and pay attention to employees' behavior, including fostering trust, willingness to collaborate, staff members should be open-minded and helpful. Employee reliance and devotion are also crucial. Additionally, leadership transformation is suggested to enable organizational performance that facilitates supply chain partners to gain ambidexterity (Ojha et al., 2018).

Conversely, there has been a growing awareness of external factors influencing social Sustainable Supply Chain Management (SSCM). These factors arise from environmental resource constraints and the challenges posed by a rising global population. Production and logistics activities within supply chains not only consume available resources but also contribute to increased waste and pollution. As the need to address external factors and their effect on sustainable practices within supply chain grows, there is recognition upon the importance of social networks among supply chain partners. These networks act as assets that protect against adversities, encourage cooperative actions, and help firms navigate sudden disruptions (Aldrich and Meyer, 2015). Particularly during times of unforeseen crises or shocks, trust and social capital play a critical role in fostering these ties and encouraging the pooling and exchange of external resources (Gölgeci 2020). Comprehensive research on variables that promote social formative capacities in disaster survival and recovery lacks nevertheless. It is still appropriate to research the role of trust and shared working together processes among partners in avoiding conflict management and variations. The literature hasn't yet addressed the role of knowledge creation, such as strategic information flow and big data, in the relationship between supply chain ambidexterity and sustainable supply chain management performance (Partanen et al., 2020), though extensive social networks have been suggested to provide knowledge benefits conducive to ambidexterity.

Although applying sustainable practises can have a detrimental effect on a company's profitability, there are strategies to maximise the performance benefits (Esfahbodi, 2017).

Specifically in the face of disruptions and the requirement for ambidexterity, the challenge lies in integrating the triple bottom line (TBL) dimensions to generate distinctive skills that promote sustained competitive advantage (Yusuf , 2020). Although it has been stated that integration offers economic and competitive advantages, it also carries unexpected hazards because of the complicated and dynamic processes, which causes supply chains to function differently (Munir, 2020).

The increasing to ensure sustainability not only presents challenges but also creates opportunities for recovery. To address this, it is crucial to focus on various areas of study related to ambidextrous supply chain strategies, including exploitation and exploration. Additionally, the change strategy and the relationship among the expertise of a corporation, operational processes, and its partners are essential for effectively dealing with unexpected disruptions or sustained adversity. Emphasizing these aspects is of urgent importance in order to establish uniqueness and effectively navigate through uncertain situations.

2.2 Empirical relationship

2.2.1 Relate to SC Ambidexterity

This research paper investigates the correlation among supply chain ambidexterity, networking capabilities, and the green supply chain management (GSCM) in manufacturing companies located in Pakistan. The objective is to comprehend the influence of supply chain ambidexterity on GSCM and examine whether networking capabilities moderate this relationship. The study gathered data from 125 top-level managers in 34 manufacturing industries, utilizing a cluster sampling technique. Data analysis involved employing the partial least square method and conducting variance analysis for moderation analysis. This outcome indicates a positive affect of supply chain ambidexterity on GSCM; however, networking capabilities were found to have no moderating effect on this relationship. This research contributes valuable insights into implementation among supply chain ambidexterity practices in Pakistani businesses and their association with various aspects of GSCM. It emphasizes the significance of effectively bring balance into exploration and exploitation in supply chain management to promote green and sustainable practices.

This research paper explores the relationship among supply chain (SC) ambidexterity, supply chain flexibility (SCF), SC competence, as well as firm performance. It introduces a novel

measurement instrument called SCF fit, which assesses SCF based on environmental demands. The study improves a theoretical model also conducts empirical analyze using collect data from 302 manufacturing firms. This findings give the importance of SC ambidexterity on achieving optimal SCF levels and emphasize the role on effective SCM in firm performance. In addition to establishing and examining SC ambidexterity, the research also introduces the SCF fit measuring tool and looks at how SCF fit affects SC competence and company performance. It looks at how SC ambidexterity affects SCF, how SCF fit affects SC competence, and how important SC competence is to firm performance. The report emphasises how crucial it is for SCM decision-making procedures to take the entire supply chain into account.

Additionally, the paper investigates the impact of OELS adoption on company performance with the development of supply chain ambidexterity. The study specifically focuses on manufacturing industries in Mainland China. Data for the survey is collected with a questionnaire administered to firms in Mainland China, targeting information on OELS adoption, supply chain abilities, and company performance. The collected data is analyzed using three-stage least squares estimation to test hypotheses and examine the relationships between variables. The study also explores the moderating effects of two supply chain network properties: the number of suppliers and relationship duration. The findings demonstrate that OELS adoption has a positive impact on supply chain process ambidexterity, enabling organizations to balance integration and flexibility in supply chain networks. Furthermore, OELS adoption significant influences operational and financial performance. The number of suppliers, which positively modifies the association with financial success, and the length of the relationship, which adversely modifies the influence on operational performance, are the network properties that have the most impact on the consequences of ambidexterity on firm performance.

This research paper focus on investigate the relationships between supply chain agility, firm ambidexterity, also external knowledge sharing. The study mainly on advancing of understanding on supply chain agility by examining the contribution of organizational ambidexterity to its development. It also looks into the connection between organisational ambidexterity and continuous improvement (CI) in predicting supply chain agility. The study additionally explores the mediating function of external communication of info in the connection between institutional ambidexterity also supply chain agility.

Data for the study was gathered from chemical manufacturing companies in the Vietnam through surveys, with a sample size of 381 respondents. Various statistical techniques, including regression analysis, used to analyze of data and test this research hypotheses.

The findings of this research show that organisational ambidexterity enhances supply chain agility. The research also supports CI's moderating function in the relationship among organisational ambidexterity also supply chain agility. The connection between organisational ambidexterity and supply chain agility is further bolstered by outside knowledge swapping, which is recognised as a mediating components.

This paper investigates of influence on high management transformational leadership to supply chain organizational both learning and ambidexterity, taking into account effect of environmental uncertainty. This study develops a research model and analyzes survey data to evaluate the relationships between these variables. The research model is evaluated using survey data. The dimensions of transformational leadership (vision, leading by example, high performance expectations, individualized support) are assessed, along with dimensions SC organizational studying (team ,memory ,learning, system orientation). The study includes the measurement of environmental uncertainty and conducts statistical analyses to examine the relationships and moderation effects. The outcomes suggest that transformational leadership has a considerable positive impact on organisational learning in the supply chain. Additionally, supply chain organisational learning fosters supply chain ambidexterity, effectively mediating the link between ambidexterity and transformational leadership. The research also identifies operational environment uncertainty as a boundary condition that strengthens the link between supply chain operational learning and transformational leadership. These results suggest that transformative management is essential in fostering a learning environment that fosters supply chain exploration and exploitation.

