UNIVERSITY OF CAPE COAST

SUPPLY CHAIN COLLABORATION, INNOVATION AND PERFORMANCE OF PRIVATE HEALTHCARE ORGANISATIONS

PATIENCE AKUA AFREH

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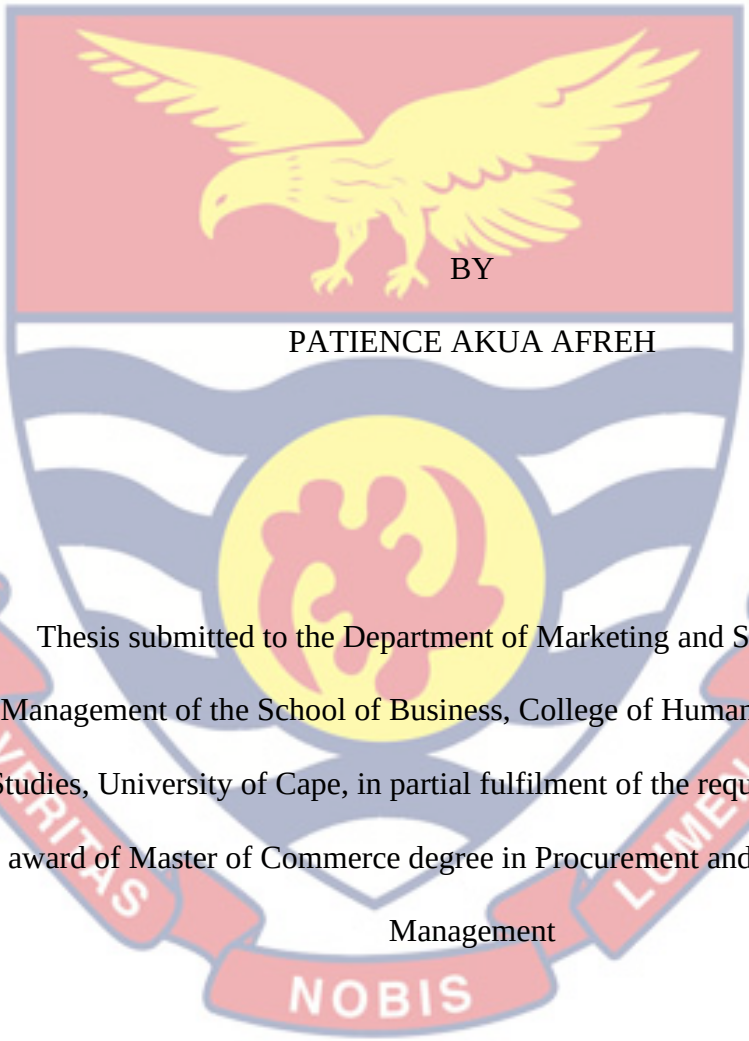

BY

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Thesis submitted to the Department of Marketing and Supply Chain Management of the School of Business, College of Humanities and Legal Studies, University of Cape, in partial fulfilment of the requirements for the award of Master of Commerce degree in Procurement and Supply Chain Management

DECEMBER 2021

DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my original research and that no part has been presented for another degree in this university or elsewhere.

Candidate's Signature ……. Date ……..

Name: Patience Akua Afreh

Supervisor's Declaration

I hereby declare that the preparation and presentation of the thesis were supervised per the guidelines on supervision of thesis laid by the University of Cape Coast.

Supervisor's Signature …… Date: …….

Name: Dr. Kwamena Mintah Nyarku

ABSTRACT

The aim of this research is to examine the mediating effect of supply chain innovation on supply chain collaboration and private healthcare performance. An explanatory research design was adopted and was supported by the quantitative research approach. A total of 206 private healthcare organisations in the Greater Accra region was used as the sampling frame and questionnaires were employed in collecting the data. A sample size 178 was used. SPSS, version 26 software was employed for data analysis. The study indicated that supply chain collaboration and supply chain innovation have a statistically significant positive relationship. Moreover, the results indicated that when the effects of other variables are statistically controlled, supply chain collaboration contributes to a statistically significant positive change in supply supply chain innovation of private healthcare organisations. Finally, the study asserted that supply chain innovation partially mediates the predictive relationship between supply chain collaboration and the performance of private healthcare organizations. Therefore, private healthcare organizations must be willing to collaborate with member in the supply chain to procure and supply drugs and non-drugs items.

KEYWORDS

Supply Chain Collaboration

Supply Chain Innovation

Healthcare Performance

Decision Synchronisation

Goal Congruence

Information Sharing

Incentive alignment

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DEDICATION

To my family and friends

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LIST OF ACRONYMS

ANOVA	Analysis of Variance
CC	Collaborative Communication
DS	Decision Synchronization
GC	Goal Congruence
HCP	Healthcare Performance
IA	Incentive Alignment
IS	Information Sharing
JA	Joint Activities
JK	Joint Knowledge
PHC	Private Healthcare
RBV	Resource Based View
SC	Supply Chain
SCC	Supply Chain Collaboration
SCI	Supply Chain Innovation
SCM	Supply Chain Management
SPM	Synchronize Performance Management
SPSS	Statistical Package for Social Sciences

CHAPTER ONE

INTRODUCTION

The chapter one contains detailed information on the background of the study, statement of the problem, purpose of the study, objectives of the study and research questions. Additionally, chapter one discussed the significance of the study, the limitations, delimitations, and organization of the study.

Background of the Study

With the U.S. government's healthcare reform initiatives and the public's demand, the healthcare industry has been under pressure to develop efficient and effective ways to improve its operations and reduce costs (Kowalski, 2016). Kowalski (2016) further argued that the urgent need for healthcare organisations to curb financial challenges efficiently has become more critical due to recent economic problems. Nowadays, the changing working environment in healthcare presents challenges and opportunities. So, to deal with such unexpected events, healthcare organizations need collaboration and innovation capabilities, and to achieve a competitive advantage, supply chain collaboration and innovation are opportunities that healthcare organizations should take advantage of (Chakraborty, Bhatta Charya & Dobrzykowski, 2014).

The 2018 annual report of the Ministry of Health indicated that the health sector is faced with significant problems such as an increase in healthcare expenses, particularly with procurement of goods and services, shortage of drugs, inadequate equipment and tools, and reduction in client satisfaction. The MOH annual report 2018 further indicated that the ministry

recorded 41.3% expenditure, which amounted to GHC 2,274.4million out of the ministry's total expenditure, on the SC activities (Ministry of Health annual report, 2018).

Additionally, healthcare organizations' efforts to offer quality healthcare without burdening the patients have become increasingly tricky (Dobrzykowski, 2012). As a result, consideration is slowly shifting toward managing SC systems and establishing connections through administration. Consequently, the collaboration with the SC and the arrangement of performing partners has expanded in significance for healthcare organizations (Lonsdale, 2005). Also, the health care segment is one of the divisions with tall possibilities of contributing more income to most nations (Mandel, 2017; Chakraborty, *et al.*, 2014). Due to this, it is essential to see into the components that offer assistance in making strides when administering hospital activities. Among the different variables of healthcare division execution, SCC has been seen as the fundamental determinant for healthcare performance. Moreover, understanding and practising SCC have become prerequisites for remaining in the competition and moving forward of the firm's performance within the worldwide race and improving benefit.

A critical understanding of SCC is essential due to the diversity of actors and the complexity of supply chain network relationships (Shin, Park & Park, 2019). Additionally, increasing competition has made most organisations look more closely for ways to partner with outside partners so that their SC can be well-organized, effective, and reactive to changing market needs (Kempa, Tanuwijaya & Tarigan, 2020). Furthermore, the dynamic and

uncertain environment has forced businesses to pool and integrate their suppliers' and customers' resources (Cao & Zhang, 2014).

Recently, individual firms are finding it difficult to improve upon both operational and financial performance in such an uncertain and volatile environment which comes as a result of changes in market demand, changes in technology used, increase in the cost of materials, and increase in competition (Acquah, Naude, & Sendra-García, 2021). As a result, individual firms have become more focused on building collaborative relationships with their suppliers and working together for tremendous success. The need for SCC has become more relevant because of the dispersion of innovation capabilities and knowledge sharing within SC networks and the increase in business environment competition and volatility (Singh, Garg, & Sachdeva, 2018). As a result, supplier collaboration has become a critical success factor in most organizations because it has considerably improved their performance (Kahkonen, Lintukangas, Ritala & Hallikas, 2017).

Research studies have asserted that innovation capability is among the SC capabilities that influence the performance of organizations (Lintukangas, Kähkönen, & Hallikas, 2019; Yan, Yang & Dooley, 2017). Additionally, among the most important sources of innovative ideas are suppliers and customers (Kahkonen *et al.*, 2017). According to Yunus (2018), companies in today's market must be innovative enough to grow at a pace that meets consumer demands that constantly change. However, it is difficult for organizations to innovate and perform well in isolation because it is now well understood that SCI primarily relies on coordinated efforts between firms and their suppliers (Sumo, Valk, Weele & Bode, 2016).

Researchers recommend collaboration within the supply chain for driving innovation. SCC has gained attention in most industries, including the healthcare sector, due to the positive outcomes that organizations enjoy when SCC initiatives are inculcated into their operations. In light of this, organizations have realised that when they work alone without collaborating with their key suppliers, they cannot compete effectively (Sumo, *et al.*, 2016). Amid the ever-increasing complex and global economy, innovation has become an essential element to drive increased performance in firms, including health care organisations, and helps them adapt to customers and business processes (Simatupang & Sridharan, 2004). Therefore, healthcare organisations need to collaborate and cooperate by sharing resources, risks and rewards, effective communication and information sharing, and aligning business objectives with their suppliers.

Innovation, which is recognised as one of the significant ways of improving healthcare performance, has not been well embraced by these firms. Most private healthcare organisations lack the resources needed for innovation (Geldes, Heredia, Felzensztein & Mora, 2017). Therefore, collaborating with suppliers will be a significant resource that healthcare organisations need to utilise. By incorporating collaborative and innovative principles, healthcare organizations can become more effective in synchronizing their processes (Soosay & Hyland, 2015). Healthcare organizations must become capable of synchronising their processes by examining the value of their work performed and applying collaborative and innovative principles (Soosay & Hyland, 2015). Organizations must build collaborative relationships with suppliers to ensure profitability and increased

performance. In collaboration, capabilities, competencies and innovations are developed when collaborative partners possess a wide range of skills and knowledge (Acquah, *et al.*, 2021).

Moreover, collaboration with partners can influence innovation through several advantages, such as providing high-quality service, cost reduction, the coordination of activities and improving real-time decision-making (Pouwels & Koster, 2017). Additionally, in the SC market, an organization's relationship with SC members aids in creating value and are prerequisites for performance (Sumo, *et al*., 2016). Therefore, healthcare organizations should re-engineer and restructure their SC activities for increased performance. Considering this, healthcare organizations need to consider how they can take advantage of the expertise and resources of their SC counterparts to create additional value for their organizations.

Additionally, innovation is the origin of competitive advantage because it generates value for customers and results in customer satisfaction (Soosay & Hyland, 2015). Healthcare organizations must pursue innovative initiatives to overcome challenges hindering their performance through process and technological innovation. Collaboration with other business functions along the SC is an essential but challenging task in SCM (Vickery, 2013). Thus, organisations that use new technologies and develop new processes can significantly improve their performance (Klein, 2007). Hence, the ability of information technology to transmit and process information in real-time has become a pillar of SCC for organizations (Setia, Setia, Venkatesh & Joglekar, 2013).

Liao, Kuo and Ding (2017) argued that SCC and SCI are essential issues in SCM. Liao and Kuo (2014) further proposed that for firms to increase their performance, they need to access information and new knowledge because organisations can learn from and create innovation with other partners. Therefore, collaboration and innovation are critical for organizations. Studies on SCM suggest that collaborating with suppliers and customers due to access to diverse sources of information is a critical factor for innovation (Nieto & Santamaria, 2007). It takes combining different internal learning modes and external sources of knowledge to develop innovative initiatives (Mandal, 2016).

Liao, Hu, and Shih (2018) also considered SCC an essential external factor influencing the effective learning instrument for innovation capability. Furthermore, it was argued that the benefits gained from a collaborative relationship would vary (Liao, *et al.*, 2018). Thus, innovation capabilities based on daily collaborative relationships could enable focal organizations and their suppliers to pool their information to understand better the need for collaboration (Apostolos, Panagiotis & Panagiotis, 2017). Although SCC enhances the efficiency of firms, less is known about how it affects SCI and organizational performance (Mandal, 2017). The study is based on resource-based theory, network theory, and contingency theory.

Through the acquisition and control of strategic resources, such as physical or intangible, the resource-based view theory illustrates how organisations gain competitive advantage. Private healthcare organisations through innovation can create tangible and intangible assets through supply chain collaboration as they integrate their resources to be subsequently

leverage towards affecting their performances. On the other hand, the network theory demonstrates the relationship that exists among the private healthcare organisations that enables them to be comfortable in sharing ideas and resources to improve their performances (Ho, Kumar, & Shiwakoti, 2020; Zimmermann, Ferreira, & Carrizo Moreira, 2016).

According to contingency theory, firms succeed in their performance goals when their strategies considers outside factors (Taylor & Taylor, 2014). This establishes the fact that private health care organsations will fall on the colloraboration amongs themselves to bring innovative ideas on board in order to help improve performance. Various organisations work relatively close with each other to commemorate each other with what the other party lacks.

Statement of the Problem

Healthcare processes arise within a dynamic environment, as they are highly complex and heterogeneous and as well cost, quality and competition have also become troubling for healthcare providers (Ali, & Gibbons, 2017). In Ghana, private healthcare organisations lack a strong collaboration with their SC partners (Kwateng, Lumor & Acheampong, 2017). Besides, there is a problem with forecasting of drugs hence limiting the efficiency of SC functioning among healthcare providers in the private sector in Ghana (Nartey, Aboagye-Otchere & Simpson, 2020), thereby exacerbating the operational challenges of private healthcare providers in Ghana (Nartey, Aboagye-Otchere & Simpson, 2020). Furthermore, poor SC operations cause disruptions and delays in medicine supply, particularly in the private sector (Asamoah, Abor & Opare, 2011). These problems are linked with weak

information sharing among SC partners in the private health organisations of Ghana (Asamoah, Abor & Opare, 2011).

Moreover, according to Chen, Preston, and Xia (2013), hospitals have been facing financial difficulties caused by increased costs of hospital supplies and increased working expenses. Globally, expenses for medical supplies are significant in the healthcare industry, which amounts to approximately forty-five per cent of the budget of a healthcare organization (Kowalski, 2016). Therefore, due to the estimated patterns, a healthcare organization may need to put resources into their SC activities (Vähätalo & Kallio, 2015) and from which hospitals are encouraged to practice SCC (Lee & Fernando, 2015).

Despite these considerable investments to handling supply chain operations in the healthcare sector, a study shows there is under-development in research concerning the effect of SCC and firm performance, especially among private hospitals in Ghana, because limited studies has been conducted in this area (Asamoah, Abor & Opare, 2011). Recent works outside the context of this empirical study have confirmed the association between SCC and firm performance (Soosay & Hyland, 2015; Ralston, Richey, & Grawe, 2017), showing a growing interest in the subject. However, Abuosi and Atinga (2013) found that patients' expectations at the various private hospitals in Accra were not met even in the face of implementing the national health insurance scheme.

A study by Yaba (2014) confirms that the non-integration of SCM processes suppresses documentation processes, hence causing delays in the medical supply of supplies. Again, the private health sector in Ghana appears to have fallen behind in implementing effective SCM practices (Yaba, 2014).

As a result, the need to effectively work with suppliers in their SC has been a significant concern among management and SC executives in various healthcare organizations (Barlow, 2010; Mandel, 2017), especially in the private sector of Ghana (Asamoah, Abor & Opare, 2011).

In addition, Mustaffa and Potter (2009) indicated that it has become crucial for healthcare organisations to ensure that high quality care is provided to clients and ensure that there is the availability of sufficient suppliers and service providers of healthcare supplies. As a result, healthcare organisations are entreated to implement SC strategies/practices like SCI to improve hospitals' performance in areas of cost reduction and client satisfaction. Although some attempts have been made to ensure innovative supply chain solutions are implemented in the health sector in Ghana, there is still the need for innovative solutions for the current health SC and impending SC problems (Botes, Bam & De Kock, 2018).

Finally, Akenroye (2012) posited that for healthcare organisations to meet the dynamic and changing needs of customers, obtain a competitive advantage and sustain the organisation’s performance, organisations need to implement SCI in their business processes. Akenroye (2012) further indicated an unstable operational landscape, persistent and long-term health problems, changing needs of patients, supply chain issues, changes in technology and sustainability obligation. To solve these challenges and issues associated with healthcare services, organisations need to use SCI to respond to these issues. So the researcher is interested in finding out how SCI affects the interaction among private healthcare organisations and their performance.

Purpose of the Study

In this study, SCI is examined for its mediating effect on SCC and performance in private healthcare organizations in Greater Accra.

Research Objectives

The specific objectives seek to:

1. Examine the correlation between supply chain collaboration, supply chain innovation, and private healthcare performance
2. Investigate the effect of supply chain collaboration on private healthcare performance.
3. Assess the effect of supply chain innovation on private healthcare performance.
4. Evaluate the effect of supply chain collaboration on supply chain innovation of private healthcare organisations.
5. Examine the mediating effect of supply chain innovation on supply chain collaboration and private healthcare performance.

