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The effect of innovation orientation on supply chain disruption recovery, the mediating role of supply chain robustness

By

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DECLARATION

I hereby declare that this submission is my work towards the Master of Science, Logistics and Supply Chain Management and that to the best of my knowledge, it contains no material previously published by another person nor material that has been accepted for the award of any other degree of the University, except where due acknowledgment has been made in the text.

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DEDICATION

I dedicate this work first to Almighty God who has been there right from the beginning to this point. Special dedication also to my supportive parents, for their relentless support and compassion towards me during my study.

Furthermore, I want to dedicate this report to my lecturers for their continual impact on knowledge.

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ABSTRACT

The main objective is to examine the effect of innovation orientation on supply chain disruption recovery and the mediating role of supply chain robustness in the innovation orientation and supply chain disruption recovery relationship with evidence from hospitality establishments in Ghana. Cross-sectional research was used. This survey was quantitative. Convenience sampling was adopted and selected 293 participants. Data gathering relied on a questionnaire. Statistical study using SPSS v26 and SmartPls v4. Data was analyzed descriptively and inferentially. The result reveals that innovation orientation positively influenced SC disruption recovery and robustness. The result shows that SC robustness positively influenced SC disruption recovery and plays a positive role in the relationship between innovation orientation and SC disruption recovery. The study concluded that management should resume regular operations quickly, if a severe security breach occurred, continue operating if a major supply chain security compromise occurred, and quickly resume vital activities after system failure/interruption which can help them embrace research-based developments to handle disruptions immediately, handle crises, and to recover cheaply from disaster.

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LIST OF ABBREVIATIONS

RBV   Resource-Based View

CFA   Confirmatory Factor Analysis

SEM   Structural Equation Modelling

HTMT   Heterotrait-Monotrait Ratio

CR   Composite Reliability

AVE   Average Variance Extracted

COVID-19   coronavirus 2019

CMV   Common Method Variance

KMO   Kaiser-Meyer-Olkin

SMEs   Small and Medium-Sized Businesses

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Tourism and hospitality's contribution to the global economy has expanded in recent decades, and it has developed into the fastest-growing and most dynamic economic sector in several countries (Agbola et al., 2020). Tourism alone generated 10.4% of the global Gross Domestic Product and 10.6% of total employment in 2019, accounting for every four new jobs produced globally (WTTC, 2021). Despite its significant economic contribution, the sector is highly vulnerable to external shocks (Lee and Chen, 2020), such as the 1997 and 2009 financial crises, the SARS outbreak in 2003, social unrest, natural disasters (e.g., earthquakes, and floods) and the spread of coronavirus 2019 (COVID-19) (Zhang et al., 2021, Spanaki et al., 2021). External shocks, most notably the COVID-19 pandemic, significantly more extensive in scope than others, affect business performance across all industries (Wen et al., 2021). The hospitality sector bears the brunt of the impact (Gursoy and Chi, 2020). As a highly infectious disease that can transmit rapidly among humans (CDC, 2021), it instills widespread fear of contagion and prompts people to shun high-risk activities, including travel (Zheng et al., 2021). To halt the transmission of viruses, governments worldwide implemented travel restrictions (travel bans, visa controls, and quarantine), lockdowns, gathering restrictions, social distancing, and other policies that limit people's activities (Bharwani and Mathews, 2021). Because tourism activities need travel, any impediment to travel, such as fear or restriction, can significantly impact the sector, which results in decreased travel demand (Yeh, 2021). In 2020, foreign visitor arrivals fell by 74%, or around 1 billion persons, compared to the previous year (UNWTO, 2021). This downturn returned tourist numbers to levels seen 30 years ago (UNWTO, 2021). The year 2021 proved to be another difficult one, with arrivals remaining 72% lower than before the pandemic (UNWTO, 2022).

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In many developing countries, a 20-30% drop could reduce international tourism receipts (exports) by $300-450 billion, or one-third of 2019's $1.5 trillion. Considering past market trends, COVID-19 will lose 5–7 years of growth. UNWTO states that international tourist arrivals fell 4% in 2009 due to the global economic crisis, but just 0.4% in 2003 due to the SARS pandemic. This situation affected the hotel industry deeply. Hotel occupancy plummeted drastically to 40% in 2020 and experienced an 11% upturn in 2021 compared to 2020, but still 33% below the pre-pandemic levels (BPS, 2022). Given the ongoing global pandemic with multiple waves' influence on the confidence of international visitors to travel and the freedom of travel between countries, it necessitates hotels to adopt measures to manage the situation and to survive and increase their performance. In an attempt to recover from the consequences of the Covid-19 disruptions, hospitality businesses have implemented various strategies. Despite the different strategies implemented, many businesses are struggling to bounce back into the business and some have died out completely due to the pandemic. Considering the relevance of the sector to growth in many economies, an understanding of how firms can manage supply chain disruptions has become an important subject for both academics and practitioners (Parast and Shekarian 2019; Sabahi and Parast, 2020; Belhadi et al., 2021; Dovbischuk, 2022; Siagian et al., 2021; Fernando et al., 2022).

World Economic Forum and Accenture in 2013 revealed that 80% of firms consider their ability to recover from supply chain disruptions as a top priority. Melnyk et al. (2014) asserted that this priority of firms is composed of two critical and complementary elements: (1) resistance capacity, the ability of a system to diminish the impact of a disruption by avoiding it entirely or by decreasing the time between the onset of a disruption and the start of the recovery from that disruption; and (2) recovery capacity, the capability of a system to determine a path to return to a steady-state of functionality once a disruption has taken place. Although resilience is important to a firm's

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capability to manage supply chain disruptions, there is limited research on how firms develop recovery to supply chain disruptions (Blackhurst, Dunn, and Craighead 2011; Sabahi and Parast, 2020).