The purpose of this study was to check the exploration factors that impact development on an ambidextrous supply chain in the context of India. Exploratory learning, inventive practises, knowledge practises, and the development of an ambidextrous supply chain were all investigated. 110 supply chain managers in India were surveyed using a structured questionnaire that had a Likert scale with five possible responses. Four constructs—knowledge practises, inventive practises, exploratory learning, and ambidextrous supply chain—were identified and validated

using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The research ideas were put to the test using structural equation modelling (SEM).

The findings of this study indicate that innovative practices and exploratory learning have important influence on development of an ambidextrous supply chain. But knowledge practices were found have no significant influence on the formation of an ambidextrous supply chain. These results suggest that innovation and exploratory learning are crucial factors in shaping ambidextrous supply chain in Indian context.

2.2.2 Relate to Sustainability Supply Chain management

This study looks at the agri-food supply chain in Indonesia and the sustainability of foods containing genetically modified organisms (GMOs) and foods including non-GMOs. The study's goal is to compare the sustainability levels of GMO and non-GMO foods while taking into account economic, social, and environmental factors. Utilising the data envelopment analysis (DEA) method, a performance assessment model based on adjusted profit (AP) is used to incorporate variables like total price recovery (TPR) and total factor productivity (TFP).

The DEA method is applied to assessment the efficiency and sustainability of agri-food supply chains, encompassing various stages from agriculture, processing, to transportation for wholesalers/retailers. The analysis focuses specifically on the rice production supply chain in Indonesia. The findings demonstrate that non-GMO rice chains outperform GMO rice chains, indicating that non-GMO rice exhibits higher sustainability.

The proposed performance measurement model, utilizing the DEA method, provides valuable insights into sustainability of GMO as well as non-GMO agri-food supply chains. These insights can inform policy decisions regarding the utilization of GMO products in comparison to non-GMO products in Indonesia, with the aim of promoting and maintaining food sustainability.

This study highlights a significance of promoting sustainable development and sustainability within the food industry, specifically focusing on Iran. It acknowledges the increasing awareness and recognition of sustainability issues among both customers and companies, emphasizing the require to address sustainability throughout on corporate supply chain. The research aims to examine the relationship among sustainable supply chain management and sustainability activities in Iran's food industry.

120 food companies were given a questionnaire to complete, and the results were subsequently analysed using methods including route analysis and confirmatory factor analysis (CFA). The relationships between sustainable supply chain management practises and other sustainability aspects were researched employing structural equation modelling (SEM).

The research results show that the environmental, economic, and social sustainability components within the food business are greatly impacted by sustainable supply chain management practises. In order to improve sustainability performance within the supply chain, the study emphasises the significance of including sustainable supplier management practises, sustainable operations management practises, and sustainable customer management practises.

Based on the study's outcomes, the authors offer recommendations to improve sustainability performance. These suggestions include enhancing product quality based on sustainability indicators, fostering sustainable consumption attitudes among customers, promoting social responsibility among supply chain personnel and managers, implementing sustainability-related standards, establishing effective communication channels with customers, and sharing knowledge and standards related to sustainability activities with customers.

Influence of the SSCM Strategy on SCM Activities in the Oil and Gas Distribution Sector

By concentrating on the difficulties associated with sustainability in supply chain management within the oil industry, the paper fills the current research gap. It emphasises the significance of incorporating sustainability concerns into various supply chain activities and tries to examine how sustainable supply chain management (SSCM) solutions affect SCM functions. In the context of the oil and gas distribution business, the paper examines the connections between three distinct SSCM methods (Supplier Selection, Product Stewardship, and Logistics Management) and four crucial SCM functions (Planning, Execution, Coordination, and Collaboration).

The research was gathered on a sample of 79 companies operating in oil and gas distribution sector in Romania and the Republic of Moldova. This findings of the study reveal a important and significant influence of SSCM strategies on SCM functions, both overall and within each individual function examined in the study. These research findings can utilized by oil and gas distribution companies to promote sustainable supply chain strategies, fulfill their environmental

and social responsibilities, and optimize their SCM processes to align with sustainability requirements.

The results of a content analysis of case studies in the area of sustainable supply chain management (SSCM) are presented in this research. The analysis concentrated on case studies that appeared in peer-reviewed English-language journals between 1994 and 2007. Evaluation of the depth of Supply Chain Management (SCM) topics covered in these case studies was the goal.

This researchers utilized frameworks from traditional SCM and SSCM to establish categories for the analysis. The selected case studies were evaluated based on their publication year, source journal, and the economic sectors they addressed. To analyze the data, frequency and contingency analyses were performed.

The methodology employed a systematic content analysis approach, combining qualitative and quantitative analyses. This approach provided a comprehensive understanding of the scope and characteristics of the because of studies in the field of SSCM.

The analysis confirms that provide from governments, consumer, and stakeholders play significant roles in driving SSCM initiatives. However, it also highlights the relative neglect of social dimension of sustainability on both conceptual study and corporate practice. The improvement of supplier performance and the establishment of minimum performance standards are identified as crucial aim of supply chain strategies. Communication emphasized as a vital characteristic of both traditional SCM and SSCM. However, the study reveals that comprehensive supply chain integration remains limited, even within the context of SSCM.

This study aims to investigate how supply networks' social, economic, and environmental sustainability are impacted by lean, resilient, and green supply chain management (SCM) techniques. The research starts with a thorough literature analysis to pinpoint pertinent practises related to these three SCM paradigms and their effects on the sustainability of the supply chain. Deductive research is used to create a conceptual model based on the literature review.

Empirical data is collected from five case studies featuring Portuguese firms involved in the automotive supply chain in order to validate the proposed conceptual model. The linkages between the identified SCM practises and the aspects of supply chain sustainability are next looked at with the data that has been collected.

The findings derived from the case studies indicate that not whole lean, resilient, also green SCM practices have a important impact on the supply chain sustainability. Specifically, the practices of "waste elimination," "supply chain risk management," and "cleaner production" are identified as having a important influence on social, economic, and environmental sustainability on supply chains. The opposite hand, practices such "flexible transportation," "flexible sourcing," "ISO 14001 certification," and "reverse logistics" are found no significant influence on supply chain sustainability according to the research findings.