Research Questions

1. What relationship exists between supply chain collaboration, innovation and private healthcare performance?
2. What effect does SCC have on private healthcare performance?
3. What effect does SCI have on private healthcare performance?
4. What effect does SCC have on the supply chain innovation of private healthcare organisations?
5. What supply chain innovation mediates the relationship between supply chain collaboration and private healthcare performance?

Significance of the Study

The study's outcome will help healthcare organisations acknowledge and appreciate SCC in dealing with the various healthcare supplies and equipment providers. In addition, this study will enlighten the Ministry of Health on the essence of integrating and coordinating activities with key suppliers of medical supplies and equipment. This research will also assist SC managers of the various private healthcare organization to develop innovative initiatives to improve the performance of their organizations through SCC.

SC managers will be abreast with the need to share relevant and timely information with their suppliers and jointly synchronise decisions with their key suppliers to generate innovative initiatives. A further benefit of the study is that it gives a valuable briefing to healthcare SC practitioners about how collaboration and innovation can improve firm performance. Finally, as a study of healthcare SCC and innovation, this research contributes to the existing literature in this area while referencing students and researchers.

Delimitation of the Study

The study looked at the impact of SC innovation on the relationship between SCC and the performance of private healthcare organisations in the Greater Accra region. The Greater Accra region of Ghana was chosen for this study because it has a higher proportion of private healthcare organisations. This research focused on private healthcare organizations not the public ones because private organizations, including PHC organizations are more concened with having direct negotiations with suppliers than going through the competitive bidding process (MCGuinnesss & Bauld, 2004). Another reason is that private organizations are more receptive to entrepreneur and

innovation unlike the public organisation who are content with the traditional ways of doing things (Newman, 2003). Also, in the private sector, procurement activities have been redefined in terms of strategic SCM, unlike the public sector which is constrained by laws, rules and regulations and this has made them unable to develop strategic supply chain partnerships (McCue & Pitzer, 2005).

In addition, private healthcare organisations were used because relationship building in private organisations will be more effective than in public organisations. After all, in private healthcare organisations, the firm's ultimate goal is to maximise profit, which can be achieved by offering quality healthcare services to their client. Furthermore, offering quality healthcare services means that the firm should effectively align its procurement and SC activities, which can be done when private healthcare organisations collaborate with their suppliers of drugs and non-drug. Collaborations with their suppliers will help prevent stock out, shortages and high prices of supplies and high cost of services, which are the significant challenges private healthcare organisations face.

Limitations of the Study

Data collection was complex because some respondents were not willing to give information to the researcher. Also, the financial constraint on the part of the researcher was a challenge in collecting data for the study. Therefore, the study only looked at the collaboration of hospital-supplier SC and collected data from some private hospitals in the Greater Accra region.

Definition of Terms

Supply Chain Collaboration: SCC is an SC practice that enables the focal organization and its SC partners to share adequate information, take joint decisions, communicate collaboratively and share benefits and risks to ensure customer satisfaction, increasing profitability that both partners can enjoy together (Kempa, Tanuwijaya & Tarigan, 2020).

Supply Chain Innovation: Arlbjorn, de Haas and Munksgaard (2014) "defined SCI as a change (incremental or radical) within the SC network, technology, or process that can take place in a company function to enhance new value creation for the stakeholder".

Goal Congruence: According to Zhang and Cao (2018), goal congruence can be defined as the extent to which supply network actors perceive their business goals and objectives are met based on the chain's overall goal and not the detriment of the actors.

Decision Synchronization: Simatupang & Sridharan (2004) defined decision synchronization as the process by which SC members jointly make decisions in planning and operations to optimise their profitability.

Information Sharing: Cao and Zhang (2011) define information sharing as the exchange of relevant details about a market, available resources, operation processes, and rapid innovation.

Incentive Alignment: According to Simatupang and Sridharan, (2004), incentive alignment refers to the process by which chain and network partners have a unified view and agree to share costs, risks, and benefits as and when necessary.

Organisation of the Study

The research is divided into five major chapters. Chapter one provided an introduction to the study, including the study's background, statement of the problem, aims of the investigation, research questions, relevance of the study, limitations of the study, and delimitation of the study's organisation. The second chapter examined the study's literature review. The third chapter concentrated on the study's research methods, which included the research paradigm, research design, research approach, study area, study population, sampling technique and sample size, data collection instruments and procedure, data analysis, validity and reliability, and ethical considerations. Chapter four examined the findings offered, analysed the findings, and responded to the questions sent out. The final chapter summarised the findings, conclusions, and recommendations based on the findings.

CHAPTER TWO

LITERATURE REVIEW

This chapter gives an overview of a systematic analysis of the literature in terms of philosophy, principles and observational evidence from related research. The theoretical analysis establishes the theoretical basis for the study; the empirical review involves related works carried out by other scholars. This chapter aims to collect a pool of information on the subject to be analysed to ensure careful examination of the data required to validate the study. Sections such as theoretical, conceptual and empirical reviews are included in this part.

Theoretical Review

In academia, theories are vital for intellectual health. Academic research requires theories to explain the dynamics of relationships and forecast essential scientific phenomena and analysis that checks theories (Hunt, 2011; Egholm, 2014). Egholm (2014) described a theory as a prism by which we view and explain phenomena. Thus, the theory is fundamental for research in various disciplines. Including theories in an analysis best demonstrates the phenomena and helps build a clear philosophical structure (Lingreen, Binedetto, Brodie & Jaakkola, 2020). This research is theoretically grounded in the RBV theory, network theory, and contingency theory.

The Resource-Based View (RBV) Theory

The RBV theory has gained recognition in most SCM research. This theory is viewed for the proper understanding of specific concepts in SCM. Among such concepts is the SCC concept, which can help organizations improve their performance through SCI (Cao & Zhang, 2011; Mandal, Roy &

Raju, 2016; Piboonrungroj, 2012). Barney (2016) argued that the RBV theory is primarily used to explain factors that affect resources in organisations to help improve the firm's performance. Backman, Verbeke and Schulz (2017) argued that strategic assets, firm resources, and capabilities constitute the critical concepts of the Resource-Based View.

According to Ralston (2014), the RBV theory is relevant for understanding SCC and performance in a collaborative environment. For example, researchers have used RBV theory to describe the advantages of collaborations in supply chains (Liu & McKinnon, 2016), most commonly explaining how to achieve better performance with collaborations. In addition, resources-based theory suggests that companies can gain a competitive advantage through collaborations that accelerate, simplify, and improve SC processes (Gu, 2016).

In RBV's foundation, it is argued that strategic resources can explain variances in an organization’s performance, including core competence, dynamic capabilities, and absorbency capacity (Daspit, Chrisman, Sharma, Pearson & Long, 2017). With Resource-Based View, an organisation's core competencies and capabilities are counted as the essential factors that can improve a firm's performance (Kroes & Ghosh, 2010). Firms that can efficiently combine resources have an advantage over their competition (Daspit et. al., 2017). To gain sustained market share, companies must excel in core competencies and capabilities. (Hitt, Xu & Carnes, 2016). According to the RBV theory, investing in relationship-specific assets can help SC partners differentiate themselves from competitors because they are unique, valuable, non-substitutable and hard to imitate (Wernerfelt, 2016).

Collaboration in supply chains is defined as being distinctive and valuable from other resources firms can tap. Furthermore, SCC often leads to cost savings, shorter lead times and improved flexibility, so it provides competitive advantages in operational and financial performance (Barney, 2016; Durand, et al., 2017). As a result, SCC allows effective sharing of information in organizations and collectively managing decisions that can benefit the whole chain, suggesting that participants involved in SCC have a significant impact on improving the performance of their organizations.

Also, innovative opportunities primarily arise due to information sharing between SC partners (Torugsa & Arundel, 2013). The RBV theory proposed that the user interaction would permit the focal organisations to exploit their existing resources by incremental innovation to existing services to meet clients' demand (Habidin, Shazali, Salleh, Zainol, Hudin & Mustaffa, 2015). Using the resource-based view theory, this study presents that SCC and innovation contribute to improved performance.

Network Theory

SC partners have considerable interactions because of the network theory, which focuses on the ties between businesses (suppliers, consumers, and purchasers) (Hakansson & Ford, 2002). Since its introduction in the 1970s and 1980s, the theory has evolved from focusing on just two entities or strategic alliances to involving multiple relationships among counterparts throughout the supply chain. This theory was developed because literature and specific empirical studies found that organizations were generally embedded in multiple supply chains, with multiple customers and suppliers (Kumar & Rahman, 2015).

SC is a network of actors and links connecting these firms to produce products or services. Exchange relationships between firms, as well as the underlying contract, are represented by connections between firms. When analysing exchange relationships, numerous types of links can be considered (Kahkonen, *et al.,* 2017). However, the most important are contacts and several types of flows, including the flows of financial, material, and information resources. The coordinating flow of information exchanges data, while a material flow exchanges tangible items. Finally, a financial flow is an exchange of financial resources. There may be a unique network for each type of connection in an SC (Hearnshaw & Wilson, 2011).

There is no precise explanation in network theory for how companies decide when to make a purchase or not. However, this seems to be a means of explaining why companies choose to buy from or hire other companies as strategic partners (Hui, He-Cheng & Min- Fez, 2015). Therefore, finding companies to start a relationship and managing them is central to the network theory. By engaging in these relationships, resources and activities are easier to access, and in turn, the organization can better mobilize its resources and use them to benefit its performance (Hakansson & Ford 2002). In recent times, SC networks are defined by the relationships and collaboration between the different SC members. SC relationships aim to promote strategic collaboration on a long-term basis through effective and timely sharing of information with members, which will, in turn, lead to increased performance (Hearnshaw & Wilson, 2011).

Building an effective relationship with partners along the chain allows firms to combine resources for effective utilisation. Combining resources

helps get better results than an individual firm acting alone. In a network model, resources are worth more when combined with other resources (Hearnshaw & Wilson, 2011). Doing so requires effective relationships with partners. Additionally, Borgatti and Halgin (2011) described how organizations could improve performance through collaborative communication and information sharing with their SC partners.

Early on in the development of the network theory, it was believed that the centrality of a firm within a network would be an essential factor that would help it achieve a competitive advantage via a position within the network. As Miles, Miles and Snow (2006) explained, organizations that wish to collaborate with other firms must cooperate internally effectively to establish such a strong position. Firms' profitability in the centre of a network is generally characterized by their internal collaborative power (Mari, Lee, & Memon, 2015). Piboonrungroj (2012) applied the Network theory in SCM to SC activities, partners, and resource flow. Developing a long-term collaborative relationship is central to network theory (Fayezi, 2012).

Again, the network theory explains the concepts of SCC, innovation, and organisational performance in the sense that network theory is characterised by the traits of adaptability, trust, exchange, bounded rationality, and dyadic linkages (Kaal & ell'Erba, 2017). Furthermore, the network theory describes how actors acquire favours by establishing relationships and collaborating with organizations. A business's ability to survive depends on social networks, particularly by start-ups (Rompho, 2018).

The Contingency Theory

In contingency theory, companies' strategies and performance are influenced by conditions inside and outside their organization (Taylor & Taylor, 2014). Since all companies are affected by their environments, contingency views their external environment as one of its fundamental determinants of strategy and performance (Acquah, *et al.*, 2021). Islam and Hu (2012) posited that contingency theory is a research approach to organisational behaviour whereby vivid explanations are given as to how contingent factors like the external environmental forces can influence or affect the functions and performance of organisations. This theory's assumption states that no best or single organisational strategy will equally fit every organisation. Instead, firm performance is dependent on a fit or match of organisational strategy. According to contingency theory, firms succeed in their performance goals when their strategies considers outside factors (Taylor & Taylor, 2014).

The contingency theory was used to find links between SCI as a mediating variable to SCC and the performance of private healthcare organizations. For example, a supply chain strategy responsive to its environment might result in higher performance for companies applying contingency-based theory (Bartnik & Park, 2018). In addition, all SC partners who collaborate must develop innovative ideas (Bartnik & Park, 2018) that help minimise the uncertainties of a change in the commercial environment.

Conceptual Review

Throughout the whole research process, from the commencement of the study to the last stages of data collection and analysis, the conceptual review serves as the fundamental building component. This part is devoted to the explanation of numerous thematic concepts that were introduced during the study.

Supply Chain Collaboration

SCC is an organizational practice that enables the primary or core organization and its partners in the chain to share adequate information, take joint decisions, communicate collaboratively and share benefits and risks to ensure customer satisfaction, increasing profitability that both partners can enjoy together (Kempa, Tanuwijaya & Tarigan, 2020). Collaborating with SC partners deals with the process of taking decisions that involves independent firms at different levels within the SC for a significant outcome (Shahbaz, Rasi & Sohu, 2018).

SCC is a term in SC that deals with the process whereby independent organisations work together or collaboratively to design and arrange operations in the SC (Shin, Park & Park, 2019). It has further been argued that successful SCC comes with many benefits for partnering organisations (Shin, Park & Park, 2019). Yung, Lee, and Lai (2009) also defined SCC as the act of getting work done and achieving shared goals through working with suppliers within the supply chain. Yung et al., (2009) asserted that SCC goes beyond common goals to include shared determination and deep cooperation to achieve a common goal. According to Lee, Cho, and Park (2015), companies collaborating with their SC partners have an advantage over their competitors.

SCC deals with focal organisations networking with two or more firms (suppliers) suited locally and heterogeneous to collaborate to achieve a common goal (Bag, Gupta & Telukdarie, 2018). They further argued that the collaborative SC includes multi-tier suppliers whose activities affect its overall performance. Furthermore, due to their rarity and uniqueness, relationship-based assets generate significant competitive edge for the entire SC (Lioukas, Reuer & Zollo, 2016). As a result, businesses can focus on their core competencies when collaborating within the supply chain. In such a scenario, specialisation and economies of scale improve, enhancing their competitive advantage (Qian, Wang, Geng & Yu, 2017).

To manage the SC effectively, there has been a need to look beyond other internal actors to seek collaborations outside the organization (Lee et al., 2011). Collaborative SC relationship helps firms to benefit from SC alignment (Ramanathan & Gunasekaran, 2014), risk management (Quoc Le, Arch-int & Nguyen, 2013), information sharing (Du, Lai, Cheng & Cui, 2012), innovation creation (Wang & Wei, 2013) and improved performance. The merits of SCC that researchers further explained are cost reduction (Kohli & Jensen, 2010; Danese, 2013), improved customer service and satisfaction (Kohli & Jensen, 2010), improved schedule attainment, and lead time reduction (Danase, 2013) and improved market competitiveness and profitability (Yunus & Tadisina, 2016; Yunus, 2017).

Contemporary studies featured the significance of joint effort over many studies and demonstrated that collaboration with SC partners brings many benefits. Research works explain how SC partners' coordinated effort reduces the risks associated with SC activities and enables organizations to

accomplish a competitive situation by guaranteeing a reduction in cost regarding operations and transactions (Liao, Hu & Ding, 2017). According to research, SCC assists firms in risk management by sharing information and other resources (Cao *et al.*, 2012), which improves both the operational and financial performance of organizations (Yunus, 2017). In the eyes of many, SCC is a collaborative process that is dependent on various networks and linkages between a business and its external environment, which may include suppliers, consumers, and governmental agencies (Mandal, 2017).

Cao and Zhang (2011, p.165) explained "SCC as integrating two or more independent firms to plan and execute SC operations". They further explained that collaboration is possible when firms with similar knowledge bases can absorb new knowledge acquired from each other. Again, SCC is explained to be "a business process whereby two or more firms work together towards common goals" (Simatupang & Sridharan, 2004, p.166). According to Zhang and Cao (2018, p. 6), "factors such as information and resource sharing, goal alignment, communication, decision synchronization, and incentive alignment are essential to a successful collaboration". The components of SCC are explained below

Incentive Alignment

According to Simatupang and Sridharan (2004, p.16) "incentive alignment refers to the process by which chain and network partners have a unified view and agree to share costs, risks, and benefits as and when necessary". Zhang and Cao (2018) indicated that it is essential to understand the benefits and risks to devise incentives and sharing structures. Due to this, in supply chains characterized by high volatility and uncertainty, who gets

what becomes extremely important. Furthermore, it provides incentives for SC members to innovate, improve their performance, and increase profitability. Generally, effective SCC is built upon the foundation that there must be a fair sharing of risk and benefit so that profit maximization does not occur at any specific location along the chain but instead occurs by global optimization throughout. It means, further, that collaborative efforts should be quantitatively advantageous to all (Cao & Zhang, 2014), and gains should be proportionally shared to the partner involved (Lee & Whang, 2001).

Information Sharing(IS)

Cao and Zhang (2011, p.166) "defined IS as the exchange of relevant details about a market, available resources, operation processes, and rapid innovation". IS has been explained in several studies and described as the cornerstone (Barratt, 2004), backbone (Ali, Mahfouz, & Arisha, 2017), and heart of SCC (Cao & Zhang, 2011). SC partners benefit from effective sharing of information in several ways, including reducing the potential for information asymmetry while dealing in a complex environment with uncertain demand (Simatupang & Sridharan, 2004). Furthermore, in the study by Kumar & Rahman (2015), it was reported that IS among SC members could improve innovation capabilities.