Innovation orientation is one of the capabilities that helps firms to build resilience to disruption (Kamalahmadi and Parast 2016). Reinmoeller and Baardwijk (2005) highlighted the impact of innovation on resilience and concluded that firms could be able to surmount disturbances and disruptions and adapt to rapid changes in the environment only when they assign enough resources to innovation. Golgeci and Ponomarov (2013) viewed supply chain disruption recovery as a vital component of a firm's continuity and innovativeness as one of the primary drivers of resilience. In their investigation of the effect of a firm's innovativeness on effective reactions to supply chain disruptions, they found that both firm innovativeness and innovation magnitude are significantly connected with supply chain resilience. Akgün and Keskin (2014) also found a significant relationship between a firm's product innovativeness and resilience-capacity variables, where product innovativeness mediates the relationship between a firm's resilience and its performance. Despite the growth of literature on supply chain disruption recovery, there is still limited understanding of how innovation orientation may aid firms' supply chain disruption recovery. The fast, vast, and disruptive changes brought about by COVID-19 in the world of work create a new setting for researchers and demand a thorough analysis of how firms have built recovery capabilities. In this regard, the present study aims to examine the effect of innovation orientation on supply chain disruption recovery and the mediating role of supply chain robustness in the innovation orientation and supply chain disruption recovery relationship.

1.2 Statement of the problem

Different statistics show that the hospitality sector remains the most affected by the covid -19 pandemic. The pandemic left many challenges on hospitality businesses especially when many hospitality businesses have to close down to minimize the spread of the virus. In response to the Covid-19 pandemic, firms including hospitality businesses adopted different strategies to withstand the negative implications of the pandemic on their operations and survival. To date, there is a paucity of studies that clearly documents how firms within the hospitality setting have managed the pandemic and whether firms have built the desired capacity to recover from the disruption. While some have bounced swiftly into businesses, many are left behind.

Clearly, some firms are able to exhibit higher levels of resilience at the time of disruptions (Christopher and Peck, 2004). This research attempts to investigate some of the important antecedents of supply chain disruption recovery. Specifically, the role of firm innovation orientation is explored. Extant literature (Sabahi and Parast, 2020; Belhadi et al., 2021; Dovbischuk, 2022; Siagian et al., 2021; Fernando et al., 2022) provides evidence of innovation as a key way in managing supply chain disruptions. In the strategy literature, innovation is often posited as a critical enabler of firm competitiveness because firm innovativeness is strongly linked to creating market value (Cho and Pucik, 2005), responding to uncertainty (Stevens and Dimitriadis, 2004), and surviving volatile or lagging demand cycles (Fisher, 1997). Given the importance of both innovativeness and resilience as competitive traits in dynamic and turbulent environments, it is somewhat surprising that the relationship between innovation orientation and supply chain disruption recovery has not been adequately addressed in the existing literature. This research attempts to bridge this gap. Additionally, prior studies (Golgeci and Ponomarov, 2013; Kamalahmadi and Parast 2016; Sabahi and Parast, 2020) have called for the need to conduct more studies on how firms can mitigate disruption, as their ability to recover from disruption is linked

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to their survival. To date, the relationship between innovation orientation and supply chain disruption recovery remains ambiguous and underexplored. This study fills the gap by examining the effect of innovation orientation on supply chain disruption recovery.

Additionally, innovation orientation evolves as a type of new, investment, and progressive techniques within the supply chain (Wagner, 2008; Shamout, 2020) to minimize risk, foster resources, and reconfigure processes that would boost disruption recovery (Ambulkar et al., 2015). Innovation orientation can be translated into robustness. In the supply chain ecosystem, robustness delineates the capacity to resist varied shocks, man-made errors, and variability in the business environment (Wieland and Wallenburg, 2012; Shamout, 2020). Hence, robustness plays an important role during disruption because well-equipped supply chain and logistics networks with risk awareness can alleviate or eliminate the occurrence of risk (Kwak et al., 2018). High innovation orientation can abate disruption and also reduce uncertainty Papadopoulos et al. (2017) and possibly boost supply chain robustness. The extant literature and abstractions denote the potentiality of nexus among important supply chain variables e.g., robustness capability, supply data disruption recovery, and innovation orientation. However, empirical evidence on this nexus is still an uncharted area (Lai et al., 2018; Shamout, 2020). Existing research highlighted the need to further expound on how and when supply chain resilience improves important outcome variables in the logistics and supply chain industry (Papadopoulos et al., 2017; Zhu et al., 2018). This study responds to this call by expounding the indirect effect of supply chain robustness on supply chain disruption recovery through innovation orientation by using Dynamic Capability Theory as a theoretical framework. This study is therefore conducted to examine the effect of innovation orientation on supply chain disruption recovery and the mediating role of supply chain

robustness in the innovation orientation and supply chain disruption recovery relationship with evidence from hospitality establishments in Ghana.

1.3 Objectives of the study

Drawing from the discussion of the research background and problem in this study, the main objective is to examine the effect of innovation orientation on supply chain disruption recovery and the mediating role of supply chain robustness in the innovation orientation and supply chain disruption recovery relationship with evidence from hospitality establishments in Ghana. The development of this study will be seen through the following objectives and research questions. In the quest to achieve the main objective of the study, the researcher intends to address the specific objectives below;

1. To examine the influence of innovation orientation on supply chain disruption discovery among hospitality businesses
2. To examine the effect of innovation orientation on supply chain robustness among hospitality businesses
3. To examine the mediating role of supply chain robustness in the relationship between innovation orientation and supply chain disruption discovery among hospitality businesses

1.4 Research Questions

1. What is the influence of innovation orientation on supply chain disruption discovery among hospitality businesses?
2. What is the effect of innovation orientation on supply chain robustness among hospitality businesses
3. What is the mediating role of supply chain robustness in the relationship between innovation orientation and supply chain disruption discovery among hospitality businesses?