This research addresses the change nature of the relationship among sustainable supply chains and environment. It acknowledges that supply chains have notable environmental influence throughout their stages, and as market conditions and competition evolve, the management of sustainable supply chains becomes a dynamic process. The authors are aware of the lack of information and resources needed to accurately measure and assess the environmental impact of supply chain operations. By introducing new tools that help decision-makers comprehend the dynamic features of the relationship between supply chains and the environment and manage the environmental impact, the study seeks to close this gap.

The paper introduces a mathematical model on nonlinear dynamic systems to describe dynamics of the environmental affect of supply chains while striving for sustainability. The model is analyzed to gain insights into equilibrium, stability, and performance. Through simulations, the effectiveness of the proposed dynamic system in capturing the dynamics of environmental impact in supply chains is demonstrated. The analysis reveals that even small increases in environmental costs can lead to significant decreases in supply chain profitability, emphasizing the significant of supply chain sustainability for enhancing activities.

In conclusion, this paper emphasizes the need to incorporate social measures into the system and suggests further research directions. These include parameter identification, sensitivity analysis, optimal control system design, and stochastic simulation. By exploring these avenues, future research can enhance our understanding on the dynamic behavior for sustainable supply chains and contribute into the development of effective strategies for managing their environmental impact.

2.3 Theory applied

Resource-Based View (RBV)

RBV underscores the significance of resources and capabilities in facilitating the survival, expansion, and overall efficiency of organizations (Barney, 1991; Wernerfelt, 1984). Organizations leverage and capitalize on the pool of resources they possess or can access. RBV identifies three key resource categories: physical, organizational, and human resources (Barney, 1991). Physical resources are usually tangible and encompass facilities, machinery, raw materials, financial assets, geographical positioning, and information technology (IT).

RBV proposes that the conversion of resources into more valuable outcomes is facilitated by various capabilities that enable effective resource utilization (Barney, 1991; Grant, 1991). Capabilities represent repetitive patterns of actions that leverage resources to generate value in the form of products and services. These capabilities encompass the concept of organizational competency and are grounded in skills and processes (Prahalad & Hamel, 1990). They may encompass skills like managerial proficiency or processes such as knowledge sharing. In summary, RBV argues that resources influence the development of capabilities, and robust capabilities are likely to enhance organizational effectiveness.

RBV also underscores the significance of resource orchestration, which entails aligning and integrating diverse resources and abilities to establish a competitive advantage. In the realm of supply chain ambidexterity and sustainability, resource orchestration involves combining knowledge network capability with other resources like technology, supplier and customer relationships, and sustainability practices. This integration enables organisations to successfully balance the exploitation of existing resources and the investigation of new resources in their supply chain endeavours, resulting in improved performance and sustainability.

In order to adapt to changing circumstances, supply chain ambidexterity is dynamic process that calls for the integration and coordination of several resources and capabilities. This dynamic capability highlights the critical role that strategic management plays in successfully integrating, reconfiguring, and adapting both internal and external skills, resources, and competencies to meet shifting environmental demands. Due to its emphasis on resource acquisition and flexible integration, RBV offers a useful foundation for comprehending supply chain ambidexterity as a dynamic capability. RBV has been widely used in the field of information systems to develop the theoretical underpinnings and build frameworks for supply chain ambidexterity. Wade and Hulland (2004) emphasised the value of using RBV to assess the strategic value of information

systems resources, and Dong et al. (2009) used RBV in conjunction with transaction cost theory to successfully show the joint effects of IS and non-IS resources on enhancing supply chain performance.

H1: SC exploitation has significant impact on SC performance.

H2: SC exploration has significant impact on SC performance.

Knowledge theory

According to Bolisani and Bratianu (2018), knowledge may be categorised into two types: explicit knowledge and tacit knowledge. Knowledge is an ethereal idea that exists outside of the physical environment. Explicit knowledge can be communicated in written materials like books, reports, and manuals and is codifiable, verbalisable, transferrable, and writable (Ooi, 2014). On opposite hand, tacit knowledge is unspoken and unwritten, residing within individuals' minds and is acquired through experience and interactions (Maravilhas and Martins, 2019). Unlike explicit knowledge, transferring tacit knowledge to others is challenging due to its inherent difficulty in articulation (Johnson et al., 2019). Recognizing this distinction, Knowledge Management (KM) is defined by Yang (2008) as the act of turning tacit knowledge into explicit knowledge in order to facilitate seamless knowledge transfer within an organisation.

The recent study employs three dimensions on KM: knowledge sharing, acquisition, and storage. Knowledge storage plays a pivotal role in effectively managing organizational knowledge by capturing, organizing, and structuring it in a manner that facilitates easy access, retrieval, and utilization by individuals within the organization. Organisations must learn from their employees, clients, and suppliers in order to improve the quality of their goods and services in light of changing consumer preferences and a dynamic business environment (Qasrawi, 2017). Knowledge acquisition also enables businesses to capitalise on their advantages and rectify their flaws (Albort-Morant, 2018). As learning organisations encourage active employee participation in a variety of organisational matters, the learned information should also be shared with coworkers, particularly those in pertinent departments (Jarrahi, 2018). These organisations can gain from a variety of viewpoints in problem analysis and the creation of workable solutions by

encouraging employee involvement. Based on these considerations, the study proposes the following hypotheses:

H3: KNC moderator has significant impact between SC exploitation and SC performance.

H4: KNC moderator has significant impact between SC exploration and SC performance.

Chapter 3

Research Methodology

3.1 Introduction

The approach used to investigate the moderating impact of understanding network capability for supply chain ambidexterity and sustainability in supply chain management is laid out in this chapter. It includes the demographic, sample size, instrument, study approach, design, strategy, and data collecting and analysis.

3.2 Research Approach

For the sake of impartiality, the study employed a positive paradigm and quantitative research procedures. The current research utilizes a deductive research strategy. The deductive method begins with the creation of hypotheses based on previously published material, followed by the creation of research strategies to develop, and test the hypotheses. The researchers conduct a thorough analysis of data and material from the literature to validate or refute the offered hypotheses (Jonker & Pennink, 2018). The deductive approach commences by establishing a theory, formulating hypotheses, and subsequently observing facts. The research follows a cross-sectional design and aligns with the positivist philosophy, which has gained considerable traction among scholars in recent times.

3.3 Research Design

The research model acts as a guide for collecting, calculating, and evaluating data . The research design encompasses the research strategy that outlines how knowledge should be gathered and evaluated. In line with the research objectives, a positivist methodology was employed in the study. The chosen research design for the study is descriptive research, utilizing a quantitative research methodology . While the primary focus of this analysis centers around the key findings, it also encompasses a comprehensive cross-sectional examination.