Cao and Zhang (2018, p.7) explained information sharing "as the willingness and readiness of firms to make strategic and tactical data such as inventory levels, forecasts, sales promotion, strategies and marketing strategies available to firms forming SC nodes". Sharing information with partners is considered the bloodline for SCC because partners can see from all sides of the chain (Panahifar, Byrne, Salam, & Heavey, (2018). Qrunfleh

(2010) suggested that the primary goal of exchanging enough intelligence is to improve the efficiency and effectiveness of supply networks while simultaneously enhancing company performance. Therefore, IS is one of the critical elements that improve the firm's performance (Lee & Ha, 2018).

Goal Congruence(GC)

According to Zhang and Cao (2018, p.7), "goal congruence can be defined as the extent to which supply network actors perceive their business goals and objectives are met based on the chain's overall goal and not to the detriment of the actors". It has been suggested by Ramanathan and Gunasekaran (2014) that a successful collaboration hinges on alignment, as satisfaction is an integral requirement for success. The collaboration will have many ups and downs without goal congruence, which will negatively affect the satisfaction of all involved, leading to decreased collaboration success.

Decision Synchronization(DS)

Simatupang and Sridharan (2004, p.16) defined DS “as the process by which SC members jointly make decisions in planning and operations to optimise their profitability”. Because each firm will be considering its information, the firms are likely to make decisions based on conflicting criteria, which may hinder the SC. Because of this, SC members must work together to make key choices in order to improve overall performance (Cao & Zhang, 2018). Additionally, they explained that joint decision-making requires planning, solving problems, rules, regulations, and procedures development and implementation. Basu, Jeyasingam, Habib, Letchmana and Radhakrishnan (2017) also proposed that decision synchronisation requires strategic coalition, worthy relationships, trust, and loyalty. DS aspires to

connect SC partners and seamlessly integrate choices in order placement, replenishment, and delivery via the use of technology (Cao, et al., 2012).

Supply Chain Collaboration in the Healthcare Industry

The growing public demand for high-quality healthcare has prompted healthcare organisations to develop processes that will help them enhance efficiency and lower costs, ultimately leading to improved performance. Examples include the practice of hospital-supplier collaboration and the use of electronic health records systems. However, recently, there has been an urgent need for the healthcare industry to curb financial challenges which comes as a result of high operating cost and high cost of health care supplies and equipment by inculcating SCC and innovation in their operations processes (Drupsteen, Vaart & Donk 2016).

Healthcare supply chains are quite different and unique from the SC of manufacturing firms. One of the uniqueness is the quality of medical supplies, which is more crucial and critical than the supplies of manufacturing firms because any defect or failure in medical can result in a severe direct effect (Akkermans & Voss, 2013). Also, how complex healthcare operations make SCM in healthcare more complex and knowledge-intensive than manufacturing firms (Wang *et al.*, 2015). Due to the criticality of the healthcare SC, medical centres are encouraged to develop SCC initiatives to help improve the firm's performance.

More emphasis is placed on value-addition, quality of care, cost of care, patient safety, and effectiveness in today's healthcare industry. As a result, healthcare organizations are increasingly embracing the SC strategy to achieve these objectives. This technique has attracted the attention of many

academics in the healthcare industry, as it has a significant impact on organizational performance. Examples include the healthcare industry, where rising prices and concerns about improved service quality have increased interest in the creation and implementation of supply chains, among other things. SCM, according to Fawcett, McCarter, Webb, and Magnan (2015), has proven to be a strategic cornerstone for boosting competitiveness, customer care, and profitability. Meanwhile, Dobrzykowski and Vonderembse (2016) found that a hospital's SC is linked to SC outcomes and cost and quality improvement.

However, according to a study by Dogra and Dogra (2015), SC in healthcare-related to a pharmaceutical product is crucial in assuring a good standard of care for patients and adequate medicine suppliers for pharmacies. As a result, according to a study, the healthcare industry has to deploy a new strategy such as SCC and SCI to retain SCM effectiveness and boost customer service levels while lowering operational costs. While SCM has proven beneficial in other industries, it has proven to be challenging to implement in healthcare (Almeida & Cima, 2015, Scholten & Schilder, 2015). Unlike other industries, the healthcare industry's supply chain networks are complicated (Vahatalo & Kallio, 2015).

Supply Chain Innovation (SCI)

Healthcare industries can use innovation to improve their services and gain a competitive advantage and organizational sustainability. Innovation goes hand-in-hand with providing a competitive advantage and achieving organizational sustainability (Mandal, *et al.*, 2016). A company's ability to differentiate itself from others, compete better, and advance to new heights

through innovation has long been regarded as the primary way to differentiate itself in the marketplace. According to Thakur, Hsu and Fontenot (2011), healthcare innovation is when a healthcare organization does more efficient and cost-effective work that focuses on the patient's needs. Healthcare innovation is, according to Omachonu and Einspruch (2010, p.5), "a new idea, concept, process, or product designed to improve treatment, diagnosis, education, outreach, prevention, and research, as well as to enhance quality, safety, outcomes, efficiency and cost".

Innovation is used to produce new goods, processes, and services that lower costs or boost efficiency, ultimately resulting in more happy customers at the end of the supply chain (SC). By allowing SCI to interact with hospital staff, SCI can provide a quality service for hospitals and patients. As a result, Healthcare organizations will perform better when SC partners collaboratively work together to bring on board exclusive innovative ideas, initiatives and practices in their business transactions. Thus, Arlbjorn, de Haas and Munksgaard (2014) recommend that companies prioritize SC technology, networks, and processes to implement SCI.

Regarding Lee, *et al.* (2011), SCI is conceptualised as two-dimensional constructs: technological innovation and process innovation. Increasingly, organisations realise that their SCI is critical to their growth and long-term sustainability. To remain competitive in a rapidly changing market, companies need SCI, which helps them maintain a long-term competitive edge while also allowing them to swiftly adapt their strategies. Organizational transformation necessitates a new approach to SCC and supply chain performance enhancement (Soosay & Hyland 2015).

Radical innovation, according to Shen and Chien (2016), is an invention with a high degree of originality that alters the overall order. Radical innovation deals with new products and services that change or replace existing products or services (Reyes-Gómez, 2018). Radical innovation involves initiating new delivery or creating new products and services (Sumo, Valk, Weele & Bode 2016). Shen and Chien (2016) identified incremental innovation as a sort of innovation that focuses on minor improvements in technology and basic product or service enhancement. incremental innovation was described by Sumo et al. (2016) as the process of adding new features or benefits to current goods and services or improving the way existing customers are treated. There are several advantages to incremental innovation, including lower risk, lower cost, and less chance of failure, compared to radical innovation (Shen & Chien, 2016).

Healthcare Performance

In order to be successful in today's highly competitive market, organisations must use performance measurement to identify issues and constraints and meet consumer needs (Ramanathan & Gunasekaran, 2014). The measuring system must represent a balance between financial and non-financial metrics in order to generate an effective performance assessment (Flynn, Huo & Zhao, 2010). Theoretically and empirically, the importance of SCC has been examined in cost reduction through the effective sharing of information and other resources (Ralston et al., 2017; Ho, Kumar & Shiwakoti, 2019). SCC can also create efficiency, effectiveness, and profitability (Cao & Zhang 2011; Wisner, Leong & Tan 2014) and gain a competitive advantage (Cao & Zhang, 2012).

According to Gunasegaram (2015), performance measures in SCM usually deal with suppliers, delivery performance, customer service, and inventory cost. However, performance measurement in healthcare seems to be more complicated than in industrial companies due to the complexity of concepts as the quality of care. Since healthcare organisations depend on their financial health to stay afloat, financial performance indicators are often used in performance measurement. According to Nerenz and Neil (2016), financial performance in the healthcare system is described as net gain and operating gain. Many researchers in SC have stressed this measurement of SC effectiveness performance.

Again, according to Gunasekaran, Gunasekaran, Irani, Choy, Filippi, & Papadopoulos (2015), the measurement must be linked to customer satisfaction for effective performance measurement in SC strategy. For example, measuring customer satisfaction from the SC perspective can reduce the delivery cost. These customer satisfaction measures are essential to describe the customer value creation in SCI as efficient data management, reduction in medical error, and speedy patient processing. Both operational and financial metrics were used to gauge how well the healthcare system is doing in this research.

Empirical Review

Supply Chain Collaboration and Firm Performance

Singh, Garg, and Sachdera (2018) conducted a study on the topic "Supply Chain Collaboration: A state of the art literature" using the qualitative method to explore a detailed explanation of the supply chain collaboration concept. Their study employed the systematic literature review technique.

This gave the researchers access to diverse information on the SCC concept. Their study posited that SCC is among the major factors that enable organisations to achieve their desired goals and objectives, including improving their performance. Mathuramaytha (2011), proposed that due to the numerous benefits of practising SCC, most organisations would want to embrace collaborative strategies to enhance the firm's performance.

Furthermore, Mandal (2016) used a multi-unit analysis of multiple healthcare supply chains in the publication "The effect of dynamic capacities on hospital-supplier cooperation and hospital SC performance." Samples were taken using a stratified sampling method. Structural equation modelling was used to analyse the data acquired through email survey. Hospital-supplier cooperation has a beneficial influence on hospital SC performance, according to a survey that received 192 replies. In addition, hospitals, according to the findings, should spend more money on improving their dynamic capacities to keep up with environmental changes and, as a result, achieve better performance.

There was also a research done by Rasi, Ahmad, and Sohu on the influence of SCC on operational performance in Malaysian manufacturing enterprises (2018). This study used a quantitative research method. Questionnaires were self-administered as well as via e-mail. 284 sample size was and factor analysis and multiple regressions through SPSS for analysing data. The findings from this study revealed that operational performance is significantly affected by two SCC approaches: information sharing and joint decision-making in a positive way.

In addition, a study on vertical collaboration in the SC by Renko (2011) used a quantitative research method and the e-mail based structured questionnaires was used for data collection. Fifty questionnaires were collected, but 47 was used for the analyses. SPSS was used for the data analysis responses from 50 respondents and employed descriptive statistics in the study. The study's findings revealed that SCC has a positive impact on firm performance.

A critical sum indicates a close positive relationship between SCC and firm performance (Salam, 2017; Yuen & Thai, 2017; Li, Fan, Lee & Cheng, 2015; Tsanos & Zografos, 2016). Ho, Kumar, and Shiwakoti (2020) argued that SCC is a competitive tool that, when used, helps to improve the performance of a firm and the SC as a whole. They further argued that gaining a high level of collaboration to obtain better performance outcomes is the ultimate goal of most organisations. It was also argued by Cao, et al. (2010) and Wisner, Leong and Tan (2014) that SCC could also create efficiency, effectiveness, and profitability and cause organisations to gain competitive advantage (Cao & Zhang, 2013). Whipple, Lynch and Nyaga (2010) also argued that SCC enables partners to share information to improve performance.

Supply Chain Innovation and Firm Performance

In the study titled "partnership-based supply chain collaboration: impact on commitment, innovation and firm performance by Shin, Park, and Park, 2019, the researchers used a model based on social capital theory to examine the impact of partnership-based SCC on innovation. In their study, they used a survey of 423 respondents. The findings of their research showed

a positive relationship between innovation and firm performance. Also, a study conducted by Yunus (2017) on leveraging SCC in pursuing radical innovation surveyed 230 firms. The data were analysed using structural equation modelling. The study revealed that radical innovation has a positive influence on a firm's performance.

Streams of literature have examined the impact of innovation on firm performance (Jajja, Kannan, Ali & Zahoor 2017; Iddris, 2016; Atalay, Dirlik & Sarvan, 2017). Organizations and researchers have acknowledged innovation as a success factor for a firm's survival and performance (Yunus, 2017). Studies on innovation examined the types of innovation, the innovative activities that firms engaged in, and the benefits of innovation in the supply chain (Pouwels & Koster, 2017; Rubera & Kirca, 2012). Previous research indicated that innovation is positively related to firm performance (Walker, Chen & Aravind 2015; Yunus 2017).

Supply Chain Collaboration and Supply Chain Innovation

Soosay, Hyland, and Ferrer (2008) conducted a study on SCC: Capabilities for continuous innovation used a semi-structured interview to collect data from 23 managers. Their study revealed that collaborative relationships positively impact firms' operations and the capabilities to innovate. Furthermore, their research showed that the ability of firms to collaborate enables firms to integrate and increase performance while embarking on both radical and incremental innovation. Finally, in research work by Kahkoneen, Lintukangas, Ritala, and Halikas (2016), on supplier collaboration practices: implications for focal firm innovation performance. This study was a quantitative study where 165 firms were used and analysed

employing regression analysis of SPSS. Their study revealed that supplier collaboration practices are closely related to focal firm innovation performance.

Lu and Yang (2004), indicated that research and development cooperation among firms helps develop new products. The level and intensity of joint development, exchange of know-how, internal development, contract development, and coordination were used to measure the degree of collaboration between a firm and its partners (Liao, Hu & Shih, 2018). Agarwal and Selen (2009) discovered that organizations that provide services create new service offerings resulting from collaborative initiatives of the firm's supply chain. Their study supports the definition of service innovation, which implies new or enhanced service offerings that can be created due to collaboration and cannot be delivered only on an individual, organizational merit.

Tomlinson and Fai (2015) also proposed that upstream and downstream collaboration improves an organization's innovation level. Liao, *et al.*, (2018) proposed a positive relationship between SCC and innovation. In terms of connections and collaboration, the SC has been exploited as a source of innovation (Bellamy, Ghosh & Hora, 2014). In addition, there has been literature that collaboration with SC partners improves their innovation capability (Iddris, 2016) because information sharing and learning capacities are improved by collaboration and coordination with SC partners (Pouwels & Koster, 2017).

Researchers (Ramanathan & Gunasekaran, 2014; Kumar, Banerjee, Meena & Ganguly, 2017) argued that organizations could innovate by

planning together, sharing information, knowledge, and other resources synchronizing and coordinating activities. However, implementation of SCC depends on radical and incremental innovation (Ahlborn, DE Haas & Munksgaard, 2011; Nguyen, Lei, Vu & Le, 2019). Hao & Feng (2016) asserted that information and knowledge sharing is more applicable to radical innovation than incremental innovation because collaboration among firms can improve heterogeneous knowledge and information sharing, leading to radical innovation. Jansen, Bosch and Volberda (2005) also argued that information exchange enables organizations to prevent being limited to inside knowledge and information, which will help create opportunities to develop new products and services different from the current ones.

Also, Nguyen, Lei, Vu and Le (2019) proposed that decision synchronization is positively related to radical innovation. It is easy for SC partners to share costs, benefits, and responsibilities when sharing the same goals and objectives. Incentive alignment can bring about certainty in the business environment where collaborators can incrementally innovate since organizations can receive stable benefits and reduce risk (Nguyen *et al.*, 2019).

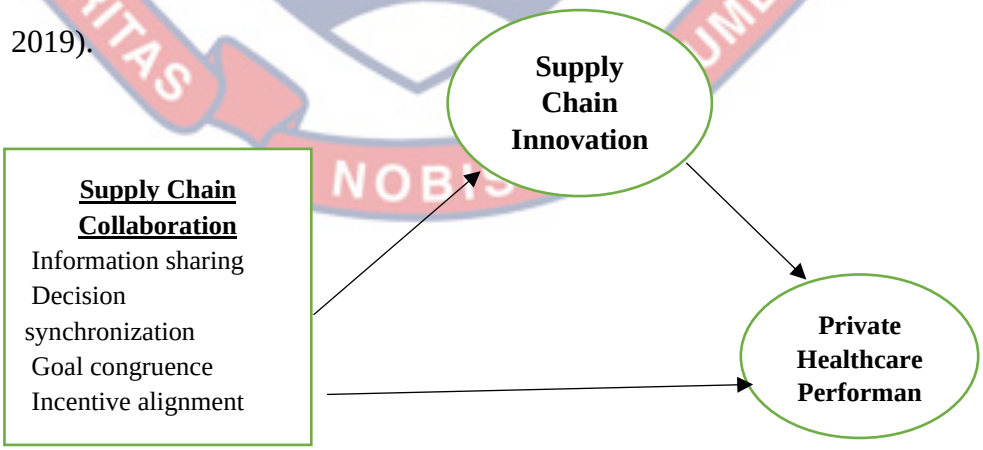

Figure 1: Conceptual Framework

Source: Developed by researcher, 2021

The conceptual framework above indicates and describes the relationships between the specific variables identified in this study. Figure 1 gives a vivid explanation of the correlation that exist among SCC, SCI and HCP. This framework was developed by the researcher by focusing on the various concept used in the study. From the framework, supply chain collaboration being the independent variable was measured by using information sharing, decision synchronization, goal congruence and incentive alignment. Also, supply chain innovation is the variable used to mediate the relationship between SCC and healthcare performance. Finally, the dependent variable in this study is private healthcare performace.

Chapter Summary

This chapter presented a literature review related to the study, including theoretical reviews, conceptual reviews, empirical reviews, and conceptual frameworks. The theories used were clearly defined, and their relevance to the study was indicated. Also, the conceptual review gave a detailed and clear explanation of the concept used in the study, such as SCC, SCI, healthcare supply chain, and firm performance. Finally, the study reviewed several works related to the study empirically and researcher came up with a conceptual framework.