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1.5 Significance of the study

This study attempted to understudy the examine the effect of innovation orientation on supply chain disruption recovery and the mediating role of supply chain robustness in the innovation orientation and supply chain disruption recovery relationship with evidence from hospitality establishments in Ghana. The study presents theoretical, practical, and policy significance relevant to individual firms and government agencies.

Of the many contributions of this study has been to extend the literature on innovation orientation and supply chain disruption recovery. The findings of the study expand perspectives on the variables used in the study. In as much as these variables have received much attention in research, it has been researched separately and in a different context. A combination of these factors in a single study, therefore, presents a unique contribution to the study. Therefore, this study may provide a better understanding to both practitioners and regulatory institutions regarding the management of the pandemic and its outcome in the Ghanaian hospitality context.

In terms of practical significance, the study will make specific managerial contributions to industrial and the management of hospitality firms. The findings of the study may be useful in developing strategies that are geared towards developing and adopting the antecedent factors of supply chain robustness and supply chain disruption recovery in a hospitality firm's context. By establishing the influence of various variables, managers of hospitality firms will be able to identify the strongest predictor of supply chain disruption recovery. The findings obtained will provide more insight into the underlying pathways among hospitality firms, where the activities are carried out in the organizations and their bearing on the innovation and how they can be utilized efficiently to improve supply chain robustness and supply chain disruption recovery.

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1.6 Research Methodology

The study employed the positivist research approach which made use of a quantitative methodology. Again, the study also employed a cross sectional survey design. The design enabled the researcher to describe the study variables in the Ghanaian context and also explore the relationship among different star-rated hotels over a period of time. The study population comprised senior and middle-level managers in hotels in Ghana. A sample of 200 hotel establishment was drawn for the study. Respondents in this study (senior and middle-level managers) were purposively sampled. The study conducted an extensive literature review to help to discover the academic writings supporting the relevance of the topic and the research hypotheses. Again, the study used primary sources of data to validate the results produced in the literature through field surveys using questionnaires adopted from previously validated instruments. After the data collection, the primary data that has been gathered from the field will be vetted for accuracy and reliability. The questionnaires that have been adequately filled will be coded into excel for analysis. This study will employ two data analysis approach i.e., descriptive and inferential analysis using multivariate data analyses such as Structural Equation Modelling (SEM) and factor analysis in order to fulfill the set objectives in chapter one. Descriptive analysis will be based on information provided by respondents concerning their organization (demographical data), which include the profile of the organization and the respondents. The essence of the descriptive analysis is to test for normality and this included frequencies, percentages, means, skewness, and kurtosis statistics. The motive of this analysis is to ensure that the data gathered are suitable for covariance-based-SEM analysis. It is done to check for missing data, outliers, and data distribution (Hair et al., 2017). Inferential analysis will be used to test the hypothesis in the study.

1.7 Scope of the Study

Even though there have been several issues in hospitality firms in recent times, this study focused on the effect of innovation orientation on supply chain disruption recovery and the mediating role of supply chain robustness in the innovation orientation and supply chain disruption recovery relationship with evidence from hospitality establishments in Ghana. Since hospitality establishments are broad, this study focuses on hotels, both rated and non-rated. The researcher intends to conduct the research among hotels in the Eastern, Ashanti, Greater Accra, and Central regions in Ghana.

1.8 Limitations of the Study

As with any research, the present study was not without limitations. Firstly, this will be conducted only in Ghana thus the results of this study do not necessarily reflect hotel opinions in other countries. Again, it is not clear whether the outcome will have the same outcome in another context since it may be possible that the needs and perceptions of hotels in other countries may differ due to different levels of knowledge, and experience related to covid varies. Secondly, the outcome of the study dwells on cross-sectional data and it covered the views of the hotel employees during a specific period. Meanwhile using a cross-sectional strategy limits the study's capability to examine the phenomena over a period of time. However, a longitudinal approach that will transcend into studying employees over a time period in relation to the subject matter, could be used to offer much more insight.

Furthermore, the data collection will be done in the Eastern, Ashanti, Greater Accra, and Central regions in Ghana, and therefore it will be important to consider other regions for future research in a similar study to find out if the outcome of the research would be different or the same.

This research will make use of quantitative techniques in data collection and analysis. The use of a questionnaire will offer very valuable information on the subject matter, however, using

qualitative data such as interviews could also offer more detailed information on the topic. The research will collect data from employees of hotels through quantitative means alone which will give very important information to the study, however collecting data from operators through purely qualitative means will also be proper to unravel much broader views on the topic.

1.9 Organisation of the Study

The study is organized into five chapters. This first chapter also named the introduction, has expanded the background of the study, statement of the problem, objectives of the study, and their corresponding research questions. The significance of the study, delimitation, and limitations of the study. It has as well explained the terms used in this study. The chapter ends with the structure of the dissertation. Chapter two reviews the relevant literature from previous research. The chapter also expounds on the key concepts and reviews empirical research related to them. Finally, the chapter ends with a summary highlighting identified gaps in the literature. The main sub-headings captured in the chapter include the definition of concepts, theoretical /conceptual framework, and empirical review. In the nutshell, this chapter will explain the theoretical concept of the study as well as the development of the model based on previous studies. Chapter three describes the methodology to be used for this research, including research design, population, sample and sampling procedure, research instruments to measure the constructs in the research model, and data collection procedure. The chapter also presents tools to be used in analyzing the data and ends with ethical considerations germane to the study. Chapter four presents and discusses the results and analyses of the data gathered. The final chapter five provides a summary, and conclusion and proposes recommendations based on the findings.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

There are five (5) sections in this chapter. Concepts related to the study are discussed in section 1 as a conceptual review. The theory employed in the study was briefly explained in section 2, which is the theoretical review. An Empirical review is presented in section 3. Hypothesis development is presented in section 4, and the conceptual framework is discussed in Section 5.