3.4 Research Strategy

The Research Approach offers a comprehensive research design and guidance. The research uses the survey design. Survey uses questionnaire technologies to collect information on the firms of animal products, farm machinery & equipment, etc. The survey will utilize a Five-Point Likert scale to assess the responses received.

This analysis aims to collect, and review collected data to conclude literature topics. Inferences surrounding the proposed partnerships were then used by quantitative analytics (McCusker & Gunaydin, 2015).

3.5 Research Instrument

To assess the respondents' perceptions of the variables under investigation, a standardized adaptive questionnaire was utilized for data collection. Multiple approaches were employed to collect extensive data. The present investigation uses a structured data collection tool in the form of a questionnaire with a 5-point Likert scale and adopts a quantitative research methodology. A tested and confirmed standardised questionnaire was used to collect primary data in order to guarantee data dependability. A standardised survey that had previously been used in studies with a similar focus provided the data for this study.

3.6 Unit of Analysis

The analysis for unit for the study consists of individuals belonging to the agricultural firms in Islamabad.

3.7 Population

The population is a defined of peoples, activities, objects that are related to the researchers' interest (Flick, 2015). The population of this paper is ten agricultural firms of Islamabad.

3.8 Sample Size

The sample sizes are defined in the Krejcie & Morgan table (1970). The survey in this analysis contained 100 individuals from agricultural firms of Islamabad.

3.9 Sampling Technique

A questionnaire was used to gather information from respondents using a straightforward random sample strategy. Each person in the population had an equal chance of being chosen to be a sample using this method. In this study, information was gathered from 100 people connected to agricultural businesses based in Islamabad.

3.10 Time Horizon

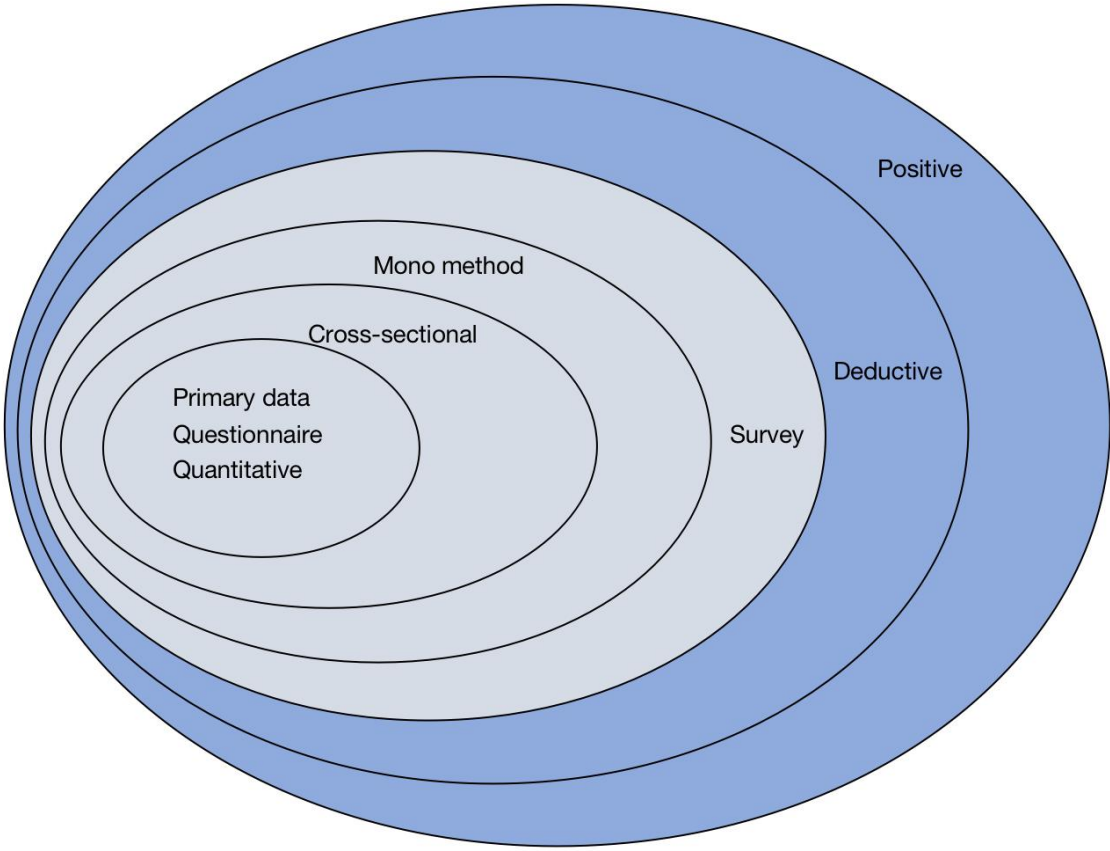
At intervals of four months, data for this cross-sectional study were collected.

3.11 Data Collection Procedure

Following meticulous consideration, this questionnaire was standardized to enhance ease of use and ensure reliable responses from the participants into the data collection process . This researcher collected survey data from agricultural firms by providing them with standardized questionnaires. These questionnaires were distributed email and through web platforms such as "Google Docs," and were directly compiled by the researchers.

3.12 Data Analysis Techniques

After the data was gathered, the data analysis process commenced with the use of numerous tests to finish the process (Kumar, 2019). With the use of SPSS software, several statistical procedures, such as regression and correlation analysis, were employed to continue data analysis and analyze the degree and direction of the relationship among supply chain exploitation and supply chain exploration (independent variable), supply chain performance (dependent variable) and knowledge network capability(moderator) . Statistical tools for data analysis (regression and correlation) have shown to be very trustworthy and valid instruments that are extensively utilized across the world.



Chapter 4

Findings

4.1 Introduction

This section presents the outcome of the structured questionnaire, providing a comprehensive overview of the collected data, its organization, and the sources from which it was obtained. Additionally, it discusses the backgrounds and qualifications of the relevant personnel involved in the study. Supply Chain Exploitation and Supply Chain Exploration are independent variables in the study, which focuses on analysing the relationship between Supply Chain Ambidexterity and Sustainability Supply Chain Management (SCM).

To collect the necessary data, a questionnaire was designed, consisting of four sections, with each section containing either three or four questions. Respondents were asked to rate their responses on a 5-point Likert scale. The collected data was then analyzed using SPSS statistics software. This chapter presents the results of the analysis, employing various methods such as Descriptives, Reliability, Correlation, Regression, Anova, and Coefficients, to provide a comprehensive understanding of the data.