CHAPTER THREE

RESEARCH METHODS

This chapter describes the study methods, which define different research approaches needed to achieve the research objectives. The study dealt with the research philosophy, design, population, research approach, sampling procedure, data collection instrument, validity and reliability, processing, and analysis. This chapter also involves the ethical considerations of the study. This study assessed the mediating effect of supply chain innovation (incremental and radical) on the relationship between supply chain collaboration (IS, GC, DS and IA) and firm performance. Members of the Private Health Facilities Associations of Ghana (PHFAoG), Accra branch, were used as the study's sampling frame. The study only considered the formal private healthcare providers.

Research Paradigm

Per the nature of the study, the positivism research philosophy was used. Ryan (2018) argued that positivism is a type of research philosophy which is objective and there exist a single version of what is true regardless of social perspective. Positivism is a theory that is heavily based on empiricism. The principle of positivism is that science is the best way to discover the truth. Again, positivitist argues that accurate understanding can only be obtained by sense experience. Positive paradigm experiments are focused on reality, and the universe is factual and external (Ryan, 2018). According to positivist research, knowledge is gained based on experience, but on the opposite, some principles such as time, space, and cause cannot be grasped based on experience. The positivist assumes that the framework of all sorts of things

can be seen as a specific difference in the actions of individuals or relations between individuals (Alharahsheh & Pius, 2020).

The positivist view of research method was employed for this research due to the quantitative nature of this study to gather much evidence. Also, positivism was used because the researcher was limited to the analytical form of data collection and analysis (Creswell, 2014) . Moreover, the study's results were quantifiable, and quantifiable conclusions contribute to the statistical review. Positivist studies usually follow a deductive approach (Scoltland, 2012). These reasons played a role in employing postitivism for this research.

Research Design

Explanatory research was used for this research because it aims to show causal associations between constructs. Explanatory research is a social phenomenon that describes and explains the association or discrepancies between two or more concepts in a study (Saunders *et al.*, 2016). In order to explain into details the various aspects of the study and as well understand the relationship and effect between variables used in the study, the explanatory reseach design was used. Also, the explanatory research design was employed with the aim of determining causal factors and results of a targeted phenomenon (Bhattacherjee, 2012).

Research Approach

The study adopted the quantitative research method. This study used a quantitative research method because it is a research approach to answer questions on relationships within variables that can be measured to explain, predict, and control phenomena (Zikmund, Babin, Carra & Graffin 2013). A quantitative study is used to confirm or disconfirm tested hypotheses. The

quantitative method also enabled the researcher to measure data using the mathematical or statistical tools in the analysis and helped generalize the research findings to the study population when the findings were reliable and valid (Saunders, Lewis & Thornhill, 2016). Quantitative research is a research approach used to test theories by examining the relationship between variables. These variables, in turn, can be measured, typically on tools, so that the data analysis can be done using statistical techniques (Creswell, 2014).

Study Area

The Greater Accra region is a cosmopolitan city with 5,055,833 residents, making it the largest region in Ghana and the eleventh largest metropolitan area in Africa (World Population Review, 2018, Ghana Statistical Service). Greater Accra is the region with the highest concentration of private healthcare centres of approximately 365 private healthcare organizations. Abuosi and Atinga (2013) found that patients' expectations at the various private hospitals in Accra were not met even in the face of implementing the national health insurance scheme. This situation is partly attributed to the inefficiencies in the SC of these private hospitals operating in the area (Abor, 2013; Nartey, Aboagye-Otchere & Simpson, 2020). Hence, justifying the need for the study to be carried out in Accra.

Population and sampling frame

Orodho (2009) defined population "as a larger group of people from which a sample is selected; the population element includes the direct and indirect beneficiaries of the final research product". The target population is a definite collection to which the researcher makes a comprehensive statement on conclusions. From this research, the study population included all private

healthcare organizations in the Greater Accra region. In this study, only the formal private healthcare organizations were considered. The sampling frame for the study involved the list of all private healthcare organizations registered with the Private Health Facilities Association of Ghana (PHFAoG). As at the time of this reseach, the PHFAoG had 206 members and this was used for the study.

Sampling Technique and Sample Size

Bryman (2016) defined sampling "as the method of defining and choosing an adequate number of elements from the sample population". Sampling techniques can be classified into probability sampling and non-probability sampling. In probability sampling, each variable in the population has a known, non-zero probability of being selected. Specifically, this study used the simple random sampling. With this technique, each participant has an equal probability of being chosen as a participant. The entire sampling process is carried out in a single stage, with each respondent chosen independently of the other population members (Saunders *et al.*, 2016).

The sampling technique and sample size used in a study can significantly affect the reliability and validity of the study (Blumberg, Cooper & Schindler, 2014). For this reason, researchers are encouraged to use the correct sampling technique and sample size to increase the acceptability and generalisability of the study results (Saunders *et al.*, 2016). The sample size used for the study was 178, even though 137 was the minimum sample size derived from the population by using the Yamene sample size determination. It was so because out of the 195 questionnaires distributed, 178 were retrieved and used for the analyses. The sample size used in a study can

be determined by using the Krejcie and Morgan sample size determination table (1970), Barclay, Higgin and Thompson (the rule of thumb approach), Marrison and Manion (2008), Yamane sample size determination, and other methods proposed by other authors. In this study, the Yamane sample size determination was used to determine the study's sample size.

Instrument

The instrument used for collecting data in this study is the questionnaire. According to Dum, 2010, a questionnaire is an instrument containing foreordained inquiries planned or defined by a researcher to gather information of interests of a study to accomplish the intended purpose of the study. A portion of the critical measures for utilizing the questionnaire is when mathematical or numeric data are required. The variables used in the study, both the dependent and independent variables, require mathematical data for quantitative analysis (Roopa & Rani, 2012).

Questionnaires were selected for many reasons; the questionnaire is the easiest and acceptable method when interacting with many respondents. Another justification for using the questionnaire was that it was easy to complete. It takes less time relative to approaches like interviews. Finally, it successfully gathers factual information on the procedures and circumstances under which respondents should know and inquire into their views and attitudes (Roopa & Rani, 2012). The questionnaire contained closed-ended/ questions where respondents were presented with choices to select. The intent of using this design was to present data that can be evaluated to quantify the variables of the study.

The questionnaire was divided into four parts (A, B, C, and D) based on the study's literature and objectives. The questionnaire used for this study can be found at pages 94-99. Section A focused on the demographics of respondents. The Section B also addressed SCC issues. The section B contained 29 items which measured how these private healtcare facilities effectively implement SCC initiatives. Also, the supply chain collaboration variable was measured using information sharing (IS), goal congruence (GC) , decision synchronization (DS), incentive alignment (IA), collaborative communication (CC), joint activities (JA) and joint knowledge (JK). A 5-point likert scale was used. The scale ranged from '1=not at all effective' to '5 = very effective'. Below are sources where the items were adapted from.

Table 1 : Construct and Items sources for supply chain collaboration

Constructs	Items	Source
Supply Chain Collaboration :		
Information Sharing	Item IS 1-5	Cao & Zhang (2013), Piboonrungruj (2012)
Goal Congruence	Item GC 1-6	Cao & Zhang (2013), Piboonrungruj (2012)
Decision Synchronization	Item DS 1-5	Cao & Zhang (2013), Piboonrungruj (2012)
Incentive Alignment	Items IA 1-4	Cao & Zhang (2013), Piboonrungruj (2012)
Collaborative Communication	Items CC 1-3	Cao & Zhang (2013), Piboonrungruj (2012)
Joint Activities	Items JA 1-3	Piboonrungruj (2012)
Joint Knowledge	Items JK 1-3	Cao & Zhang (2013), Piboonrungruj (2012)

Section C tackled issues regarding SCI. This sections comprised of 12 items. Radical (RI) and incremental innovation (II) was used to measure the supply chain innovation variable. A 5-point likert scale was used. The scale ranged from '1=not at all in agreement' to '5 = strongly agree'. Below are sources where the items were adapted from.

Table 2 : Construct and Items sources for supply chain innovation

Constructs	Items	Sources
Supply ChainInnovation :		
Incremental Innovation	Item II 1-6	Ralston (2014), Cao & Zhang (2012)
Radical Innovation	Items RI 1-6	Ralston (2014), Cao & Zhang (2012)

Finally, section D talked about the performance of private healthcare organizations in the Greater Accra region. A 5-point Likert scale was used when designing the questionnaire. Below are the sources were the questionnaire were adapted from.

Table 3 : Construct and Items sources for healthcare performance

Construct	Items	Sources
Healthcare Performance	Items 1-6	Ghandi, Shaikh & Sheorey (2017), Ralston (2014). Cao & Zhang (2012)

Data Collection Procedure

Primary data in the form of questionnaires were used for gathering data for the study. An introductory letter or ethical clearance letter given to the researcher by the university's Institutional Review Board was sent to all the selected private health care organizations in the Greater Accra region. The

letter stated the purpose or reason for the study, which was to examine the mediating effect of SCI on SCC and performance of private healthcare organizations in the Greater Accra region and why their assistance was needed for this survey. The researcher then waited for approval from the private healthcare organisations, to begin with, the data collection exercise.

The researcher used three weeks for questionnaires administration and collection, and each respondent used 20 to 30 minutes in answering the questionnaires. Despite that the minimum sample size was 137, 195 questionnaires were distributed, of which 178 were retrieved with a given response rate of 91.7%. The questionnaires were administered to procurement managers, supply chain managers, administrators and other personnel responsible for procurement and supply chain activities for their firms. In addition, respondents were requested to provide information on their organizations' benefits from practising SCC and SCI on firm performance.

Data Analysis

This section explained the data gathered and the measurement of the variables used in the study. The data analysis explicitly incorporates data entry into essential statistical software tools and further running of statistical analysis. Descriptive and multiple regression analyses were utilized to examine the study's objectives. Descriptive analysis is necessary for systematic thinking, and it generates ideas for further probing and research (Zikmund *et al.*, 2013; Creswell, 2014).

Statistical Packages for Social Science(SPSS), version 26 was the computer software program used to analyse the data. Correlation analysis was used to analyse the first obiective, while multiple regression analysis was used

to analyse the study's second, third and fourth objectives. The first objective sought to examine the relationship among SCC, SCI and private healthcare performance. Objective two also analysed the effect of SCC on the performance of private healthcare organizations. The third objective also sought to analyse the effect of SCI on private healthcare organizations' performance . Also, the fourth objective aimed to examine the effect of SCC on SCI of private healthcare organizations. Then the mediation analysis in the SPSS process macro was used to analyse the fifth objective, which was to examine the mediating effect of SCI on SCC and the performance of private health care organizations.

Ethical Consideration

Ethical considerations are relevant for any study. Issues regarding ethics exist from the onset of every study before the study is published (Creswell, 2009). Orb, Einenhbaur, and Wynada (2001) posited that the process of researching every study creates conflicts between the goal of generalizing the study's findings for the benefit of others and the right of respondents to preserve and keep their privacy. The researcher sent an introductory letter to all the selected private healthcare organizations in the Greater Accra region to comply with research ethics. The letter stated the purpose or reason for the study: To examine the mediating effect of SCI on SCC and performance of private health care organizations and why their assistance is needed to complete this study successfully. The researcher was given formal ethical approval to conduct the data collection exercise.

In order to ensure respondents' anonymity and confidentiality, the survey was without characters like the name of respondents and organization.

Personal records that could uniquely mark their names and their companies were not disclosed. Participants were also told that no third party would access the presented data. The study also guaranteed that the information gathered would be utilized only for scholarly purposes. This research was free from data manipulation, and there was a good design of the research instrument.

Chapter Summary

This chapter revealed and explained the choice of research philosophy, research design, research approach, study area, population, sampling technique and sample size, instrument, validity and reliability, data collection procedure, data analysis, and ethical considerations.

CHAPTER FOUR

RESULTS AND DISCUSSION

The study examines the effect of supply chain collaboration and performance of private healthcare organizations in the Greater Accra Region, the mediating role of supply chain innovation. This chapter offers information regarding findings obtained after data analysis performed by SPSS. In addition, the results and discussion were presented concerning the specific objectives of the research.

Demographic Information of Respondents

Information on the demographics of respondents obtained from the data collection process was analysed and discussed in this section. In doing this, respondents' information on demographics was analysed using the descriptive statistics of frequency and percentages in SPSS. The statistical techniques were used because of the categorical nature of the variables. The findings are presented in Table 4 below.

Table 4: Demographic Characteristics of Respondents

Variables	Options	Frequencies	Percentages (%)
Gender	Male	110	61.8
	Female	68	38.2
Age	20-30years	30	16.9
	31-40years	109	61.2
	41-50years	33	18.5
	51-60years	3	1.7
	Above 60	3	1.7
Academic	Diploma/HND	25	14.0
Qualification	First Degree	97	54.5
	Masters	55	30.9
	PhD	1	0.6
Department	Procurement/supply chain/ Logistics	40	22.5
	Human Resource/ Administration	83	46.6
	Accounting/Finance	41	23.0
	Operations	6	3.4
	Others (owners)	8	4.5
Working Years	1-5years	56	31.5
	6-10years	97	54.5
	11-15years	19	10.7
	16 and above	6	3.4

Source: Field survey, (2021)

Results from Table 4 show the demographic characteristics of the respondents that were surveyed for the study. It includes age, gender, academic qualification, department, and years of working experience. The data on demographics of respondents have no significant impact on the study but giving a report on them gives an overview of the study's male and female participants. The demographic analysis revealed that males made up the majority (61.8 per cent) of the study group, while females made up 38.2 per cent. As men dominate paid employment in most developing nations, including Ghana (Gyan, 2013), these changes also reflect the rise in male employment in private healthcare organisations.

According to the analysis, most of the respondents were within the active working-age range. A total of 61.5 % respondents fell within the 31-40-year age range, followed by those in the 41-50-year bracket (18.5%) and 20-30-year bracket (16.9%). 1.7% of the participants were within the ages of 51-60years and above 60years. Young individuals working in private healthcare organizations, especially in the supply chain, provide a valuable experience that can be utilized in future engagements. It is essential not to overlook the tax revenue generated from people who work in this profession for long periods before retiring (Acquah *et al.*, 2020).

Additionally, all respondents are educated to some degree, with a PhD being the highest and a certificate (SSCE/WASSCE) being the lowest. For the academic qualification of the respondents, the study indicated that most of them were first degree holders (54.5%), then 30.9% were master degree holders. Diploma/HND graduates made up 14.0% of the respondents, and 0.5% were PhD holders. Thus, an encouraging number of respondents are first-degree holders, which means that organizations cannot do without highly educated people and confirms that it is vital to develop human capacity through education (Acquah, et al., 2021).

Regarding the department and position respondents worked in, the majority (46.6%) were from the human resource and administration. The procurement/supply chain/ logistics department consisted of 22.5% of the participants. 23.0% and 3.4% were from operation and accounting/finance units, respectively. 4.5% of the respondents were owners of private healthcare organizations. The results indicate that personnel performing procurement and

SC functions in private healthcare organizations are in administrative and human resource positions.

Finally, the results on respondents' years of working experience (54.5%) have worked in the healthcare organization for 6-10years. 31.5% have 1-5years of working experience in the healthcare setting. 10.7% and 3.4% have 11-15years and above 15years of work experience. Experienced workers are more valuable to an organization because they have more real-life experience than workers with little work experience. Moreover, they possess a more extraordinary ability to solve problems, are innovative, and possess specific skills necessary in the workplace. A company or organization's information centre relies on their expertise, making their knowledge crucial. The above explaination to the demograpics is not applied to the objectives of this work but were the results obtained from the field.

Preliminary Analysis

Validity and Reliability

Validity is the extent to which a measure accurately represents what it is meant to do. Ensuring validity begins with a detailed understanding of what it is meant to measure, and then the measurement is as accurate and valid as possible. However, precision is not guaranteed to be valid. Thus, if the validity is guaranteed, the researcher must consider the reliability of the observations (Hair, Celsi, Money, Samouel & Page 2010). Reliability is the extent to which the measured attribute tests the actual value and is error-free. Therefore, the study must constantly analyse the measurements being used, ensure that valid alternative measures are available and select a variable of higher reliability (Hair *et al.,* 2016).

These are significant ideas in research, particularly in essential investigations. When results from an investigation are not reliable and valid, the recommendation or suggestions are void (Roopa & Rani, 2012). In order to achieve the reliability of results, this study used a statistical test known as Cronbach alpha to evaluate the degree of reliability. Adams (2015) stated that even though research works do not have a particular Cronbach alpha score, a score nearer to 0.7 or more is thought to be generally reliable. This study also depends on theoretical indicators and empirical estimations validated to plan the survey to improve the validity. The principal component factor analysis was used to measure the validity of the data, and the internal consistency approach with the Cronbach's Alpha of 0.7 and above as the criterion for the decision was used to treat the data's reliability.

Factor Analysis for variables

Table 5: KMO and Bartlett's Test

		SCC	SCI	HCP
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0 .701	0 .707	0.849
Bartlett's Test of Approx. Chi-Square		4946.477	971.605	785.200
Sphericity	Df	496	66	21
	Sig.	0.000	0.000	0.000

Source: Field survey, (2021)

Results from Table 5 indicated that the KMO and Bartlett's test of Sphericity the measurement of validities for SCC (SCC: KMO=is interpreted as acceptable; p = 0.000: p <0.05), SCI (SCI: KMO=is interpreted as

acceptable; p=0.000: p<0.05) and healthcare performance (HCP: KMO=is interpreted as outstanding; p=0.000: p<0.05) is adequate and significant for the Principal Component Factor analysis.