2.1 Conceptual Literature Review

A conceptual review of the key concepts employed in this work is presented in this section. These concepts include innovation orientation, supply chain disruption recovery, and supply chain robustness.

2.1.1 Innovation orientation

Innovation, according to Sanders and Lin (2016), is the deliberate introduction and implementation of ideas, methods, goods, or procedures that are novel to the relevant unit of adoption and are intended to significantly benefit the person, the group, the organization, or the larger society. As defined more generally by Jantz (2017), innovation is "a major departure from conventional management concepts, methods, and practices, or a departure from conventional organizational structures that dramatically modifies how the job of management is accomplished. It is described as a state of being, one that varies from being disruptive to situations that are slightly innocuous by Ronstadt et al. (2021). The above definitions imply that innovation is significant from the standpoint of organizational culture and that of an organization's capacity for innovation will be constrained by its culture. Innovation, however, encompasses more than simply actions and behaviors. Damanpour (2017) suggested that a larger conception of innovation is necessary for the

meta-analysis of the literature. Damanpour (2017) looked examined 13 possible factors of organizational innovation in relation to one another. Nine of the factors, including specialization, functional differentiation, managerial attitude towards change, technical knowledge resources, and external and internal communication, were shown to have statistically significant relationships. In their theoretical creation of a construct of organizational innovation, Maldonado-Guzmán et al. (2018) also succeeded in providing an empirical measure for a more comprehensive conceptualization. According to their definition in the article, organizational performance is an organization's total innovative capacity of presenting new items to the market or opening up new markets via integrating strategic direction with inventive behaviour and procedure. Their construct, which comprised the aspects of product, market, process, behaviour, and strategic innovation, was multi-dimensional, as was their concept of innovation Maldonado-Guzmán et al. (2018). Additionally, it is acceptable to state that innovation is viewed as anything new that brings about change (David, 2019; Snchez et al., 2017; Robbins and O'Gorman, 2016) or is connected to creativity and change (Matei and Bujac, 2016). Consequently, it would seem that the definition of innovation is comprehensive and based on characteristics of infrastructure, process, behavioural (cultural), and product/service factors. Successful businesses may incorporate innovation into their management procedures and organizational culture (Vasudevan et al., 2021; O'Reilly et al., 2019). Organizational culture, in the opinion of O'Reilly et al., 2019, is what drives innovation. They and other people hold the opinion that culture has an impact on creativity and invention in a variety of ways, such as socialization processes and the value proposition expressed through structures, policies, and everyday objects, practices, and procedures. In reality, it's possible to define innovation as a cultural orientation. The general conclusion is that organizational innovation appears to be supported by a market-oriented culture (Kasemsap, 2017). Innovativeness, in the

opinion of Su et al. (2018), is a persistent quality that emerges through time in companies. This is also in line with the literature already in existence, such as works by Kunda (2016) and Neto and Machado, (2022) both of whom emphasize the importance of culture as the foundation for creativity in companies. As previously mentioned, socialization (Le et al., 2020; Xu et al. 2019; Sugandini et al.,2018) and fundamental values, assumptions, and beliefs (Tanget al., 2015) that serve as the foundation for behaviors are two ways in which the basic components of culture shared values and beliefs, and expected behavior resulting from the values and beliefs influence innovation. Therefore, behaviors that encourage creativity, risk-taking, independence, cooperation, being value and solution driven, communicating, instilling trust and respect, and being fast to act when making choices are all part of an innovation-supporting culture. These behaviors should be instilled in the company culture since they are desirable, natural, and expected (Yanget al., 2018). Similarly, to this, one would anticipate that such a culture would detest rigidity, control, predictability, and stability as practices and behaviours that limit creativity (Frauke Wolf et al., 2018). Organizations' ability to be creative then it must include anything from the ambition to do so to the ability to bring new ideas, products, or services all the way up to the introduction of systems and procedures that can improve corporate performance. The culture's receptivity to innovation is a crucial component of innovation (Hazzah et al., 2019). The organization's cultural awareness required to recognize the need for innovation is what cultural openness is concerned with (Dougherty, 2017). The adoption or rejection of innovative projects will ultimately depend on this focus.

2.1.2 Supply chain disruption recovery

The Unplanned and unforeseen incidents that interfere with the regular flow of supplies and materials through a supply chain are referred to as supply chain disruption (Ivanov et al. 2017).

Despite risk preparation, certain events that have a substantial disruptive effect on supply networks will occur. Therefore, managers will still have a difficult time recovering from supply chain disruptions and seeking to lessen their effects. Additionally, it is important to comprehend how managers react to and recover from supply chain disruptions in order to better understand how managers could try to prevent disruptions through risk planning. As a Matter of fact, managers must deal with supply chain disruptions brought on by a variety of factors, such as inadequate supplier-to-manufacturer communication, opportunistic supplier behavior, truck driver or port worker strikes, terrorist attacks, Information technology issues, industrial accidents, quality issues, operational issues, natural disasters, and governmental regulations Ponis and Ntalla, 2016; Scholten and Fynes, 2017; Mizgieral, 2015; Wonget al., 2020 and Ivanov et al., 2017). Large financial losses, missed sales, and a detrimental effect on shareholder wealth and operating performance are all common outcomes of these disruptions (Hendricks et al.,2020, Baghersad and Zobel., 2021). The objective of the impacted firm is to recover from the event and reduce its consequences as soon as feasible after a disruptive event has damaged the supply chain. Undoubtedly, the decisions made by a company's supply chain management play a significant role in how quickly and successfully the company recovers from interruptions (Baghersad and Zobel, 2021). Managers should be aware of the internal and external elements that might influence the entire disruption management process in order for enterprises to respond and recover from disruptions in an effective manner (Mizgieral, 2015). However, the research has just begun to outline precisely what these particular elements are or how they interact to form a larger process. So far frameworks have mostly concentrated on the actions that need to be done (Mittal and Sinha, 2021) in order to recover from the disruption. However, comprehending the broader disruption management process has received far less attention (Messina et al. 2020). The three main process-