4.2 Descriptives

Table1

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
KNC	100	1.89	4.22	3.0078	.51472
EX1	100	1.25	4.75	3.0000	.75962
EX2	100	1.00	4.50	2.9975	.69766
SSCM	100	1.44	4.11	2.9633	.50956
Valid N (listwise)	100				

The descriptive statistics provide an overview of the data collected for each variable in the study. It is important to note that the "Valid N (listwise)" value indicates that all 100 respondents provided valid responses for all variables, ensuring the completeness of the dataset.

The descriptive statistics offer insights into the central tendencies and dispersion of the data. The mean values for KNC, EX1, EX2, and SSCM are around 3.00, indicating moderate levels of agreement or perception on these variables. The standard deviations show the extent of variability in the responses.

4.3 Reliability

Table 2

Reliability Statistics		
Variable	Cronbach's Alpha	N of Items
Supply Chain Exploitation	.808	4
Supply Chain Exploration	.851	4
Economic sustainable	.853	3
Social sustainable	.720	3
Governance sustainable	.916	3
Knowledge sharing	.780	3
Knowledge acquisition	.755	3
Knowledge storage	.899	3

The reliability statistics, as measured by Cronbach's alpha, indicate a high level of reliability and consistency in the questionnaire used this study. The Cronbach's alpha values obtained are close to 1, suggesting a strong level of reliability in the measurement instrument and the responses provided by the respondents. These values fall within the accepted range of 0.7-0.9, which demonstrates the consistent and dependable nature of the Likert scaling and the questionnaire utilized in the quantitative research. This high Cronbach's alpha values affirm the authenticity and clarity of the questionnaire, further validating its suitability for collecting reliable data in this study.

4.4 Correlation

Table 3

		Exploration	Exploitation	Knowledge network capability
Exploitation	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	100		
Exploration	Pearson Correlation	.420	1	
	Sig. (2-tailed)	.000		
	N	100	100	
Knowledge network capability	Pearson Correlation	.108	.068	1
	Sig. (2-tailed)	.000	.000	
	N	100	100	100
**. Correlation is significant at the 0.01 level (2-tailed).				

The table above indicates significant relationships between Exploration and Knowledge network capability, with a magnitude of 0.108, and Exploitation and Knowledge network capability, with a magnitude of 0.068. Both relationships are in a positive direction.

4.5 Regression

Regression analysis is an essential step in determining the relationships between variables in a study. It helps identify whether the relationship between variables is direct (positive) or inverse (negative) and whether they function as independent or dependent variables. The corresponding relationships between the variables in this study were looked at using linear regression analysis.

By conducting analysis, we can obtain accurate and dependable data that yields valuable insights. This process enables us to examine the most pertinent and reliable results based on the collected data.

To examine the moderating influence of KNC on the linkages between Supply Chain Exploitation (EX1), Supply Chain Exploration (EX2) and SSCM, a regression analysis with a moderator was conducted. The analysis aimed to determine whether the relationship between EX1, EX2 and SSCM is contingent upon the level of KNC.

Table 4

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.422 ^a	.222	.208	.51687
2	.322 ^a	.188	.109	.51188
3	.208 ^a	.112	.202	.51432
4	.328 ^a	.301	.239	.51195
5	.434 ^a	.318	.108	.50753

- a. Predictors: (Constant), EX1
- b. Predictors: (Constant), KNC
- c. Predictors: (Constant), EX2
- d. Predictors: (Constant), EX1KNC
- e. Predictors: (Constant), EX2KNC

The correlation coefficient (R) among the predictor variable (EX1) and the dependent variable is 0.422, indicating a moderate linear relationship among the two variables. The R-squared value indicates that the predictor variable can explain approximately 22.2% (0.222) of the variance in the dependent variable. In order to evaluate how well the theoretical model matches the data, one might use the adjusted R-squared value. In this analysis, predictor variable (EX1) shows a moderate relationship with the dependent variable and explains a significant portion of its variance. However, it is important to note that there might be other factors not considered in the model that could enhance its explanatory capacity.

The correlation coefficient (R) among the predictor variable (KNC) and dependent variable is 0.322 in the Model 2, indicating a moderate linear relationship between the two variables. Approximately 18.8% (0.188) of the variance in dependent variable can be explained by the predictor variable, as indicated by the R-squared value. The adjusted R-squared value in Model 2 is 0.109, which considers the complexity of the model and the certain predictors, supplying a more accurate evaluation of the model's explanatory capability. The average discrepancy between the actual values and the values predicted by the regression model is represented by the standard deviation of the forecast, which is 0.51188.

The correlation coefficient (R) a difference between expected and actual values of the dependent variable is 0.208 in Model 3, indicating a weak positive correlation between the predictor variable (EX2) and the dependent variable. The R-squared value, suggesting the proportion of the dependent variable's variance that may be attributed to the variable used as a predictor, is 0.112, indicating that approximately 11.2% of the variance is accounted for by the predictor variable.

The adjusted R-squared value, which is the number of predictors and the sample size, is 0.202 in Model 3. This adjusted value suggests that around 20.2% of the variance in the dependent variable is explained by predictor variable, taking into account the complexity of the model.

The estimate's standard deviation, which reflects the mean distance among the observed values and predicted values of dependent variable, is 0.51432 in Model 3. This value indicates the typical amount of error in predicting the dependent variable using the predictor variable. Overall, the model summary indicates that the predictor variable (EX2) explains only a small a part of the dependent variable's variance, and there is room for improvement in the model's fit.

In Model 4 , there is a moderately positive connection between the predictor variables (EX1KNC) and the dependent variable as indicated by the correlation coefficient (R) between the predicted values and the actual values of the dependent variable, which is 0.328. The R-squared value, which measures the percentage of the dependent variable's variance that can be described by the predictor variables, is 0.301, meaning that roughly 30.1% of the variance can be explained by the predictor variables.

The adjusted R-squared value, which considers the number of predictors and sample size, is 0.239 in Model 4. This adjusted value suggests that around 23.9% of the variance in the dependent variable explained by predictor variables, taking into account the complexity of the model.

The average difference between the dependent variable's actual values and predictions is represented by the standard error of the estimate, which in Model 4 is 0.51195. This number represents the typical level of inaccuracy in the dependent variable's prediction using the predictor variables.