Table 6: Component Matrix: Factor Analysis of SCC

	Factor loadings
IS 1	0.371
IS 2	-0.137
IS 3	0.586
IS 4	0.167
IS 5	0.652
GC 1	0.602
GC 2	0.571
GC 3	0 .471
GC 4	0.392
GC 5	-0.137
GC 6	0.568
DS 1	0.797
DS 2	0.621
DS 3	0.639
DS 4	0.105
DS 5	0.731
IA 1	0.632
1A 2	0.660
IA 3	0.653
IA 4	0.337
CC 1	0.628
CC 2	0.520
CC 3	-0.060
JA 1	0.752
JA 2	-0.001
JA 3	0.698
SPM 1	0.650
SPM 2	-0.027
SPM 3	0.654
JK 1	0.677
JK 2	0.022
JK 3	0.729

Source: Field Survey (2021)

The validity test results for SCC indicate that items like IS 4, GC 5, DS 4, JA 3, CC 3, SPM 2, and JK 2 were not valid to measure the SCC variable. Therefore, they were excluded from the reliability analysis, data transformation, multiple regression analysis, and macro mediation analysis.

Table 7: Component Matrix: Factor analysis for SCI

	Factor loadings
II 1	0.805
II 2	0.807
II 3	0.783
II 4	-0.073
II 5	0.746
II 6	0.574
RI 1	0.515
RI 2	-0.088
RI 3	0.395
RI 4	0.746
RI 5	0.511
RI 6	0.173

Source: Field Survey (2021)

The validity test results for SCI indicates that items like II 4, RI 2 and RI 6 were not valid to measure the SCI variable. Therefore, they were also excluded from the reliability analysis, data transformation, multiple regression analysis, and the process macro mediation analysis.

Table 8: Component Matrix: Factor analysis for HCP

	Factor loadings
HCP 1	0.438
HCP 2	0.864
HCP 3	0.712
HCP 4	0.854
HCP 5	0.854
HCP 6	0.855
HCP 7	0.840

Source: Field Survey, (2021)

The validity test results for the performance of private healthcare organizations depicts that all items used in measuring the variable were valid. Due to that, all items were included in the reliability analysis, multiple regression analysis and process macro mediation analysis.

Table 9: Reliability analysis

Constructs	Cronbach's Alpha	No. of items
SCC	0.887	16
SCI	0.834	9
HCP	0.892	7

Source: Field survey, (2021)

The reliability of data for this study was measured with the internal consistency approach. The value of Cronbach's alpha was used to measure the variables used in the study. According to Bujang, Omar and Baharum, (2018), a Cronbach's alpha of 0.7 and above is acceptable. So, from the reliability analysis results, it was identified that all variables were reliable and fit to

continue with other analyses. SCC had 0.887 with 16 items, SCI had 0.834 with nine items, and healthcare performance had 0.892 with seven items.

Common Methods Bias

It refers to the artificial correlation produced when variables are measured using the same method (Tehseen, Ramayah & Sajilan, 2017). Common method bias results from using just one kind of item context, one type of study participants, one context of measurement, and one type of item feature (Reio, 2010). In any survey or questionnaire where information is being collected self-reported by individuals, Common method bias is an essential factor to consider, especially when the individual is the only one who has both predictor and criterion variables available (Podsakoff, MacKenzie, & Podsakoff, 2012). Many researchers have suggested two primary methods (Podsakoff et al., 2012; Williams, Hartman, & Cavazotte, 2010) reduce the effect of common method bais. In order to minimize the impact of method biases, the first strategy is to plan the study carefully, and the second is to implement statistical remedies to mitigate the effects of common technique bias once data has been collected.

Table 10: Total Variance Explained

	Initial Eigen values			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1. SCC	9.270	28.970	28.970	9.270	28.970	28.970
2. SCI	4.081	34.008	34.008	4.081	34.008	34.008
3. HCP	4.339	61.989	61.989	4.339	61.989	61.989

Source: Field survey, (2021)

The Harman Single-Factor Test, one of the statistical remedies to control common method bias, was used to measure the bias of the common method. Researchers usually use this test to investigate CMV in their investigations. Data variance is determined through Harman one-factor analysis, a posthoc analysis performed after data collection (Chang *et al.*, 2010). It is used to see if a single factor accounts for the vast majority of the correlation between the variables. If no single factor emerges, it indicates that Common method bias is not prevalent in the study (Chang *et al.*, 2010).

The results in table 8 indicate that there was no threat of common method bias for SCC [% of variance = 28.970: < 50%] and SCI [% of variance = 34.008 :< 50%]. However, the threat of common method bias was present in healthcare performance [% of variance = 61.989: > 50%].

Test of Normality

Table 11: Descriptive Statistics

			Statistics	Std. Error
Healthcare Performance	Mean		4.0465	0.04529
	95% Confidence Interval for mean	Lower Bound	3.9572	
		Upper Bound	4.1359	
	5% Trimmed Mean		4.0632	
	Median		4.1429	
	Variance		0.365	
	Std. Deviation		0.60429	
	Minimum		2.57	
	Maximum		5.00	
	Range		2.43	
	Interquartile Range		0.86	
	Skewness		-0.325	0.182
	Kurtosis		-0.452	0.362

Source: Field Survey, (2021).

The dependent variable, healthcare performance, was tested for normality as a measure of an assumption underlying the multiple regression

analysis used to analyse the second, third and fourth objectives. Results in Table 8 indicated that private healthcare performance was normally distributed because its z-score for the skewness and Kurtosis were 1.785 and 1.248, respectively. The z-scores were between -1.96 and +1.96. A Z-test determines whether the data are normal by measuring skewness and kurtosis. In order to calculate a z-score, divide the extra kurtosis or skew values by their standard errors (Ding, Bailey, Jain, Olsen, & Paten, 2020; Mishra, Pandey, Singh, Gupta, Sahu, & Keshri, 2019). In large samples with distributions close to normal, z-tests on the null hypothesis of normality tend to be easier to reject, whereas, in small samples, the null hypothesis may be accepted more readily than necessary due to more significant standard errors (Trafimow, Wang & Wang, 2019).

Objective One : Examine the correlation between SCC, SCI and private healthcare performance

This objective sought to examine the correlation between SCC, innovation, and private healthcare performance. After the validity and reliability tests were performed, data transformation was used for the individual constructs to create composite variables. Finally, the Pearson product-moment correlation analysis was carried out to assess the relationship between the variables used in the study.

Table 12: Correlation Matrix

		SCC	SCI	HCP
SCC	Pearson Correlation	1		
	Sig. (2-tailed)	0.000		
SCI	Pearson Correlation	0.660**	1	
	Sig. (2-tailed)	0.000		
HCP	Pearson Correlation	0.365**	0.375**	1
	Sig. (2-tailed)	0.000	0.000	

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Field survey, (2021)

Results from Table 12 showed that there is a statistically significant positive relationship between SCC and SCI ($r = 0.660$; $p = 0.000$: $p < 0.05$). This reflects that healthcare organizations can change or modify their business process, products, services and technology if these organisations effectively work collaboratively with their SC partners, and it supports the arguments from literature (Rosell, Lakemond, & Melander, 2017). Again. the results identified a statistically positive significant relationship between SCC, SCI and performance of private healthcare organizations in the Greater Accra region ($r= 0.365$; $p=0.000$: $p<0.05$) and (($r= 0.375$; $p=0.000$: $p<0.05$) respectively. The results above shows that the rise in the level of collaboration and innovation among private healthcare organizations and their SC partners corresponds with an increment in the level of the performance of the private healthcare organizations.

Furthermore, the relationship between SCC, SCI and private healthcare organisations' performance is linear, which explains the nature of

the relationship in terms of direction and strength. (Bustinza, Vendrell-Herrero, Gomes, Lafuente, Rabetino & Vaillant, 2018). These findings will guide procurement officers and those performing procurement and SC functions in the various private healthcare centres when making decisions regarding increase in organisational performance.

Objective Two : Investigate the effect of SCC on private healthcare performance

Objective two aimed to investigate the effect of SCC on the performance of private healthcare organizations in the Greater Accra region. The researcher carried out data transformation on the individual construct to obtain composite variables, and it was done after the tests for validity and reliability were performed. The multiple regression analysis was employed to analyse this objective. The results for the analysis are shown in Tables 13, 14, and 15.

Table 13: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.456[a]	0.208	0.190	0.54390	1.837

Predictors: (Constant), Incentive alignment, Goal congruence, Information sharing, Decision synchronization

Dependent Variable: Healthcare performance

Source:Field survey, (2021)

The Durbin-Watson criterion was used to test for the assumption of auto-correlation. The Durbin-Watson score must be within 1.5 - 2.5 thresholds to avoid the threat of auto-correlation. In this study, the Durbin-Watson score of 1.837 reveals no threat of auto-correlation between SCC and healthcare

performance. A close observation of the findings indicated that there was a positive relationship between the predictors (IS, GC, DS and IA) and performance of private healthcare organization (R =0.456). An observation of the R squared showed that the joint elements of SCC (predictors) accounted for 20.8% positive variance in performance of private healthcare organizations (R^2 = 0.208).

The results from table 10, then indicates that all the joint elements of SCC are in control of 20.8% increment in performance of private healthcare organizations. This further means that 79.2% viariance in private healthcare performance was attributed for by other variable that were not present in the model. The adjusted R Square depicts that an adjustment in the SCC variable can explain 19.0% of the variations in the healthcare performance. The above findings support research works that argue that SCC affects the performance of organizations. As a results of the above findings, it is recommended that private health organizations that do not practice SCC should try as much as possible to work together with other partners in the supply chain. Reason being that SCC in a way helps improve PHC performance. To find out whether the 20.8% positive variance in PHC performance was proven statistically or not, the ANOVA analysis was conducted.

Table 14: ANOVA

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	13.456	4	3.364	11.371	0 .000b
	Residual	51.179	173	0.296		
	Total	64.635	177			

a. Dependent Variable: Healthcare performance

b. Predictors: (Constant), IA, GC, IS, DS

Source: Field survey, (2021)

Results from the ANOVA table explain the influence that the independent variable has on the dependent variable. This is also to explain whether the regression model can explain changes in healthcare performance. The significance value of the F-stat of 11.371 is above 1.96 and p-value is 0.000 and is less than 0.05(p=0.000: p<0.05), which means that SCC has a positive statistically significant effect on the performance of private healthcare organizations in the Greater Accra region. This signifies that the 20.8% vaiance is statistically proven and that variances wasn't caused by chance. From the results, it is advised that when PHC organizations are making strategic decisions concerning performance, they should consider inculcating SCC in their operations.

The above results highlight that private healthcare organizations' performance will increase if they effectively integrate SCC into their business practices. The results above, therefore, supports the assertions in previous studies that there is a significant favourable influence of SCC practices on firm performance (Kempa, Chandra Tanuwijaya, & Jiwa Husada Tarigan, 2020; Shan, Li, & Shi, 2020; Singh, Garg, & Sachdeva, 2018; Ho, Kumar, & Shiwakoti, 2019).

Using the resource-based view and network theories to explain the study's findings confirms that private healthcare organizations must build an effective collaborative relationship with their suppliers because it enables organizations to pool their resources for improved performance. Due to this, it is essential for private healthcare organizations to willingly and effectively collaborate with their suppliers to take advantage of the benefits of

networking, which includes gaining a competitive advantage in the healthcare industry and increased performance.

Table 15: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1	(Constant)	2.156	0.336		6.409	0.000		
	IS	0.416	0.085	0.421	4.890	0.000	0.617	1.620
	GC	0.010	0.079	0.011	0.132	0.895	0.631	1.584
	DS	0.330	0.068	0.054	0.477	0.634	0.355	2.820
	IA	-.005	0.059	-.009	-.089	0.929	0.492	2.033

a. Dependent Variable: Healthcare performance

Source: Field survey, (2021)

From the results above, the tolerance and VIF values were employed to test the multicollinearity of the variables. According to Eti and Inel (2016), there is no threat of multi-collinearity if the VIF is <5. From Table 12, it can be said that there is no threat of multi-collinearity present in the variables because VIFs < 5. Multiple regression studies confirm that the residuals are normally distributed by checking normality, linearity, homoscedasticity, and residual independence assumptions. An analysis of multiple regression measures the link between variables' strength and direction (Shukla, 2016).

In the model, beta coefficients measure the contribution of each predictor. The beta value of information sharing is 0.416, which means that every unit increase in information sharing improves the performance of private healthcare organizations by 41.6%. Likewise, a unit decrease in

information sharing will result in a 0.416 decrease in the performance of private healthcare organizations in the Greater Accra region. Information sharing had a positive statistically significant variation in private healthcare organizations' performance (Beta=0.416; p=0.000: p<0.05).

Decision synchronization is insignificantly linked to and cannot cause changes in the performance of private healthcare organizations, as demonstrated by a beta of 0.330 (Beta=0.330; p=0.634: p>0.05). Thus, the results indicate no direct improvement in performance of private healthcare organization is attributed to any unit variation in decision synchronization. GC, DS and IA had an insignificant relationship with the performance of private healthcare organizations in the Greater Accra region.

SC teams that can connect functional and organizational boundaries and receive relevant, up-to-date, and timely information can make better decisions together since time and distance are decreased. In addition, recent technological advancements have greatly improved business connectivity. Connection creates the ability to communicate. Therefore, partners are urged to share information frequently and continuously inculcate SCC in their SC practices to increase their healthcare performance. This finding confirms the assertion that when hospitals collaborate with their SC partners, it affects their performance positively (Chakraborty, 2018; Mandal & Jha, 2017; Mandal, 2017).

Objective Three : Assess the effect of SCI on private healthcare performance

Objective three was to assess the effect of SCI on the performance of private healthcare organizations in the Greater Accra region. In analysing this

objective, multiple regression analysis was used. In addition, the data transformation exercise was undertaken after the test for validity and reliability was done. The results are presented in Table 13 below.

Table 16: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.476[a]	0.227	0.218	0.53437	2.031

a. Predictors: (Constant), Radical innovation, Incremental innovation

Dependent Variable: Healthcare performance

Source: Field survey, (2021)

The Durbin-Watson criterion was used to test for the assumption of auto-correlation. The Durbin-Watson score must be within 1.5 - 2.5 thresholds to avoid the threat of auto-correlation. Because the Durbin-Watson score was 2.031, the study's findings demonstrated no risk of auto-correlation between SCI and healthcare performance, which was within the threshold. To add to, the correlation coefficient denoted by r = 0.476 indicates a moderate positive correlation between the predictor variable (SCI) and the outcome variable (healthcare performance)

The R-Squared measured the degree of changes in healthcare performance triggered by the SCI variable. The results from Table 13 indicate that 22.7% of the variation in healthcare performance (dependent variable) was described by SCI (Adams, 2015). Again, from Table 13, it was realised that SCI that constituted radical and incremental innovation was regressed against the performance of private health care organisations. The variance accounted for 0. 227, which shows that (22.7%) of SCI can improve the

performance of private healthcare organizations in the Greater Accra Region. Furthermore, the adjusted R Square depicts that 13.5% of the variations in the healthcare performance can be explained by an adjustment in the supply chain innovation variable.

Table 17: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	14.663	2	7.332	25.675	0.000[b]
	Residual	49.972	175	0.286		
	Total	64.635	177			

a. Dependent Variable: Healthcare performance

b. Predictors: (Constant), Radical innovation, Incremental innovation

Source: Field survey, (2021)

Results from the ANOVA table explain whether the regression model can explain changes in healthcare performance. The significance value of the F-stat of 25.675 is 0.000 and is less than 0.05(p=0.000: p<0.05) means that SCI has a positive statistically significant effect on the performance of private healthcare organizations in the Greater Accra region. Furthermore, the results reveal that private healthcare organizations' performance will increase if they effectively practice SCI as one of their supply chains practices. Therefore, the results above support the SCI influences firm performance, including that of healthcare organizations (Habidin, Shazali, Salleh, Zainol, Hudin & Mustaffa, 2015; Lee et al., 2011).

Table 18: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	2.779	0.211		13.139	.000		
	Incremental innovation	0.366	0.054	0.500	6.726	.000	.799	1.251
	Radical innovation	-0.044	0.054	-0.060	-0.804	0.422	.799	1.251

a. Dependent Variable: Healthcare performance

Source: Field survey, (2021)

Table 18 shows that the tolerance and VIF values were used to test the variables' multicollinearity. According to Kock (2015), there is no threat of multi-collinearity if the VIF is <5. So, from the table, it can be said that there is no threat of multi-collinearity present in the variables because VIF=1:<5.

In the model, beta coefficients measure the contribution of each predictor. The beta value of incremental innovation is 0.366 which, means that every unit increase in incremental innovation improves the performance of private healthcare organizations by 36.6%. Likewise, a unit decrease in SCI will result in a 0.366 decrease in the performance of private healthcare organizations in the Greater Accra region. SCI had a positive statistically significant variation in the performance of private healthcare organizations (Beta=0.366; p=0.000: p<0.05). In contrast, radical innovation had an insignificant relationship with the performance of private healthcare organizations in the Greater Accra region, with a beta of -.044.