level categories that make up the overall post-event disruption management process are the discovery of the disruption event, recovery after the event, and redesign, according to DuHadway et al. (2019). Messina et al. (2020) focused on the buffering or bridging decisions managers make depending on the effect of the disruption as well as the pre-disruption elements of trust, dependency, past experience, and supply chain disruption orientation to start an investigation into the factors. Through measures like increased inventory, a firm's vulnerability to disruptions in the supply chains of its partners will be reduced as a result of a buffering choice. Ivanov et al. (2016) reviewed quantitative research that concentrated on using a reactive strategy to deal with supply chain interruption. Production, supply, and transportation interruptions with shared issues, whether there are measures for recovery or not, are three fundamental concerns, according to the authors. Future research that incorporates recovery components into proactive models was suggested by the authors. A real-time rescheduling technique was suggested in a study by Paul et al. (2018) for an issue with economic lot size in a two-stage supply chain system that is prone to transportation interruption The pricing structure for the model was created to account for the possibility of damaged items during the disruption. The best recovery plan for the model has been discovered using a computationally effective heuristic technique. The same real-time recovery model was described by Paul et al. (2018) for a two-stage serial supply chain system with a manufacturer and a retailer, where the disruption happened at the manufacturer's manufacturing operation. Paul and Chowdhury (2020) created a recovery strategy for interruptions in a two-stage production inventory system taking process reliability into account based on the research of the previous author. In a three-stage production system, Paul et al. (2021) developed a recovery strategy for handling disturbances as well as a fresh, effective heuristic for handling both single and multiple disruptions. In different research, Darom et al. (2018) created a perfect plan, a proactive mitigation

plan, and a reactive mitigation plan for three-stage Supply chain to handle shifts in demand and production problems. In their research, the authors created a quantitative model, a fuzzy interference system, and effective heuristics. According to Ivanov and Das (2020) a multi-layer supply chain model with simultaneous supply interruption, machine failure, safety stock, and maintenance breakdown was taken into consideration. Utilizing a mathematical model, the researchers determined the integrated total expected cost for the manufacturer's warehouse, the manufacturer, and the retailer.

2.1.3 Supply chain robustness.

The capacity of the supply chain to continue operating despite internal or external disturbances is known as supply chain resilience (Zhuo et al., 2021). While many of their rivals had to suspend manufacturing during the Indonesian currency crisis, Li and Fung were able to keep supplying their clients (Ivanov et al., 2017). The capacity of the supply chain to continue operating despite internal or external disturbances is known as supply chain resilience (Ivanov et al., 2017). According to Ahmed and Huma (2021), robustness is defined as the capacity to carry on with operations despite supply chain interruptions. Several believe that supply chain robustness has yet to be adequately defined in the supply chain risk literature and is often misunderstood (Vlajic et al., 2019). Furthermore, additional effort, such as establishing scales, is necessary (Ruel and El Baz, 2021). Robustness is sometimes misinterpreted as a static notion, indicating that a system and its processes remain unaffected by disturbances. In reality, to sustain the operation, resilient systems frequently necessitate structural or component changes (Zhuo et al., 2021). A resilient supply chain is thought to include dimensions, which are those properties that are mutually exclusive and frequently exhaustive, and antecedents, which are factors that predict the construct (Sturm et al., 2021). Hartmann et al. (2022) and Tukamuhabwa et al., (2021) established the

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characteristics and causes of supply chain agility. Research has not yet attempted to combine the ideas and data found in the literature to provide a thorough theoretical foundation for understanding supply chain resilience. Amazingly, it is better to participate in loss avoidance and proactive risk mitigation than to deal with the effects of real interruptions. Prevention is, after all, always preferable to treatment (El Baz and Ruel, 2021). A robust supply chain strategy is preferred by most general and supply chain managers over an agile one, with the latter being viewed as expensive and unpredictable in its execution, according to Paul and Chowdhury (2020). Data gathered from 270 manufacturing managers were studied by Hohenstein et al. (2015) to determine the impact of robustness and agility initiatives on company performance. They discovered that, in contrast to agility, robustness has a direct and significant beneficial impact on company performance. Various variables that contribute to supply chain resilience have been found by research to far (Ivanov et al., 2017; Mackay et al., 2020), but managers and researchers still need to comprehend the theoretical underpinnings of the construct. This study fills in this vacuum by creating a thorough framework that emphasizes the preconditions for the successful use of supply chain resilience measures.

2.2 Theoretical Literature Review

2.2.1 The Resource-Based View (RBV)

The RBV contends that by developing strategic resource or capability bundles, a business may gain a competitive edge (Barney, 1991; Hoopes, Madsen & Walker, 2003; Rumelt, 1984). According to research by Barney et al. (2012) and Priem & Swink (2012), supply chain management and purchasing both have the ability to provide a competitive advantage as long as the resources or competencies are valued, uncommon, unique, and non-replaceable (Barney, 1991). Although opponents of the RBV criticize the lack of distinction between concepts like