The correlation coefficient (R) in the Model 5 between the dependent variable's predicted values and actual values is 0.434, showing a moderately positive connection between the dependent variable and the predictor variables (EX2KNC). The R-squared value, a measure of the portion of the dependent variable's variance that can be explained by the predictor elements, is 0.318, which means that around 31.8% of the variance can be understood by the predictor variables.

The adjusted R-squared value, which considers the number on predictors and the sample size, is 0.108 in Model 5. This adjusted value suggests that around 10.8% of the variance in dependent variable explained by predictor variables, taking into account the complexity of the model.

The standard error of the estimate, which reflects the mean distance among the observed values and the predicted values of the dependent variable, is 0.50753 in Model 5. This value indicates the average amount of error in predicting dependent variable using the predictor variables.

4.6 Anova

Table 5

	Model	Sum of Squares	Df	Mean Square	F	Sig.
	Regression	.027	1	.027	11.02	.000
1	Residual	25.678	98	.262		
	Total	25.705	99			
	Regression	.020	1	.020	20.78	.000
2	Residual	25.685	98	.262		
	Total	25.705	99			
	Regression	.462	1	.462	17.92	.000
3	Residual	25.243	98	.258		
	Total	25.705	99			

a. Dependent Variable: SSCM

b. Predictors: (Constant): KNC

c. Predictors: (Constant): EX1KNC

d. Predictors: (Constant): EX2KNC

The analysis on the data provides significant insights into the relationship amongst the predictor variable (KNC) and dependent variable (SSCM). In Model 1, the regression sum of squares indicates that approximately 2.7% of the variance in SSCM can be explained by KNC. The unexplained variation is represented by the remaining total of squares or error in SSCM, which amounts to 25.678. The F-value of 11.02 suggests a significant difference between the mean square due to regression and the mean square of the residuals. Furthermore, the associated significance level is 0.000, indicating a highly significant relationship between KNC and SSCM. These findings emphasize the importance of KNC as a predictor variable in understanding the variability in SSCM. However, further exploration and interpretation of effect size measures would give a more deep understanding of practical significance of the relationship.

The analysis of data reveals important findings regarding the connection between the predictor variables (EX1KNC) and the dependent variable (SSCM). Model 2 indicates that the regression sum of squares is 0.020, representing the amount of variance in SSCM that can be explained by EX1KNC. The residual sum of squares is 25.685, indicating the unexplained variation or error in SSCM. The F-value of 20.78 suggests a significant difference between the mean square due to regression and the mean square of the residuals. Moreover, the associated significance level is 0.000, which is below the conventional threshold of 0.05, means a highly significant link between EX1KNC and SSCM. These findings highlight the importance of EX1KNC as predictor variables in explaining the variability in SSCM. Further investigation and interpretation of the effect size would give a comprehensive understanding of practical significance of the relationship.

The analysis of the data indicates significant findings regarding the link between the predictor variables (EX2KNC) and the dependent variable (SSCM). Model 3 reveals that the regression sum of squares is 0.462, indicating proportion of variance in SSCM which can be explained by EX2KNC. The residual sum of squares is 25.243, representing the unexplained variation or error in SSCM. The F-value of 17.92 suggests a significant difference between the mean square due to regression and the mean square of the residuals. Additionally, the associated significance level is 0.000, which is below the conventional threshold of 0.05, signifying a highly significant relationship between EX2KNC and SSCM. These findings highlight the importance of EX2KNC as predictor variables in explaining the variability in SSCM. Further exploration and analysis of

the effect size would provide a more complex understanding of the practical significance on this relationship.

Table 5

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.047	1	.189	30.06	.000
	Residual	26.181	98	.262		
	Total	26.229	99			
2	Regression	.305	1	.305	20.52	.000
	Residual	25.924	98	.265		
	Total	26.229	99			

a. Dependent Variable: KNC

b. Predictors: (Constant): EX1

c. Predictors: (Constant): EX2

The analysis of the data reveals important findings regarding the relationship among the predictor variable (EX1) and dependent variable (KNC). Model 1 indicates that the regression sum of squares is 0.047, representing the amount of variance in KNC that can be explained by EX1. The residual sum of squares is 26.181, indicating the unexplained variation or error in KNC. The F-value of 30.36 suggests a significant difference between the mean square due to regression and the mean square of the residuals. Moreover, the associated significance level is 0.000, which is below the conventional threshold of 0.05, means a highly significant relationship among EX1 and KNC. These findings highlight the importance of EX1 as a predictor variable in explaining the variability in KNC. Further investigation and interpretation of the effect size would give an in- depth understanding of the relationship's practical value.

The analysis on the data reveals important findings regarding the relationship amongst the predictor variable (EX2) and dependent variable (KNC). Model 2 indicates that the regression sum of squares is 0.305, representing the amount of variance in KNC that can be explained by EX2. The residual sum of squares is 25.924, indicating the unexplained variation or error in

KNC. The F-value of 20.52 suggests a significant difference between the mean square due to regression and the mean square of the residuals. Moreover, the associated significance level is 0.000, which is below the conventional threshold of 0.05, means a highly significant relationship amongst EX2 as well as KNC. These findings highlight the importance of EX2 as a predictor variable in explaining the variability in KNC. Further investigation and interpretation of the effect size would give a comprehensive understanding of practical significance of the relationship.

4.7 Coefficients

Table 6

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.094	.212		14.623	.000
	EX1	.229	.068	.042	.420	.010
	EX2	.380	.074	.108	1.073	.006
2	(Constant)	3.059	.305		2.032	.000
	KNC	.122	.100	.132	2.319	.001
	EX1KNC	.325	.019	.119	2.028	.001
	EX2KNC	.329	.021	.134	2.339	.004

a. Dependent Variable: KNC
 B. Dependent Variable: SSCM

According to the information provided in Model 1, it suggests that the table presents the percentage of variance and effect size for the link between the variables in this study. The results means that supply chain exploitation contributes 22.9% to the variance in dependent variable, with an effect size of .010. Similarly, supply chain exploration contributes 38.0% to the variance in the dependent variable, with an effect size of .006. These findings suggest that supply chain exploitation also on exploration have a notable impact on explaining the variability in the

dependent variable. However, the table does not give specific information about the important of these relationships, so it is unclear whether they are statistically significant.