From the results in Table 15, Private healthcare organizations are encouraged to innovate incrementally or make changes regarding their processes and operations. As a result, healthcare organizations have to modify their existing processes and services to adapt to the changing requirement of clients. When this is done, it helps to improve customer satisfaction which in turn leads to an increment in the organization's performance. Moreover, private healthcare organizations are being advised to frequently and continuously inculcate SCI in their SC practices if they want to experience an increase in their performance. This finding confirms the assertion that when hospitals apply innovation to their SC process, it affects their performance positively (Shahbaz, Rasi, Ahmad, & Sohu, 2018; Shan, Li, & Shi, 2020; Shin, Park, & Park, 2019).

Objective Four: Evaluate the SCC on SCI of private healthcare organizations

The fourth objective is to evaluate the effect of SCC on SCI of private healthcare organizations in the Greater Accra region. Multiple regression analysis was used here, and the data transformation exercise was undertaken after the test for validity and reliability was done. The results are presented in Table 16 below.

Table 19: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.712[a]	0.506	0.495	0.50028	2.194

a. Predictors: (Constant), IA, GC, IS, DS

b. Dependent Variable: SCI

Source: Field survey, (2021).

The Durbin-Watson criterion was used to test for the assumption of auto-correlation. The Durbin-Watson score must be within 1.5 - 2.5 thresholds to avoid the threat of auto-correlation. The study's outcome shows no threat of auto-correlation between SCC and healthcare performance because the Durbin-Watson score of 2.194 was within the threshold. Furthermore, the correlation between the independent variable (SCC) and the dependent variable (SCI) is strong and positive(r=0.712).

The R-Squared explained the amount of variation in the dependent variable (SCI) caused by the independent variable (SCC). Table 16 indicates a 50.6% variation in healthcare performance as the dependent variable is explained by SCC's independent variable. The residuals explain the remaining 49.4% (Adams, 2015). Therefore, the adjusted R Square depicts that an adjustment in the SCC variable can explain 49.5% of the variations in the SCI.

Table 20*:* ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	44.394	4	11.098	44.344	.000[b]
	Residual	43.299	173	0.250		
	Total	87.693	177			

a. Dependent Variable: SCI

b. Predictors: (Constant), IA, GC, IS, DS

Source: Field survey, (2021)

Results from the ANOVA table above explain whether the regression model can explain changes in SCI. The significance value of the F-stat of

44.344 is 0.000 and is less than 0.05(p=0.000: p<0.05) means that there is a close statistically significant effect between SCC and SCI of private healthcare organizations. The results indicate that a private hospital's SC innovativeness depends on how effectively the healthcare organization collaborates with its SC partners. Therefore, the results above support that SCI is attained due to SCC (Rosell, Lakemond, & Melander, 2017).

Table 21: Coefficients.

Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
(Constant)	1.806	0.309		5.839	0.000		
IS	0.210	0.078	0.182	2.681	0.008	0.617	1.620
GC	-0.141	0.073	-0.131	-1.950	0.053	0.631	1.584
DS	0.420	0.063	0.601	6.694	0.000	0.355	2.820
IA	0.056	0.054	0.079	1.043	0.298	0.492	2.033

a. Dependent Variable: SCI

Source: Field survey, (2021)

The tolerance and VIF values were calculated based on the preceding data to test the variables' multicollinearity. According to Kock (2015), there is no threat of multi-collinearity if VIF is <5. From the table above, it can be said that there is no threat of multi-collinearity present in the variables because of VIFs < 5. In the model above, beta coefficients measure the contribution of each predictor. The beta value of decision synchronization is 0.420 means that every unit increase in decision synchronization among SC partners improves the SCI of private healthcare organizations by 42.0%.

Likewise, a unit decrease in information sharing will result in a 0.420 decrease in SCI.

Decision synchronization had a positive statistically significant variation in the SCI of these private healthcare organizations (Beta=0.420; p=0.000: p<0.05). IS, GC and IA had an insignificant relationship and variation in the SCI of private healthcare organizations in the Greater Accra region. Information sharing (Beta = 0.210; p=.008: p>0.005), Goal congruence (Beta = -.141; p=.053: p>0.005), Incentive alignment (Beta =.056; p=.298: p>0.005).

From the results in Table 18, Private healthcare organizations are advised to involve other parties in the supply chain when taking supply chain decisions. When this happens, members in the SC can collaboratively comes up with innovative ideas and mechanisms that will help increase the operations of the organization. For this reason, private healthcare organizations are being advised to effectively collaborate with their supply partners in order to increase their level and intensity of SCI. This finding confirms the assertion that when private healthcare organizations effectively collaborate with their suppliers, it leads to an increase in SCI (Jimenez-Jimenez, Martínez-Costa, & Sanchez Rodriguez, 2019; Liao, Hu, & Shih, 2018; Nguyen, Lei, Vu, & Le, 2019; Yunus, 2018).

Relating the RBV theory, it states that SCC fosters innovation and generates mutual profit for members by exchanging creative ideas and activities (Fatemeh, et al., 2019). A further finding of RBV theory states that SCI is concerned about activities centred on logistics, marketing, and other connected activities (Wong & Ngai, 2019). SC innovations impact procedures,

networks, and technology, contributing to improved corporate performance (Fatemeh, et al., 2019). To advance SCI, all partners in the SC must work together (Lin, 2007).

Objective Five : Examine the mediating effect of SCI on the relationship between SCC and private healthcare performance

Objective five was aimed to examine the mediating effect of SCI in the relationship between SCC and healthcare performance. Using the transformed composite variables, SPSS process macro-Version 3.2 by Hayes, 2018 was configured in the SPSS software application for the mediation analysis

Outcome Variable: Supply Chain Innovation

Table 22: Model Summary

R	R-sq	MSE	F	df1	df2	p
0.6601	0.4358	0.2811	135.9420	1.0000	176.0000	0.0000

Source: Field survey, (2021)

A critical observation of the model depicted that there was a statistically strong positive relationship between SCI and SCC (R = 0.6601, $p<0.05$) . From the results, it can be seen that changes in the SCC resulted in a moderate positive statistically significant variance in SCI when the other factors were statistically controlled for (r-squared = 0.4358; p= 0.0000). This means that the 43.5% increment in SCI was not by chance but was statistically explained for by SCC.

Table 23 : Model Summary

	coeff	se	t	p	LLCI	ULCI
Constant	1.1474	0.2154	5.3279	0.0000	0.7224	1.5724
SCC	0.6964	0.597	11.6594	0.0000	0.5785	0.8143

Source: Field survey, (2021)

SCC contributed 43.58% significant variance in SCI, and this depicts that SCC is a significant positive predictor of SCI of private healthcare organizations in the Greater Accra region (Beta = 0.6964; p=0.0000: p<0.05). Mathematically, the estimated regression is; SCI = 1.1474+0.6964(SCC).

Variable Outcome**:** Healthcare Performance

Table 24: Model Summary

R	R-sq	MSE	F	df1	df2	p
0.3645	0.1329	0.3184	26.9714	1.0000	176.0000	0 .0000

Source: Field survey, (2021)

From the results, it can be seen that changes in the SCC variable resulted in a positive statistically significant variance in performance of private healthcare organizations in the Greater Accra region when the other factors were statistically controlled for (r-squared = 0.1329; p= 0.0000).

Table 25: Model

	coeff	se	t	p	LLCI	ULCI
Constant	2.8766	0.2292	12.5498	0 .0000	2.4242	3.3290
SCC	0.3302	0.0636	5.1934	0.0000	0.2047	0.4556

Source: Field survey, (2021)

The contribution of SCC for predicting the 13.29% significant variance in performance of private healthcare organizations depicts that SCC is a

significant positive predictor of performance of private healthcare organizations in the Greater Accra region (Beta = 0.3302; p=0.0000: p<0.05). Mathematically, the estimated regression is; HCP = 1.1474+0.6964 (SCC)

Outcome Variable: Healthcare Performance

Table 26: Model Summary

R	R-sq	MSE	F	df1	df2	p
0.4058	0.1647	0.3085	17.2480	2.0000	175.0000	0.0000

Source: Field survey, (2021)

From the results, there was statistically moderate positive relationship SCC, SCI and PHC performance. Having the mediator included in this model, the positive variance in the PHC performance was attributed to the changes in the predictors (SCC and SCI) when the effect of other factors was not captured in the model (r-squared = 0.1647; p = 0.0000: p<0.05). In effect, this means that the 16.4% increment in PHC performance was not by chance but by the statistical interaction amomg the predictors.

Table 27: Model

	coeff	se	t	p	LLCI	ULCI
Constant	2.6428	0 .2431	10.8698	0.0000	2.1630	3.1226
SCC	0.1883	0 .0833	2.2598	0.0251	0.0238	0.3527
SCI	0.2038	0 .0790	2.5802	0.0107	0.0479	0.3596

Source: Field survey, (2021)

Concerning the role of individual variables in the positive variation in private healthcare institutions' performance, it was identified that SCC (Beta 0.1883; p=0.0251: p<0.05) and innovation (Beta 0.2038; p=0.0107: p<0.05) made statistically positive significant contributions predicting to 16.4%

positive variance in performance of private healthcare organizations. Since the mediating variable (SCI) did not contribute to the insignificant direct predictor, then the mediation is considered partial mediation. Mathematically, the estimated regression is: HCP= 2.6428+0.1883(SCC)+0.2038(SCI).

Table 28: Indirect effect(s) of X on Y:

	Effect	BootSE	BootLLCI	BootULCI
SCI	0.1419	0.0768	0.0046	0.3110

Source: Field survey, (2021)

The results from Table 25 indicates that the indirect effect of SCC and healthcare performance of private healthcare organizations in the Greater Accra region is significant because BootLLCI and BootULCI are positive, and also, zero does not lie between the two limits. This means that the mediation effect of SCI on the relationship between SCC and healthcare performance is significant but partial because the indirect effect coefficient is less than that of the direct effect. Therefore, it is concluded that SCI partially plays a vital role in improving SCC, which improves the level of performance of private healthcare organizations in the Greater Accra region. This result and finding support the position argued by (Lee et al., 2011; Yoon, Lee & Schniederjans, 2016).

Chapter Summary

This chapter focused on the results and discussions of the study. In addition, this chapter provided information on the study's key findings and was proven by other empirical studies. This study confirms that SCC accounts for a positive statistically significant change in performance of private

healthcare organizations in the presence of a partial mediating role of SCI in private healthcare care organizations.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This study sought to examine the effect of SCC on the performance of private healthcare organizations in the Greater Accra region with the mediating effect of SCI. The quantitative research approach was used, while the explanatory research design was used. Structured questionnaires were self-administered in gathering data for the study, and the SPSS application was for analysing the study's objectives. This chapter is comprised of the study's summary, conclusions, and recommendations.

Summary

The first objective examined the correlation between SCC, SCI and healthcare performance. Statistically controlling for the effect of other parameters in the model, it was observed that SCC positively affects private healthcare performance. Also, the results from the study demonstrated that when the influence of other parameters in the model is considered statistically, there is a statistically significant strong link between SCC and SCI in private healthcare organizations. Further, the correlation analysis found that after the effect of other parameters in the model have been statistically adjusted for, the research shows a positive association between SCI and performance. Impliedly, results from objective one indicate that it is imperative for private healthcare organizations should collaboratively work with partners in the supply chain network since it has positive implication on innovation and private healthcare performance.

The second objective was to examine the effect of SCC on private healthcare performance. It was identified that SCC accounts for a statistically significant positive variance in the performance of private healthcare organizations when the effect of other variables in the model is statistically controlled. Furthermore, SCC contributed a weak positive significant change in the performance of private healthcare organizations. Also, among the dimensions used to measure SCC, information sharing, and decision synchronization were the dimensions that had a statistically significant positive effect on the performance of private healthcare organizations. Implications of the results in objective two states that there is the need for private healthcare organizations to effectively share accurate, real time information with partners across the supply chain.

The third objective examined the effect of SCI on the performance of private healthcare organizations in the Greater Accra region. With this objective, the analyses indicate that SCI accounts for a statistically significant positive change in the performance of private healthcare organizations in the Greater Accra region when the effect of other variables is statistically controlled. SCI had a positive change in the performance of private health care organizations. Between incremental and radical innovation, incremental appeared to have a positive statistically significant effect on the performance of private healthcare organizations in the Greater Accra region. Impliedly, private healthcare organizations are encourage to improve upon their existing products, services and technologies used in their operations.

The fourth objective examined the effect of SCC on the SCI of private healthcare organizations. This objective indicates that SCC accounts for a

statistically significant positive change in the SCI of private healthcare organizations when the effect of other variables is statistically controlled. From the results, decision synchronization had a positive statistically significant variation in the performance of private healthcare organizations. Conversely, IS, GC and IA had an insignificant relationship and variation in the SCI of private healthcare organizations. The results from this objective indicated that for private healthcare to more innovative in order to meet the changing needs of their clients. Working together with supply chain partners allows private healthcare organizations to come up with innovative process, services and technologies.

Objective five of the study sought to examine the mediating effect of SCI in the relationship between SCC and the performance of private healthcare organizations in the Greater Accra region. The indirect effect results revealed a partial mediation of SCI in the predictive relationship between SCC and performance of private healthcares. Results of this objective implies that, to improve the performance of private healthcare organizations, it is essential for these firms to inculcate supply chain collaboration and innovation initiatives into their business processs and operations.

Conclusion

To conclude, the study exmined the mediating effect of SCI on the predictive relationship between SCC and private healthcare performance. The resource based view, network and contingency theories were used to underpin this research. The postivitism research philosophy accompanied by the quantitative research approach was used. A list of 206 members of the Private Health Facilities Association was the sampling frame used for the study. The

simple random technique was used with 178 sample size. The SPSS software was used for the study's data analysis. This study was guided by five objectives.Following the results of the study, SCC accounted for a statistically significant positive variance in the performance of private healthcare in the Greater Accra region. SCI also accounted for a statistically significant moderate positive variance in the performance of private healthcare in the Greater Accra region. Finally, SCI partially mediated the predictive relationship between SCC and the performance of private healthcare in the Greater Accra region.

Recommendations

Based on the results from objective one, private healthcare organizations in the Greater Accra region are encouraged to effectively collaborate with their suppliers and distributors of medical, pharmaceuticals, and surgical supplies that will lead to an increase in the level of SCI, which in turn will aid in the improvement of private healthcare performance. Also, private healthcare organisations are advised to implement SCC and SCI into their business process because they are mechanisms through which SC partners can coordinate in more complex SC within and outside the organisation's boundaries (Mandal, 2016).

Again, from objective two results, a recommendation is given that SC partners in private healthcare organisations should be willing to share timely, appropriate, complete and accurate information among themselves. This will aid partners in jointly making plans on inventory and supply of medical products, as well as making it possible for private healthcare organisations to reduce costs in the process of order fulfilment. Furthermore, collaborating of

partners will also help make precise forecasts that will benefit these private healthcare organizations and improve the speed in solving issues and meeting the market's demands at a faster pace. This will also enable them to build and maintain a collaborative, long-lasting and mutual relationship (Zhang & Cao, 2018).

Furthermore, private healthcares must become fully aware of the benefits of SC relationships and be ready and eager to be committed to relationships with partners because it will help them achieve the overall objectives of the supply chain and achieve their objectives. When this is practised continuously, it is assured that it will help improve private healthcare performance (Cao & Zhang 2014).

Again, referring to the findings from objective three, private healthcare organisations are encouraged to continually make adaptations and modifications to their existing technologies and business processes to meet the changing needs of their clients. When this is done, service quality improves, which in turn increases customers' satisfaction, thereby increasing the firm's profitability. In other words, private healthcare organizations are encouraged to take advantage of the incremental form of innovation because the results from the study depict that it moderately helps enhance the performance level of private healthcare organizations.

From the results in objective four, it is recommended that for organizations to experience an increase or improvement in innovativeness in their supply chain, individual healthcare organizations should be willing to work together with their SC partners collaboratively. This is because it has been argued that SCC directly influences the SCI of private healthcare

organisations. Finally, since the study reveals that SCC positively influences and predict changes in SCI and performance of healthcare organizations, private healthcare organizations must be willing to share information, encourage incentive alignment, joint teams and jointly decide on the supply of medical, pharmaceutical and surgical items with their suppliers or distributors.

Suggestions for Further Studies

It is recommended that further studies could be conducted in the same healthcare industry, but research should focus on collaboration between public and private healthcare organizations. This is because there are limited studies on this subject. Also, future researchers can use larger sample size to ensure the generalibility of the study. Also, mediating variables like co-creation, trust and others can can be used to mediate the relationship between SCC and performance. Finally, this study recommends that further studies should look at the effect of supply chain collaboration and innovation other sectors as well.

REFERENCES

Abor, P. A. (2013). Managing healthcare waste in Ghana: A comparative study of public and private hospitals. *International Journal Of Health Care Quality Assurance*, *26*(4),375-386.

Abuosi, A. A., & Atinga, R. A. (2013). Service quality in healthcare institutions: establishing the gaps for policy action. *International Journal Of Health Care Quality Assurance*, *26*(5),481-492.

Acquah, I. S. K., Naude, M. J., & Sendra-García, J. (2021). Supply chain collaboration in the petroleum sector of an emerging economy: Comparing results from symmetrical and asymmetrical approaches. *Technological Forecasting and Social Change*, *166*, 120-568.

Akenroye, T. O. (2014). Factors influencing innovation in healthcare: a conceptual synthesis. *The Innovation Journal*, *17*(2), 1-5.