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resources and capabilities, this is becoming less of an issue in the literature now in publication. Physical capital, human capital, and organizational capital are three categories of resources that have been expanded to encompass financial capital, technical capital, and reputational capital (Barney, 1991). They could be real, like infrastructure, or intangible, like knowledge exchange or information (Gröler & Grübner, 2006). According to Gröler and Grübner (2006), resources are "what a business owns or has access to, not something a firm is competent to achieve." Because of this, they could not be valuable on their own and instead require processing or use in combinations to boost performance (Newbert, 2007). Bundling is the merging of resources to enable the creation of capabilities (Sirmon, Gove & Hitt, 2008). If firms want to gain or retain competitive advantage, this bundling process is required in a given context "to exploit opportunities and/or prevent dangers (Sirmon et al., 2008). The definition of organizational capabilities as a higher-order construct depends on resource bundling (Wu, Yeniyurt, Kim & Cavusgil, 2006). When resources are integrated and used together, capabilities are produced (Grant, 1991). Bundling resources are required to develop distinctive skills that add value and might be superior to those of rivals (Sirmon et al., 2007, 2008; Lu, Zhou, Bruton, & Li 2010). These qualities must be those that the business has determined to be essential (Hitt, 2011), therefore they are reliant on the environment in which the organization operates. The presence and use of capabilities may aid in the explanation of how businesses gain or maintain a competitive advantage (Wu et al., 2006). Comparatively to competitive advantage established just by resources, competitive advantage developed by skills will be more deeply ingrained throughout the organization's management and procedures and hence more likely to be sustainable (Brush & Artz, 1999). A small number of studies has combined the exploration of resources and capabilities. As an illustration, Ravichandran and Lertwongsatien (2005) investigate the impact of information

systems capabilities and resources on organizational performance. They discover that information systems capabilities depend on technological, human, and relational resources and are essential for an organization to use information technology effectively. According to Hitt et al. (2001) the ability to use human capital resources more effectively may result in better performance. However, using human capital as a resource on its own or in conjunction with the previously mentioned capability does not necessarily improve performance because it may result in higher costs. According to Zhu and Kraemer (2002), there is some data that suggests the interaction between e-commerce capacity and IT infrastructure (as a resource) may improve performance. They contend that in order to fully utilize the resources already available, capacities must be created. Despite the RBV's widespread use in the literature now in circulation, it has been claimed that the theory exhibits "context insensitivity" (Ling-yee, 2007). This implies that it is unable to recognize the situations in which resources or competencies may be of the greatest use (Ling-yee, 2007). This idea of contingent conditions is addressed by contingency theory, which contends that internal and external factors will affect how an organization or supply chain is managed, which may then have an impact on the resources or capabilities required to support performance under various circumstances (Grötsch, Blome, and Schleper 2013). According to contingency theory, businesses must adjust to the environment in which they operate (Donaldson, 2001). Scholars have proposed a contingent RBV as a way to overcome the RBV's fairly static character. The further development of this is helpful to assess the potential value that various organizational resources or capabilities may offer (Aragón-Correa & Sharma, 2003), to increase the applicability of the theory (Brush & Artz, 1999), and to pinpoint factors that influence the usefulness of various resources or capabilities. It has been determined that contingencies are essential to achieving the competitive advantage produced by resources and capabilities, particularly in respect to selection and

deployment (Sirmon & Hitt, 2009). In the literature on operations and supply chain management, contingent elements including business size, country context and culture, strategy context, and other organizational variables have been taken into account (Sousa & Voss, 2008). According to Sousa and Voss (2008), contingent research is essential for the advancement of operations and supply chain management. However, the literature has not yet adequately established contingent perspectives on the RBV.

2.3 Empirical Review

Kwak et al. (2018) conducted a study to investigate whether supply chain innovation positively affects risk management robustness and resilience in global supply chain operations, and to examine how these capabilities may improve competitive advantage. Existing based studies were used in the development of a questionnaire to obtain data from manufacturers and logistics intermediaries involved in global supply chain operations. The data were analyzed using confirmatory factor analysis (CFA) and structural equation modelling (SEM) to validate the model. Results showed that innovative supply chains have a positive impact on all dimensions of risk management capability, and further have a significant impact on enhancing competitive advantage. The finding provides firm grounds for managerial decisions on investment in technology innovation and process innovation.

Golgeci and Ponomarov (2013) conducted research to investigate the relationships connecting a firm's innovativeness, innovation magnitude, disruption severity, and supply chain resilience. These relationships are examined within a supply chain disruptions context. A Scenario-based experimental method was used together with a survey method. The Survey of the study was done among Participants in senior level supply chain and operations managers in manufacturing companies. A linear regression model was used to test the hypotheses. The results showed that a

firm's innovativeness and innovation magnitude are positively associated with supply chain resilience. Furthermore, disruption severity proved to be positively associated with innovation magnitude.

Sabahi and Parast (2020) conducted a study to investigate whether firms that are innovative can as well be resilient to supply chain disruptions. A dynamic capability theory was used to examine the relationship between firm innovation and a firm's response to supply chain disruptions. Results showed that an innovative firm environment would be more resilient to disruptions, because innovation, directly and indirectly, helps firms fortify capabilities that positively affect risk management capability. A literature review was used to prove that innovation can enhance the capabilities of knowledge sharing, agility, and flexibility within a firm, and these capabilities further have a significant impact on enhancing resiliency.

Durach et al. (2015) conducted research on an emerging theory of supply chain robustness. The method used was a Review of relevant literature. A team of academics, librarians, and managers was involved during the research. From the findings, a definition of supply chain robustness was obtained with the creation of a theoretical framework of supply chain robustness that augments both causal and descriptive knowledge and finally indicates how the findings from the review further assist practice. The researchers recommend the need for further research on quantitative testing of the framework of supply chain robustness to obtain suitable practical implications.

Brandon-Jones et al. (2014) conducted a study to investigate and understand the relationship between resources such as information sharing and connectivity, capabilities and performance in terms of supply chain resilience and robustness. A supply base complexity was used as a moderating factor. The survey data was obtained from 264 manufacturing plants. The findings showed that the connectivity between the supply chain and information sharing resources lead to

a supply chain visibility capability as well as increasing resilience and robustness. Finally, as supply complexity is used as a contingent factor, other factors that may moderate the relationship between visibility and resilience and robustness should be examined.