Based on the data provided in Model 2, it suggests that this table presents percentage of variance and effect size for the link between the variables in this study. The results means that knowledge network capability contributes 12.2% to the variance in the dependent variable, with an effect size of .001. Additionally, the interaction term between supply chain exploitation and knowledge network capability contributes 32.5% to the variance in the dependent variable, with a magnitude of .001. On the other hand, the interaction term between supply chain exploration and knowledge network capability contributes 32.9% to the variance in the dependent variable, with a magnitude of .004. These findings suggest that both knowledge network capability and the interaction between supply chain exploitation or exploration and knowledge network capability have a important impact on explaining the variability in dependent variable.

4.8 Data Findings

The following findings concerning the hypothesis of the research depend on the results mentioned above:

Supply chain exploitation has a substantial effect on supply chain effectiveness, according to hypothesis 1 (H1). Supply chain exploitation and performance are significantly correlated, according to both correlation and regression analysis. This result implies that supplier exploitation enhances the effectiveness of the supply chain.

Supply chain exploration has a major impact on supply chain performance, according to hypothesis two (H2). This hypothesis has also been supported. Supply chain exploration and performance are significantly correlated, according to the correlation and regression analyses. This suggests that supply chain investigation enhances the effectiveness of the supply chain.

The third hypothesis (H3), which states that the correlation between supply chain exploitation and performance is moderated by knowledge network capability, has been found to be true. The results of both the regression and correlation studies show that the interaction involving supply chain exploitation and performance is significantly moderated by knowledge network capability.

This suggests that the degree of knowledge network capability affects the effect of supply chain exploitation on supply chain performance.

Similar to hypothesis 3, it has been determined that knowledge network competence moderates the association between supply chain exploration and performance. The results of the correlation and regression studies show that knowledge network capabilities significantly modifies the causal connection amongst supply chain exploration and performance. This implies that the degree of insight network capability determines how supply chain exploration affects the efficiency of the supply chain.

Table 7

Variables	Significance level	Result	Accept/Reject
SC Exploitation	0.010	Significant impact on SSCM	Hypothesis accepted
SC Exploration	0.006	Significant impact on SSCM	Hypothesis accepted
SC Exploitation and KNC	0.001	Significant impact on SSCM	Hypothesis accepted
SC Exploration and KNC	0.004	Significant impact on SSCM	Hypothesis accepted

Chapter 5

Discussion, Conclusion and the Recommendations

5.1 Discussion

The results of the correlation and regression studies confirm H1, which claims that supplier exploitation has significant effects on the performance of the supply chain. A favourable and statistically significant association is present between supply chain exploitation as well as supply chain performance, according to the correlation study. Furthermore, the regression study confirms this association by showing that supply chain exploitation is a major predictor of supply chain performance. These findings suggest that organisations that effectively employ supply chain exploitation tactics are more likely to achieve superior overall supply chain performance.

Similarly, H2, which shows that supply chain exploration has a large impact on supply chain performance, is corroborated by the correlation and regression studies. The correlation study demonstrates a favourable and statistically significant link between supply chain exploration and supply chain performance. Furthermore, the regression analysis supports this finding by revealing that supply chain exploration is a major predictor of supply chain performance. This shows that organisations that actively engage in supply chain exploration activities are more likely to enjoy improved supply chain performance outcomes.

The analysis of H3, which examines the impact of knowledge network capability as a moderator on the relationship underlying supply chain exploitation and supply chain effectiveness, are encouraging. A positive association exists between knowledge network capabilities, supply chain exploitation, and supply chain effectiveness, according to the correlation analysis. Furthermore, a regression study reveals that knowledge network capability has a moderating effect, indicating that it increases the association across supply chain exploitation and supply chain effectiveness. This implies that organisations with strong knowledge network skills can capitalise on the benefits of supply chain exploitation to improve the overall efficiency of the supply chain.

Similarly, H4 explores the impact of knowledge network capabilities and a moderator in the association among supply chain exploration and supply chain effectiveness. The correlation analysis reveals a favourable relationship between knowledge network capability, supply chain exploration, as well as supply chain effectiveness. Furthermore, the regression analysis confirms the moderating influence of knowledge network capabilities, demonstrating that it enhances the association across supply chain exploration and supply chain effectiveness. These results imply that organisations with strong knowledge network capabilities can increase the favourable consequences of supply chain exploration upon the overall performance of the supply chain.

5.2 Conclusion

Finally, this research has successfully proved the significant effects of supplier exploitation along with supply chain exploration on the efficiency of supply chains. The findings confirm that organisations that use these tactics effectively are more inclined to obtain superior supply chain efficiency results. The study also emphasises the value of knowledge network capabilities as a moderator, demonstrating that organisations with strong knowledge networks can boost the favourable benefits of supply chain techniques on performance. The present investigation adds to the existing body of knowledge by offering empirical evidence and insights into the elements that influence supply chain performance. The findings emphasize the need for organizations to invest in developing and leveraging knowledge networks to optimize their supply chain outcomes. By doing so, organizations can enhance their competitive advantage and improve overall performance in today's dynamic and complex business environment.

5.3 Recommendations

Several recommendations for supply chain management practitioners depend on the study's outcomes. To begin, organisations must prioritise and invest in both supply chain exploitation and exploration initiatives. This includes optimising existing methods and assets as well as investigating fresh possibilities and innovative practises. By striking a balance between exploitation and exploration, organizations can enhance their overall supply chain performance.

Secondly, organizations should place emphasis on developing and strengthening their knowledge network capabilities. This involves fostering a culture of knowledge sharing, encouraging collaboration among supply chain partners, and leveraging technology platforms for effective

knowledge management. By actively cultivating their knowledge networks, organizations can maximize the benefits derived from their supply chain strategies and improve their performance outcomes.

5.4 Limitations

It is essential to recognize and address the findings of this research limitations. Firstly, the generalizability of the discoveries may be limited as the research focuses on a specific industry or context. The dynamics and characteristics of other industries may differ, and therefore, caution should be exercised when applying these findings to different contexts. Secondly, the study relies on self-reported data obtained through a questionnaire. This opens the door to response biases that involve social desirability nor recollection bias. Furthermore, because it is based on participants' views and subjective interpretations, the questionnaire might not reflect the whole complexity of supply chain dynamics. To get a more thorough comprehension of supply chain events, future studies should incorporate objective measures or alternate data collection methods, such as observations or interviews. A mixed-methods strategy that blends quantitative data with qualitative insights might provide a more comprehensive perspective to improve the robustness and validity of upcoming studies. This would allow for a deeper exploration of the underlying mechanisms and contextual factors influencing supply chain performance.