Akkermans, H., & Voss, C. (2013). The service bullwhip effect. *International Journal of Operations & Production Management*, *33*(6), 765-788.

Alharahsheh, H. H., & Pius, A. (2020). A review of key paradigms: Positivism VS interpretivism. *Global Academic Journal of Humanities and Social Sciences*, *2*(3), 39-43.

Ali, A. M., & Gibbons, C. E. (2017). Predictors of 30-day hospital readmission after hip fracture: a systematic review. *Injury*, *48*(2), 243-252.

Almeida, A. S., & Cima, J. F. (2015). Demand uncertainty and hospital costs: an application to Portuguese public hospitals. *The European Journal of Health Economics*, *16*(1), 35-45.

Arlbjørn, J. S., de Haas, H., & Munksgaard, K. B. (2011). Exploring supply chain innovation. *Logistics Research*, *3*(1), 3-18.

Asamoah, D., Abor, P., & Opare, M. (2011). An examination of pharmaceutical supply chain for artemisinin-based combination therapies in Ghana. *Management Research Review*, *34*, (7), 790-809.

Bag, S., Gupta, S., & Telukdarie, A. (2018). Importance of innovation and flexibility in configuring supply network sustainability. *Benchmarking: An International Journal*, *25*(9), 3951-3985.

Bahinipati, B. K., & Deshmukh, S. G. (2012). Vertical collaboration in the semiconductor industry: A decision framework for supply chain relationships. *Computers & Industrial Engineering*, *62*(2), 504-526.

Barney, J., Wright, M., & Ketchen, D. J. (2016). The resource-based view of the firm: Ten years after 1991. *Journal of Management*, *27*(6), 625-641.

Blumberg, B., Cooper, D., & Schindler, P. (2014). *EBOOK: Business Research Methods*. McGraw Hill.

Borgatti, S. P., & Halgin, D. S. (2011). On network theory. *Organization Science*, *22*(5), 1168-1181.

Bryman, A. (2016). Social Research Method (5th ed.). New York: Oxford University Press Incorporated.

Bryman, A., & Bell, E. (2015). *Business research methods*. Oxford: Oxford University Press.

Bustinza, O. F., Vendrell-Herrero, F., Gomes, E., Lafuente, E., Opazo-Basáez, M., Rabetino, R., & Vaillant, Y. (2018). Product-service innovation

and performance: Unveiling the complexities. *International Journal of Business Environment*, 10(2), 95-111.

Cao, M., & Zhang, Q. (2011). Supply chain collaboration: Impact on collaborative advantage and firm performance. *Journal of Operations Management*, *29*(3), 163-180.

Cao, M., & Zhang, Q. (2012). *Supply chain collaboration: Roles of inter-organizational systems, trust, and collaborative culture*. London: Springer Science & Business Media.

Chen, K.H., Wang, C.H., Huang, S.Z. & Shen, G.C. (2016). Service innovation and new product performance: the influence of market-linking capabilities and market turbulence. *International Journal of Production Economics*, *172* (2), 54–64.

Creswell, J. W. (2014). *Research design*: *Qualitative, quantitative, and mixed methods approach* (4th ed.). London: SAGE Publishing.

Creswell, J. W. (2015). *A concise introduction to mixed methods research*. New York: SAGE Publishing.

Drupsteen, J., van der Vaart, T., & Van Donk, D. P. (2016). Operational antecedents of integrated patient planning in hospitals. *International Journal of Operations & Production Management*, *36* (8), 879-900.

Durand, R., Grant, R. M., & Madsen, T. L. (2017). The expanding domain of strategic management research and the quest for integration. *Strategic Management Journal*, *38*(1), 4-16.

Fawcett, S. E., Fawcett, A. M., Watson, B. J., & Magnan, G. M. (2012). Peeking inside the black box: toward an understanding of supply chain

collaboration dynamics. *Journal of Supply Chain Management*, *48*(1), 44-72.

Flynn, B. B., Huo, B., & Zhao, X. (2010). The impact of supply chain integration on performance: A contingency and configuration approach. *Journal of Operations Management*, *28*(1), 58-71.

Ghadimi, P., Toosi, F. G., & Heavey, C. (2018). A multi-agent systems approach for sustainable supplier selection and order allocation in a partnership supply chain. European Journal of Operational Research, 269(1), 286-301.

Gimenez, C., Sierra, V., & Rodon, J. (2012). Sustainable operations: Their impact on the triple bottom line. International Journal of Production Economics, 140(1), 149-159.

Gitau, L. M. (2015). The effects of risk management at project planning phase on the performance of construction projects in Rwanda. Jomo Kenyatta University of Agriculture and Technology, 1-76.

Golmohammadi, A., & Hassini, E. (2020). Review of supplier diversification and pricing strategies under random supply and demand. International Journal of Production Research, 58(11), 3455-3487.

Gordon, S. R. (2016). Supplier evaluation and performance excellence: A guide to meaningful metrics and successful results. J. Ross publishing.

Graham, S. (2020). The influence of external and internal stakeholder pressures on the implementation of upstream environmental supply chain practices. Business & Society, 59(2), 351-383.

Gross D., Soriano A., (2016). The effect of reducing lead time on inventory levels-simulation analysis, Management Science, 16, 2, B-61–B-76, 1969.

Gunasekaran, A., Irani, Z., Choy, K. L., Filippi, L., & Papadopoulos, T. (2015). Performance measures and metrics in outsourcing decisions: A review for research and applications. *International Journal of Production Economics, 161*, 153-166.

Habidin, N. F., Shazali, N. A., Salleh, M. I., Zainol, Z., Hudin, N. S., & Mustaffa, W. S. W. (2015). A review of supply chain innovation and healthcare performance in healthcare industry. *International Journal of Pharmaceutical Science Review and Research, 35*(1), 195-200.

Hair, J. F. Jr., Celsi, M., Money, A., Samouel, P., & Page, M. (2016). The e*ssentials of business research methods* (3rd ed.). New York: Routledge.

Hart, S. L., & Dowell, G. (2010). A Natural-Resource-Based view of the firm. Fifteen years after, Journal of Management, Forthcoming

Hearnshaw, E. J., & Wilson, M. M. (2013). A complex network approach to supply chain network theory. *International Journal of Operations & Production Management*, *33*(4), 442-469.

Helfat, C. E., & Peteraf, M. A. (2003). The dynamic resource-based view: Capability lifecycles. Strategic Management Journal, 24(10), 997 1010.

Hitt, M. A., Xu, K., & Carnes, C. M. (2016). Resource based theory in operations management research. *Journal of Operations Management*, *41*(2016), 77-94.

Ho, D., Kumar, A., & Shiwakoti, N. (2019). A literature review of supply chain collaboration mechanisms and their impact on performance. *Engineering Management Journal, 31*(1), 47-68.

Hui, Z., He-Cheng, W., & Min-Fei, Z. (2015). Partnership management, supply chain collaboration, and firm innovation performance: an empirical examination. *International Journal of Innovation Science, 7*(2), 127-138.

Huq, F. A., Chowdhury, I. N., & Klassen, R. D. (2016). Social management capabilities of multinational buying firms and their emerging market suppliers: An exploratory study of the clothing industry. Journal of Operations Management, 46, 19-37.

Inayatullah, S., Khan, N., Imtiaz, M., & Khan, F. H. (2012). A minimum angle method for dual feasibility. arXiv preprint arXiv:1207.0343.

Jermsittiparsert, K., & Rungsrisawat, S. (2019). The supply chain management and information sharing as antecedents of operational performance: A case of SMEs. Humanities & Social Sciences Reviews, 7(2), 495-502.

Jimenez-Jimenez, D., Martínez-Costa, M., & Sanchez Rodriguez, C. (2019). The mediating role of supply chain collaboration on the relationship between information technology and innovation. *Journal of Knowledge Management, 23*(3), 548-567.

Job, V. (2015). The impact of relationship quality and supplier development on green supply chain integration: A mediation and moderation analysis. Journal of Cleaner Production, 202, 524-535.

Kähkönen, A. K., Lintukangas, K., Ritala, P., & Hallikas, J. (2017). Supplier collaboration practices: implications for focal firm innovation performance. *European Business Review*, *29*(4), 402-418.

Kannan, V. R., & Tan, K. C. (2006). Buyer-supplier relationships: the impact of supplier selection and buyer-supplier engagement on relationship and firm performance. International Journal of Physical Distribution & Logistics Management.

Karatzas, A., Johnson, M., & Bastl, M. (2017). Manufacturer-supplier relationships and service performance in service triads. International Journal of Operations & Production Management.

Kauppi, K., Longoni, A., Caniato, F., & Kuula, M. (2016). Managing country disruption risks and improving operational performance: Risk management along integrated supply chains. *International Journal of Production Economics*, *182*, 484-495.

Kempa, S., Tanuwijaya, N. C., & Tarigan, Z. J. H. (2020). *The impact of supply chain collaboration in logistic service for small medium enterprise in east java, indonesia* (Doctoral dissertation, KnE Life Sciences).

Kerzner, H. and Kerzner, H. R. (2017). Project management metrics, KPIs, and dashboards: a guide to measuring and monitoring project performance. John Wiley & Sons.

Khan, A., & Siddiqui, D. A. (2018). Information sharing and strategic supplier partnership in supply chain management: A study on pharmaceutica companies of Pakistan. Asian Business Review, 8(3), 117-124.

Klassen, R. D., & Vereecke, A. (2012). Social issues in supply chains: Capabilities link responsibility, risk (opportunity), and performance. International Journal of Production Economics, 140(1), 103-115.

Kowalski, A. (2016). Censored quantile instrumental variable estimates of the price elasticity of expenditure on medical care. *Journal of Business & Economic Statistics, 34*(1), 107-117.

Krause, D. R. (1997). Supplier development: current practices and outcomes. International Journal of Purchasing and Materials Management, 33(1), 12-19.

Krause, D. R., Handfield, R. B., & Tyler, B. B. (2007). The relationships between supplier development, commitment, social capital accumulation and performance improvement. Journal of Operations Management, 25(2), 528-545.

Kumar, D., & Rahman, Z. (2015). Sustainability adoption through buyer-supplier relationship across supply chain: a literature review and conceptual framework. *International Strategic Management Review*, *3*(1), 110-127.

Kwateng, K. O., Lumor, R., & Acheampong, F. O. (2017). Service quality in public and private hospitals: A comparative study on patient satisfaction. *International Journal of Healthcare Management*, *12*(4), 251-258.

Lancaster, D. C. (2008). Research methods: *A concise introduction to research in management and business consultancy*. London: Butterworth-Heinemann.

Law, P. (2010). Gaming outcome of accountants and human capital theory: Macau evidence. Management Research Review.

Lee, A. B. S., Chan, F. T., & Pu, X. (2018). Impact of supplier development on supplier's performance. Industrial Management & Data Systems.

Lee, S. M., Lee, D., & Schniederjans, M. J. (2011). Supply chain innovation and organizational performance in the healthcare industry. *International Journal of Operations & Production Management*, *31*(11), 1193-1214.

Leenders, M. R. (1966). Supplier development. Journal of Purchasing, 2(4), 47-62.

Lei, H., Le, P. B., & Nguyen, H. T. H. (2017). How collaborative culture supports for competitive advantage: The mediating role of organizational learning. *International Journal of Business Administration*, *8*(2), 73.

Li, W., Humphreys, P. K., Yeung, A. C., & Cheng, T. C. E. (2012). The impact of supplier development on buyer competitive advantage: A path analytic model. International Journal of Production Economics, 135(1), 353-366.

Li, W., Humphreys, P. K., Yeung, A. C., & Cheng, T. E. (2007). The impact of specific supplier development efforts on buyer competitive advantage: An empirical model. International Journal of Production Economics, 106(1), 230-247.

Liao, S. H., Hu, D. C., & Shih, Y. S. (2018). Supply chain collaboration and innovation capability: the moderated mediating role of quality

management. *Total Quality Management & Business Excellence, 32*(3-4), 298-316.

Liao, S. H., Kuo, F. I., & Ding, L. W. (2017). Assessing the influence of supply chain collaboration value innovation, supply chain capability and competitive advantage in Taiwan's networking communication industry. *International Journal of Production Economics 191* (1) *143-153*.

Lintukangas, K., Kähkönen, A. K., & Hallikas, J. (2019). The role of supply management innovativeness and supplier orientation in firms' sustainability performance. *Journal of Purchasing and Supply Management*, *25*(4), 100558.

Liu, L., Zhang, M., Hendry, L. C., Bu, M., & Wang, S. (2018). Supplier development practices for sustainability: A multi-stakeholder perspective. Business Strategy and the Environment, 27(1), 100-116.

Liu, L., Zhang, M., Hendry, L. C., Bu, M., & Wang, S. (2018). Supplier development practices for sustainability: A multi-stakeholder perspective. Business Strategy and the Environment, 27(1), 100-116.

Lo, S. M., Zhang, S., Wang, Z., & Zhao, X. (2018). The impact of relationship quality and supplier development on green supply chain integration: A mediation and moderation analysis. Journal of Cleaner Production, 202, 524-535.

Lu, D., Ding, Y., Asian, S., & Paul, S. K. (2018). From supply chain integration to operational performance: The moderating effect of market uncertainty. Global Journal of Flexible Systems Management, 19(1), 3-20.

Lukhoba, E. J., & Muturi, W. (2015). Effect of supplier development on supplier performance: a survey of food manufacturing companies in Kisumu county. International Journal of Economics, Commerce and Management, 3(11), 1146-1159.

Maestrini, V., Luzzini, D., Caniato, F., & Ronchi, S. (2018). Effects of monitoring and incentives on supplier performance: An agency theory perspective. International Journal of Production Economics, 203, 322 332.

Maina, E.W. (2011). Investigation of strategic supplier-related factors affecting performance of procurement function: A case of Mathira Water and Sanitation Company

Mandal, S. (2017). The influence of dynamic capabilities on hospital-supplier collaboration and hospital supply chain performance. *International Journal of Operations & Production Management, 37*(5), 664-684.

Mandal, S., Roy, S., & Raju, G. A. (2016). Tourism supply chain agility: An empirical examination using resource-based view. *International Journal of Business Forecasting and Marketing Intelligence*, *2*(2), 151-173.

Mari, S. I., Lee, Y. H., & Memon, M. S. (2015). Complex network theory-based approach for designing resilient supply chain networks. *International Journal of Logistics Systems and Management*, *21*(3), 365-384.

Markley, M. J., & Davis, L. (2007). Exploring future competitive advantage through sustainable supply chains. International Journal of Physical Distribution & Logistics Management.

Mathuramaytha, C. (2011). Supply chain collaboration-What's an outcome? A theoretical model. *International Conference on Financial Management and Economics,11*, 102-108.

Mays, N., & Pope, C. (2000). Assessing quality in qualitative research. Bmj, 320(7226), 50-52.

Mesquita, L., Anand, J., & Brush, T. (2008). Knowledge transfer in vertical alliances: Advantages for whom. Strategic Management J, 29(9), 913 942.

Mfinanga, D. A. (2017). Optimising the Performance of Roundabouts in Dar Es Salaam City. Tanzania Journal of Engineering and Technology, 34(2).

Mikkola, J. H., & Skjoett-Larsen, T. (2003). Early supplier involvement: Implications for new product development outsourcing and supplier buyer interdependence. Global Journal of Flexible Systems Management, 4, 31 – 41.

Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive statistics and normality tests for statistical data. *Annals of Cardiac Anaesthesia*, *22*(1), 67.

Mollahosseini, A., & Barkhordar, M. (2010). Supplier knowledge management for supplier development. Review of Business Information Systems (RBIS), 14(4).

Mugenda, M. A. & Mugenda, C. A (2003). Research methods, quantitative and qualitative approaches. Nairobi: Acts Press.

Munir, M., Jajja, M. S. S., Chatha, K. A., & Farooq, S. (2020). Supply chain risk management and operational performance: The enabling role of supply chain integration. International Journal of Production Economics, 227, 107667.

Nair, A., Jayaram, J., & Das, A. (2015). Strategic purchasing participation, supplier selection, supplier evaluation and purchasing performance. International Journal of Production Research, 53(20), 6263-6278.

Nair, R. D., & Landani, N. (2020). Making agricultural value chains more inclusive through technology and innovation (No. wp-2020-38). World Institute for Development Economics Research (UNU-WIDER).

Naor, M., Goldstein, S. M., Linderman, K. W., & Schroeder, R. G. (2008). The role of culture as a driver of quality management and performance: infrastructure versus core quality practices. Decision Sciences, 39(4), 671-702.

Nartey, E., Aboagye-Otchere, F. K., & Simpson, S. N. Y. (2020). The contingency effects of supply chain integration on management control system design and operational performance of hospitals in Ghana. *Journal of Accounting in Emerging Economies*, *10*(2), 207-241.

Nguyen, M. A. T., Lei, H., Vu, K. D., & Le, P. B. (2019). The role of cognitive proximity on supply chain collaboration for radical and incremental innovation: a study of a transition economy. *Journal of Business & Industrial Marketing*, *34*(3), 591-604.

Omachonu, V. K., & Einspruch, N. G. (2010). Innovation in healthcare delivery systems: a conceptual framework. *The Innovation Journal: The Public Sector Innovation Journal*, *15*(1), 1-20.

Orodho, J. A. (2009). Elements of education and social science research methods. Nairobi- Maseno, *2*(6), 26-133.