Ivanov et al. (2017) conducted research to analyze the present condition of arts research on supply chain design as well as planning with both disruptions and recovery factors to achieve a coordinating connection of quantitative to empirical research. Results from the study showed that both supply chain and operations managers should discover which quantitative tools are accessible and applicable for other areas. Finally, there is the need for future studies to be conducted on decision-support methods in supply chain risk management domains that can be identified.

Centobelli et al. (2020) conducted research to further ascertain the interactions and relationships between discovery of supply chain disruption event, causes of the event, and recovery performance. Method used for data collection was a qualitative in-depth interview. Finding indicates that although internal disruptions have a faster to recovery property but it can also significantly result to negative organization of the recovery performance outcome. Additional research is required to determine the utilization of block chains and their effectiveness in enhancing supply chains, as well as additional studies to pinpoint the advantages of the circular economy.

Chen (2018) conducted an empirical study on the associations among information technology, supply chain robustness, and supply chain performance. 186 questionnaires were administered for data collection and results showed a significant positive effect of information technology on supply chain robustness and supply chain performance as well as a positive effect of supply chain robustness and supply chain performance. Information Technology significantly helps improves supply chain's ability of resisting risks, and also improves the supply chain's performance. Furthermore, for better supply chain operation and reduced risks of supply chain disruption then

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Information Technology strategy should be used a firms supply chain operations. The study recommended that there is a need for advance studies to be done on several countries and respondents to attain broader and reasonable results on supply chain robustness.

Mackay et al. (2020) researched on the important of robustness and resilience aimed at mitigating the probability and magnitude of disruptions. The method used was abductive approach to review and investigate contextual factors from existing empirical research. Results showed that insurance, expediting, strategic adaptive capability and reconfiguration are contributing factors to reducing probability and magnitude of supply chain disruptions. In conclusion, factors that include dissimilarities between redundancy and flexibility usage to improve resilience and robustness are characterized by the relation between the supply chain, the disruption characteristics and the decision maker. It was recommended that future research focuses on testing the validity of redundancy and flexibility actions by applying the framework empirically that will provide a general perspective overview of this phenomenon.

Adenso-Díaz et al. (2018) conducted a study to assess supply chain robustness to links failure. Numerical experiments were used to understand how different design factors affect robustness. From the results the number of potential transportation links between supply network nodes is the most influential factor affecting supply network and its robustness together with the service level that can be maintained after disruptions. It was recommended that further studies should be done on other link failure orderings and how it could be used to assess the robustness of the supply chain network.

2.4 Conceptual frameworks

Figure 2.1 below shows the effect of innovation orientation on supply chain disruption recovery and the mediating role of supply chain robustness in the innovation orientation and supply chain disruption recovery relationship with evidence from hospitality establishments in Ghana.
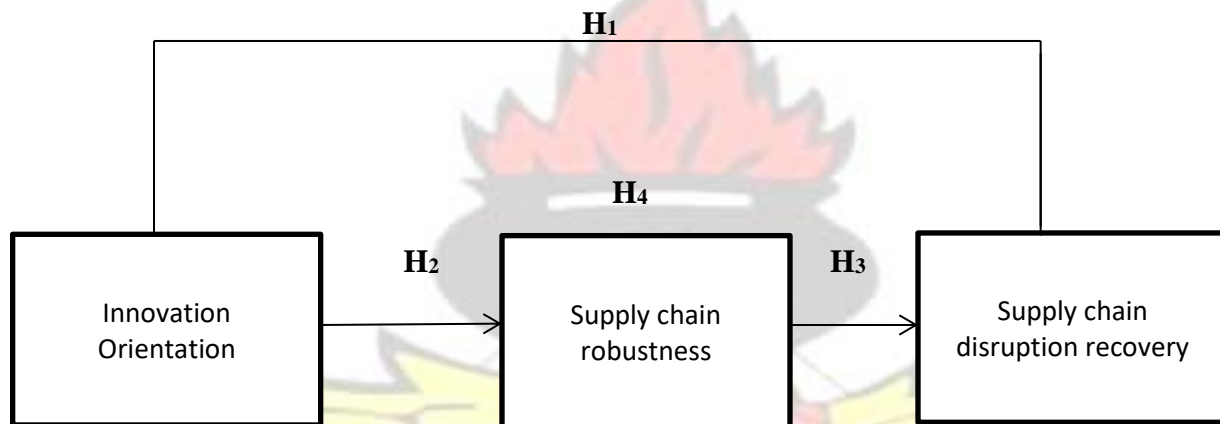
Figure 2.1 Conceptual Framework

Author/Year	country	Purpose	Theory	Method	Findings	Future studies
Golgeci and Ponomarov (2013)	USA and Europe	To investigate the relationships connecting firm innovativeness, innovation magnitude, disruption severity, and supply chain resilience.	Resource base theory	Quantitative and Qualitative	firm's innovativeness and innovation magnitude are positively associated with supply chain resilience	The need for future studies to be conducted on the effect of innovation type on resilience capabilities
Kwak et al. (2018)	South Korean	To investigate whether supply chain innovation positively affects risk management robustness and resilience in global supply chain operations, and to examine how these capabilities may improve competitive advantage	No theory used	Quantitative	Innovative supply chain has a positive impact on all dimensions of risk management capability, and further have a significant impact on enhancing competitive advantage.	Future research should compare several nations utilizing objective data to assess a company's competitive edge in order to broaden the applicability of findings.
Brandon-Jones et al. (2014)	UK	Investigate and understand the relationship between resources such as information sharing and connectivity, capabilities and performance in terms of supply chain resilience and robustness.	Contingent resource-based view theory	Quantitative	connectivity between supply chain and information sharing resources lead to a supply chain visibility capability as well as Increasing resilience and robustness	The need for future studies to be conducted using other variables that might influence the link between robustness, resilience, and visibility
Durach et al. (2015)	Germany, Denmark and Spain	Emerging theory of supply chain robustness.	No theory used	Qualitative	supply chain robustness was obtained with the creation of a theoretical	Future researches that focus on Understanding the dimensions, antecedents, and