5.5 Future Study

This study indeed provides valuable insights and sets the stage for future research in supply chain management. There are several areas that warrant further investigation. To begin, future research may look into the exact mechanisms through which supply chain exploitation and exploration of resources affect the efficiency of the supply chain. Understanding underlying processes and factors that drive these relationships can help organizations implement effective strategies.

Second, other moderating factors and context-specific variables who might affect the connections underlying supply chain methods and performance outcomes should be investigated. Organisational culture, technical improvements, and market conditions can all influence the success of supply chain practises. Investigating these characteristics might offer a more nuanced understanding of how to optimise management of supply chains in various circumstances.

Furthermore, longitudinal studies that track supply chain performance over an extended period can offer valuable insights into the dynamics and long-term effects of supply chain strategies. This can help identify trends, uncover temporal relationships, and provide guidance on the sustainability and adaptability of supply chain practices.

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Appendix

We invite you to take part in our survey aimed at gathering valuable insights on SC Ambidexterity and SSCM: Moderator Role of KNC. By participating in this questionnaire, you have an opportunity to contribute to our research and help us gain a deeper understanding of agricultural sector.

The survey is designed to be brief and will only take a few minutes of your time. Your responses will be kept private and analysed collectively to ensure anonymity. Your input is vital in providing us with a comprehensive perspective on SC Ambidexterity and SSCM: Moderator Role of KNC.

Your response in the survey will entirely voluntary, you able choose to skip question that you not prefer to answer. We appreciate your honesty and thoughtful responses, as they will greatly contribute to the quality and validity of our research findings.

Thank you for considering participating in our survey. Your contribution is highly valued, and we sincerely appreciate your time and effort in helping us further our understanding of SC Ambidexterity and SSCM: Moderator Role of KNC

Best regards,

Ma Liya

Measurement

Supply chain ambidexterity
Supply chain exploitation(March 1991, <u>Levinthal</u> and March 1993, <u>Lewin et al.</u> 1999, <u>Lewin and Volberda</u> 1999)
Ei1.To maintain our competitive edge, our SC managers prioritize the elimination of operational redundancies within our current processes.
Ei2.Utilizing our existing SC technologies is integral to our company's strategic approach.
Ei3.To maintain a competitive edge, our SC managers prioritize enhancing our current technologies
Ei4. Managers are dedicated to cultivating enhanced capabilities within our existing supply chain processes.
SC exploration(March 1991, <u>Levinthal</u> and March 1993, <u>Lewin et al.</u> 1999, <u>Lewin and Volberda</u> 1999)
Er1.We actively seek out innovative SC solutions.
Er2.We continuously experiment with new ideas to enhance our SC.
Er3.In our quest to improve the SC, we consistently explore new opportunities.
Er4.We always on the lookout for fresh approaches to address SC challenges.
Sustainability Supply chain management
Economic sustainable(<u>Latruffe et al.</u> , 2016 , <u>Enjolras and Sentis</u> , 2011 and <u>Bradshaw et al.</u> , 2004)
ES1.The profitability, liquidity, and productivity of our organization directly impact the sustainability of our farm.
ES2.We implementation of energy-efficient practices resulted reduction in operational costs.
ES3.The diversification of our organization enhances economic sustainability by providing

protection against market risks.
Social sustainable(Lebacqz et al., 2013; Terrier et al., 2013; Latruffe et al., 2016).
SS1.The main factors used to assess social sustainability include the level of education, working hours, and the overall workforce composition.
SS2.Our organization prioritizes the social welfare and human rights of all stakeholders involved in our supply chain.
SS3.We have implemented robust measures to ensure equitable labor practices and maintain safe working conditions throughout our supply chain operations.
Governance sustainable(Campbell, 2007)
GS1.Our organization has implemented effective governance structures and policies to ensure ethical and transparent practices in our supply chain.
GS2.We have established codes of conduct and guidelines for suppliers and other stakeholders to ensure responsible behavior in our supply chain operations.
GS3.Our company is sustainable and socially responsible without sacrificing the welfare of any group of stakeholders.
Knowledge Network Capability
Knowledge acquisition(representative references:Roldán Bravo et al., 2016 and Gluch et al. 2009, p. 459)
KA1.We possess the capability to identify and transfer relevant knowledge from our organization to our supply network effectively.
KA2.Our knowledge acquisition processes enhance our ability to view products and services from a holistic perspective, thereby strengthening our overall understanding.
KA3.We actively seek out new knowledge and expertise to improve our supply chain operations.
Knowledge sharing(representative references;Maravilhas and Martins, 2019 and Lucas, 2019)
KSh1.Our organization has established communication channels and platforms for

sharing knowledge among stakeholders in our supply chain.

KSh2.The act of knowledge sharing significantly improves both our explicit and tacit knowledge, leading to a reduction in errors and mistakes and ultimately enhancing our operational and economic sustainability.

KSh3.To ensure transparency in our operations and build customer trust, our organizations openly share the details of our manufacturing processes.

Knowledge storage(Olivera (2000))

KSt1.The ability of our organization to preserve knowledge has significant implications for our performance.

KSt2.We regularly update and maintain our knowledge storage system to ensure the accuracy and relevance of the information.

KSt3.We have established access controls and security measures to protect our knowledge assets from unauthorized access or use.

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1st Half Semester Progress Report

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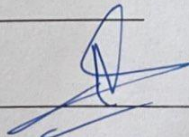
Supervisor Student Meeting Record

No.	Date	Place of Meeting	Topic Discussed	Signature of Student
1	8/4/2023	Business school	Identify thesis topic	Malya
2	28/4/2023	Business school	Guide for research gap	Malya
3				
4				

Progress Satisfactory

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Signature of Supervisor:  Date: 16-6-23

Note: Students attach 1st & 2nd half progress report at the end of spiral copy.



2nd Half Semester Progress Report & Thesis Approval Statement

Enrollment No.	01-322212-010
Thesis/Project Title	Supply chain Ambidexterity and Sustainability SCM: Moderator role of knowledge network Capability

Supervisor Student Meeting Record

No.	Date	Place of Meeting	Topic Discussed	Signature of Student
5	20/5/2023	Business school	Develop literature Review	Malya
6	12/6/2023	Business school	Check for Plagiarism	Malya
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APPROVAL FOR EXAMINATION

I hereby certify that the above candidates' thesis/project has been completed to my satisfaction and, to my belief, its standard appropriate for submission for examination. I have also conducted plagiarism test of this thesis using HEC prescribed software and found similarity index at 18%. that is within the permissible limit set by the HEC for thesis/ project MBA/BBA. I have also found the thesis/project in a format recognized by the department of Business Studies.

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