Panahifar, F., Byrne, P. J., Salam, M. A., & Heavey, C. (2018). Supply chain collaboration and firm's performance: The critical role of information sharing and trust. *Journal of Enterprise Information Management*, *31*(3), 358-379.

Panayides, P. M., & Lun, Y. V. (2009). The impact of trust on innovativeness and supply chain performance. *International Journal of Production Economics*, *122*, 35–46.

Paula, I. C. d., Campos, E. A. R. d., Pagani, R. N., Guarnieri, P., & Kaviani, M. A. (2019). Are collaboration and trust sources for innovation in the reverse logistics? Insights from a systematic literature review. *Supply Chain Management: An International Journal*, *25*(2), 176-222.

Piboonrungroj, P. (2012). *Supply chain collaboration: Impacts and mediation on firm performance* (Unpublished doctoral dissertation, Cardiff University).

Piboonrungroj, P., & Disney, S. M. (2015). Supply chain collaboration in tourism: a transaction cost economics analysis. *International Journal of Supply Chain Management*, *4*(3), 25-31.

Ployhart, R. E., & Moliterno, T. P. (2011). Emergence of the human capital resource: A multilevel model. Academy of Management Review, 36(1), 127-150.

Ployhart, R. E., Nyberg, A. J., Reilly, G., & Maltarich, M. A. (2014). Human capital is dead; long live human capital resources!. Journal of Management, 40(2), 371-398.

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *63*, 539-569.

Prajogo, D., Chowdhury, M., Yeung, A. C., & Cheng, T. C. E. (2012). The relationship between supplier management and firm's operational performance: A multi-dimensional perspective. International journal of production economics, 136(1), 123-130.

Prajogo, D., Chowdhury, M., Yeung, A. C., & Cheng, T. C. E. (2012). The relationship between supplier management and firm's operational performance: A multi-dimensional perspective. International Journal of Production Economics, 136(1), 123– 130

Qrunfleh, S. M. (2010). *Alignment of information systems with supply chains: Impacts on supply chain performance and organizational performance* (Doctoral dissertation, University of Toledo).

Rajput, A., Gulzar, S., & Shafi, K. (2019). Impact of Supplier Development on Supplier Performance: Mediating Role of Trust. Business & Economic Review, 11(2), 45-66.

Ralston, P., (2014). *Supply chain collaboration: A literature review and empirical analysis to investigate uncertainty and collaborative benefits in regard to their practical impact on collaboration and performance (*Unpublished doctoral dissertation, Iowa State University*).*

Ralston, P., Richey, R. G., & Grawe, J. S. (2017). The past and future of supply chain collaboration: a literature synthesis and call for research. *The International Journal of Logistics Management*, *28*(2), 508-530.

Ramanathan, U., & Gunasekaran, A. (2014). Supply chain collaboration: impact of success in long-term partnerships. *International Journal of Production Economics*, *147*, 252-259.

Reio Jr, T. G. (2010). The threat of common method variance bias to theory building. *Human Resource Development Review*, *9*(4), 405-411.

Remenyi, D. (1996). So you want to be an academic researcher in business and management studies! Where do you start and what are the key philosophical issues to think about?. South African Journal of Business Management, 27(1-2), 22-33.

Reyes-Gómez, J. D. (2018). The effects of strategic orientations on firm performance, and the mediating role of innovation outcomes: A meta-analytic path analysis. *Research Synthesis 2018, Trier, Germany*.

Richard, O. C., Wu, P., & Chadwick, K. (2009). The impact of entrepreneurial orientation on firm performance: the role of CEO position tenure and industry tenure. The International Journal of Human Resource Management, 20(5), 1078-1095.

Rogers, Z. S., Carter, C. R., & Kwan, V. (2019). Making tough choices: A policy capturing approach to evaluating the tradeoffs in sustainable supplier development initiatives. Journal of Purchasing and Supply Management, 25(5), 100574.

Roopa, S., & Rani, M. S. (2012). Questionnaire designing for a survey. *Journal of Indian Orthodontic Society*, *46*(4), 273-277.

Rosell, D. T., Lakemond, N., & Melander, L. (2017). Integrating supplier knowledge in new product development projects: decoupled and coupled approaches. *Journal of Knowledge Management*, *21*(5), 1035-1052.

Roy, S., Sivakumar, K., and Wilkinson, I.F. (2004). Innovation generation in supply chain relationships: a conceptual model and research propositions. *Journal of the Academy of Marketing Science, 32*(1), 61-79.

Sancha, C., Longoni, A., & Giménez, C. (2015). Sustainable supplier development practices: Drivers and enablers in a global context. Journal of Purchasing and Supply Management, 21(2), 95-102.

Santos, H., Lannelongue, G., & Gonzalez-Benito, J. (2019). Integrating green practices into operational performance: Evidence from Brazilian manufacturers. Sustainability, 11(10), 2956.

Sarantakos, S. (2012). Social research. Macmillan International Higher Education.

Saunders, M. N., Lewis, P., & Thornhill, A. (2016). *Research methods for business students*, (7th ed.). Edinburg: Pearson Education Limited.

Scholten, K., & Schilder, S. (2015). The role of collaboration in supply chain resilience. Supply Chain Management*: An International Journal*, *20*(4), 471-484.

Schwartz, K. & Font, X. (2005). A sustainable supply chain management framework for tour operators. Journal of Sustainable Tourism, 16(3), 298-314.

Scotland, J. (2012). Exploring the philosophical underpinnings of research: Relating ontology and epistemology to the methodology and methods of the scientific, interpretive, and critical research paradigms. *English Language Teaching*, *5*(9), 9-16.

Setia, P., Setia, P., Venkatesh, V., & Joglekar, S. (2013). Leveraging digital technologies: How information quality leads to localized capabilities and customer service performance. *MIS Quarterly*, 565-590.

Shahbaz, M. S., Rasi, R. Z. R. M., Ahmad, M. F. B., & Sohu, S. (2018). The impact of supply chain collaboration on operational performance: Empirical evidence from manufacturing of Malaysia. *International Journal of Advanced and Applied Sciences, 5*(8), 64-71.

Shan, H., Li, Y., & Shi, J. (2020). Influence of supply chain collaborative innovation on sustainable development of supply chain: A Study on Chinese Enterprises. *Sustainability*, *12*(7), 2978.

Sheng, M.L. & Chien, I. (2016). Rethinking organizational learning orientation on radical and incremental innovation in high-tech firms. *Journal of Business Research, 69* (6), 2302-2308.

Shin, N., Park, S., & Park, S. (2019). Partnership-Based supply chain collaboration: Impact on commitment, innovation and firm performance. *Sustainability*, *11*(2), 449.

Shou, Y., Hu, W., Kang, M., Li, Y., & Park, Y. W. (2018). Risk management and firm performance: the moderating role of supplier integration. Industrial Management & Data Systems.

Sikombe, S., & Phiri, M. A. (2021). Institutional factors influencing institutionalised supplier development initiatives in the construction industry in Zambia. Cogent Business & Management, 8(1), 1935184.

Sillanpää, I., Shahzad, K., & Sillanpää, E. (2015). Supplier development and buyer-supplier relationship strategies–a literature review. International Journal of Procurement Management, 8(1-2), 227-250.

Simatupang, T.M. & Sridharan, R. (2002), The collaborative supply chain. *The International Journal of Logistics Management*, *13*(1), pp. 15-30.

Singh, H., Garg, R. K., & Sachdeva, A. (2018). Supply chain collaboration: A state-of-the-art literature review. *Uncertain Supply Chain Management*, 149-180.

Smith, J. P. (1973). Family decisionmaking over the life cycle: Some implications for estimating the effects of income maintenance programs.

Smith, J. P. (1984). Race and human capital. The American Economic Review, 74(4), 685-698.

Soosay, C. A., & Hyland, P. (2015). A decade of supply chain collaboration and directions for future research. *Supply Chain Management: An International Journal*, *20*(6), 613-630.

Su, H. C., Chen, Y. S., & Kao, T. W. (2018). Enhancing Supplier Development: An efficiency perspective. Journal of Business Logistics, 39(4), 248 266.

Subramaniam, P. L., Iranmanesh, M., Kumar, K. M., & Foroughi, B. (2019). The impact of multinational corporations' socially responsible supplier development practices on their corporate reputation and financial performance. International Journal of Physical Distribution & Logistics Management.

Subramaniam, P. L., Iranmanesh, M., Kumar, K. M., & Foroughi, B. (2019).The impact of multinational corporations' socially responsible supplier development practices on their corporate reputation and financial performance. International Journal of Physical Distribution & Logistics Management.

Suleman, K., & Agyekum, K. (2021). An assessment of causes of project failures and abandonment practices of some selected public institutions in the Greater Accra Metropolis: Analysis of practice and problems (Doctoral dissertation).

Sumo, R., Valk, W.V.D., Weele, A.V., & Bode, C. (2016). Fostering incremental and radical innovation through performance-based contracting in buyer-supplier relationships. *International Journal of Operations & Production Management*, *36* (11), 1482-1503.

Swamidass, P.M., Newell, W.T. (1987). "Manufacturing strategy, environmental uncertainty and performance: a path analytic model", Management Science, Vol. 33, No. 4, pp. 509-524.

Teece, D. J., Gary, P., & Amy S. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(7), 509–533.

Tehseen, S., Ramayah, T., & Sajilan, S. (2017). Testing and controlling for common method variance: A review of available methods. *Journal of Management Sciences*, *4*(2), 142-168.

Thakur, R., Hsu, S. H., & Fontenot, G. (2012). Innovation in healthcare: Issues and future trends. *Journal of Business Research*, *65*(4), 562-569.

Tokar, T., Aloysius, J., Williams, B., & Waller, M. (2014). Bracing for demand shocks: An experimental investigation. *International Journal of Operations and Production Management*, *34*(2), 205– 216.

Trafimow, D., Wang, T., & Wang, C. (2019). From a sampling precision perspective, skewness is a friend and not an enemy. Educational and psychological measurement, *79*(1), 129-150.

Vähätalo, M., & Kallio, T. J. (2015). Organising health services through modularity. *International Journal of Operations & Production Management*, *35*(6), 925-945.

Williams, L. J., Hartman, N., & Cavazotte, F. (2010). Method variance and marker variables: A review and comprehensive CFA marker technique. *Organizational Research Methods*, *13*(3), 477-514.

Yaba, C. (2014). *Assessment of supply chain management in hospitals: A case study of Greater Accra regional hospital–Ridge* (Doctoral dissertation, University of Ghana).

Yan, T., Yang, S., & Dooley, K. (2017). A theory of supplier network-based innovation value. *Journal of Purchasing and Supply Management*, 23(3), 153-162.

Yoon, S. N., Lee, D., & Schniederjans, M. (2016). Effects of innovation leadership and supply chain innovation on supply chain efficiency: Focusing on hospital size. *Technological Forecasting and Social Change, 113*, 412-421.

Yunus, E. N. (2018). Leveraging supply chain collaboration in pursuing radical innovation. *International Journal of Innovation Science*, *10*(3), 350-370.

Zhang, Q., & Cao, M. (2018). Exploring antecedents of supply chain collaboration: Effects of culture and inter-organizational system appropriation. *International Journal of Production Economics*, *195*(2018), 146-157.

Zimmermann, R., D.F. Ferreira, L. M., & Carrizo Moreira, A. (2016). The influence of supply chain on the innovation process: a systematic literature review. *Supply Chain Management: An International Journal*, *21*(3), 289-304.

APPENDIX: QUESTIONNAIRE

UNIVERSITY OF CAPE COAST

SCHOOL OF BUSINESS

DEPARTMENT OF MARKETING AND SUPPLY CHAIN MANAGEMENT

Thank you for the willingness to be part of this research. This study is on supply chain collaboration, innovation and private healthcare performance. The items in this questionnaire is tailored to your healthcare facility. Respondents are assured that any information provided will be held confidential and will only be used for academic purposes. Thank you for considering it worthwhile to participate in the research.

SECTION A

DEMOGRAPHICS

Please complete this section by ticking (√) in the corresponding box or writing the requested information**.**

1. What is your gender? Male [ ] Female [ ]

2. What is your Age range? 20-30 [ ] 31-40 [ ] 41-50 [ ] 51-60 [ ] Above 60

[ ]

3. What is your Highest Academic Qualification?

Diploma/HND [ ]

First Degree [ ]

Masters [ ]

PHD [ ]

Others (specify)…….

4. What is your Department?

Procurement/supply chain/ Logistics [ ]

Human Resource/Administration [ ]

Marketing/Sale [ ]

Accounting/Finance [ ]

Operations [ ]

Others (specify)…….

5. What position do you hold in this organization?

Procurement/supply chain/ Logistics officer [ ]

Human Resource/Administration officer [ ]

Marketing/Sale officer [ ]

Accounting/Finance officer [ ]

Operations officer [ ]

Others (specify)…….

7. How many years of work experience do you have?

1-5years [ ]

6-10years [ ]

11-15years [ ]

16years and above [ ]

SECTION B

SUPPLY CHAIN COLLABORATION:

How effectively does your firm implement these SCC practices? ***Where:*** **1-** *Not at all effective*, **2-** *Slightly effective*, **3-** *Moderately effective*, **4-** *Effective*, **5-** *Very effective*

:	**Information Sharing**	**1**	**2**	**3**	**4**	**5**
1	My firm and supply chain partners exchange timely information					
2	My firm and supply chain partners exchange accurate information					
3	My firm and supply chain partners exchange complete information.					
4	My firm and supply chain partners exchange confidential information.					
5	My firm and supply chain partners exchange information that aids in the planning of supply chain activities.					
	Goal Congruence:					
1	My firm and supply chain partners have an agreement on the goals of the supply chain.					
2	My firm and supply chain partners agree on the importance of collaboration with suppliers.					
3	My firm and supply chain partners have an agreement on the importance of improvements that benefit the supply chain as a whole					
4	My firm and supply chain partners agree that our individual goals can be achieved through working toward the goals of the supply chain					
5	My firm and supply chain partners agree on clearly defined roles and responsibilities of each partner					
6	My firm and supply chain partners are actively involved in standardizing supply chain practices and operations					
	Decision synchronization:					
1	My firm and supply chain partners jointly develop demand forecasts					

2	My firm and supply chain partners jointly manage inventory					
3	My firm and supply chain partners jointly plan on the assortment of medical supplies and equipment					
4	My firm and supply chain partners jointly work out solutions					
5	My firm and supply chain partners jointly plan and work on promotional events.					
	Incentive Alignment	**1**	**2**	**3**	**4**	**5**
1	My firm and supply chain partners co-develop systems to evaluate and publicize each other's performance.					
2	My firm and supply chain partners share costs (e.g. loss on order changes).					
3	My firm and supply chain partners share risks that can occur in business transactions.					
4	My firm and supply chain partners share benefits (e.g. savings on reduced inventory cost).					
	Collaborative communication	**1**	**2**	**3**	**4**	**5**
1	My firm and supply chain partners have open and two-way communication.					
2	My firm and supply chain partners have different channels to communicate.					
3	My firm and supply chain partners have frequent contacts regularly.					
	Joint Activities	**1**	**2**	**3**	**4**	**5**
1	My firm and supply chain partners have a joint team.					
2	My firm and supply chain partners conduct joint planning to anticipate and resolve operational problems.					
3	My firm and supply chain partners make joint decisions about ways to improve overall cost-efficiency					
	Joint knowledge					
1.	My firm ad supply chain partners search and acquire new and relevant knowledge.					
2.	My firm and supply chain partners jointly assimilate and apply relevant knowledge.					
3.	My firm and supply chain partners jointly learn the intentions and capabilities of our competitors.					

Source : (Coa & Zhang , 2013 ; Piboonrungruj , 2012)

SECTION C

SUPPLY CHAIN INNOVATION:

To what extent do you agree with the following statements in line with SCI?

Use the scale of *1-Not at all in agreement, 2- Slightly agree 3- Moderately agree, 4-Agree, 5. Strongly agree*

No:	Incremental Innovation:	1	2	3	4	5
1	We frequently refine the provision of existing products, services, technologies and business processes					
2	We regularly implement minor adaptations to existing products, services, technologies and business processes.					
3	We introduce improved but existing products and services for our existing clients.					
4	We improve our provision's efficiency of products, services and business processes					
5	We increase economies of scale in existing markets.					
6	My firm expands services for existing clients					
	Radical Innovation:					
1	My firm accepts demands that go beyond existing products and services.					
2	We invent new technologies, products, services and processes to meet the changing needs of our clients.					
3	We experiment with new technologies, business processes and services in our local market.					
4	We commercialize products and services that are entirely new to our firm					
5	We frequently utilize new opportunities in new markets.					
6	My firm regularly uses new distribution channels.					

Source : (Ralston 2014; Cao & Zhang 2012)

SECTION D:
FIRM PERFORMANCE

How do you rate the extent of improvement in the performance of this firm, given the effectiveness of SCC and SCI?

Use the scale of 1- *No improvement*, 2-*Slight improvement*, 3- *Moderate improvement*, *4- Improvement*, 5- *High improvement*

No:	Healthcare Performance	1	2	3	4	5
1	Sales growth					
2	Customer satisfaction					
3	Profit contribution					
4	Timeliness					
5	Cost reduction					
6	Quality care					
7	Responsiveness					

Source : (Ralston 2014; Cao & Zhang 2012 ; Ghandi, Shaik & Sheorey 2017)