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					framework of supply chain robustness that augments both causal and descriptive knowledge	moderators of the concept in order to create a theoretical foundation for supply chain resilience.
Sabahi and Parast (2020)	USA	To investigate whether firms that are innovative can as well be resilient to supply chain disruptions	Dynamic capability theory	Qualitative	Innovative firm environment would be more resilient to disruptions, because innovation, directly and indirectly, helps firms fortify capabilities that positively affect risk management capability.	The need for future studies to be conducted on investment mitigating supply chain disruptions in different countries.
Ivanov et al. (2017)	Germany and Russia	Analyze the present condition of art research on supply chain design as well as planning with both disruptions and recovery factors to achieve a coordinating connection of quantitative to empirical research.	Simulation and control theory	Quantitative	Supply chain and operations managers should discover which quantitative tools are accessible and applicable to other tasks.	The need for future studies to be conducted on decision-support methods in supply chain risk management domains that can be identified.
Centobelli et al. (2020)	Italy	Interactions and relationships between the discovery of supply chain disruption event, causes of the event, and recovery performance.	Resilience theory	Qualitative	Internal disruptions significantly result in the negative organization of the recovery performance outcome.	Additional research is required to determine the utilization of blockchains and their effectiveness in enhancing supply chains, as well as

					additional studies to pinpoint the advantages of the circular economy.
Chen (2018)	China	An empirical study on the associations among information technology, supply chain robustness, and supply chain performance.	Resource-based view, social exchange theory, and competence-based theory	Quantitative	Significantly result to negative organization of the recovery performance outcome	There is a need for advanced studies to be done on several countries and respondents to attain broader and more reasonable results on supply chain robustness.
Mackay et al. (2020)	Australia	Important robustness and resilience aimed at mitigating the probability and magnitude of disruptions.	System theory	Qualitative	Results showed that insurance, expediting, strategic adaptive capability, and reconfiguration are contributing factors to reducing the probability and magnitude of supply chain disruptions	Future research focuses on testing the validity of redundancy and flexibility actions by applying the framework empirically that will provide a general perspective overview of this phenomenon.
Adenso-Díaz et al. (2018)	Mexico and Spain	To assess supply chain robustness to links failure	No theory used	Quantitative	supply network nodes are the most influential factor affecting supply network and its robustness together with the service level that can be maintained after disruptions.	It was recommended that further studies should be done on other link failure orderings and how it could be used to assess the robustness of the supply chain network.

CHAPTER THREE

RESEARCH METHODOLOGY AND ORGANIZATIONAL PROFILE

3.1 Introduction

This chapter presents an outline of the various methods and strategies employed by the researcher to collect data, clean the data, and analyze the data using the appropriate analytical tools. It looks at the research design, the population of the study, sampling technique and sampling size, data collection, data analysis, validity and reliability, and chapter summary.

3.2 Research design

This study employs the quantitative research design because quantitative research primarily collects data from respondents through surveys and allows the researcher to evaluate a wide sample of respondents and generalize the results (Uman and Sommanawat, 2019). Quantitative research, according to Abuhamda et al. (2020), is used to measure the issue by creating numerical data or data that may be turned into meaningful statistics. According to Tavakol and Sanders (2014), quantitative research investigations are typically concerned with determining why and how phenomena differ. Again, this is a cross-sectional study because data are collected once for two weeks in August 2021. Consequently, the researcher believes the quantitative methodology is appropriate for this investigation. In contrast to longitudinal studies, where cases are often explored for more than one point in time, a cross-sectional survey was employed as part of the research design, where data collected from respondents at a single moment in time would be measured once (Saunders et al., 2017). Cross-sectional research is utilized due to its lower cost and shorter duration. The bulk of cross-sectional research employs the survey method since it is applicable under these conditions (Saunders et al., 2017). From the body of literature, research hypotheses representing positivist attitude beliefs were then generated and empirically tested.

3.3 Population of the study

The population of interest refers to the group of individuals or organizations that the study intends to address (Majid et al., 2018). Lavrakas (2008) defined population of interest as the specific groupings of people, corporations, or other organizations that the researcher wants to study and generalize about based on the features of those groups. The demographic of interest for this study comprises Ghanaian hotel employees, with an emphasis on those in Accra. The selection of Accra is supported by the fact that the city has the biggest concentration of hotels in Ghana. It is projected that Ghana has 2,723 licensed formal lodging places classified as star-rated, guest homes, and budget hotels (GSS, 2020).

3.4 Sampling techniques and sample size

The number of people or items to be included in the study is referred to as the sample size (Saunders et al., 2011). Several factors go into determining the sample size for a certain study, whether a researcher uses a qualitative or quantitative technique. Malhotra and Birks (Malhotra & Birks, 2007). Despite the fact that sample size is a critical decision for any research, there is no single method for selecting it (Bhat & Darzi, 2016). The study, therefore, identified the sample size to be 296 using Krejcie and Morgan (1970) formula of sample size determination.

From Krejcie and Morgan (1970) formula for sample size determination:

$$s = X^2 NP (1-P)/ d^2 (N-1) + X^2 P(1-P)$$

where s = required sample size

X^2 = the table value of chi-square for one degree of freedom at the desired confidence level of 0.05

N = the population size

P = the population proportion (assumed to be .05 since this would provide the maximum sample size)

d = the degree of accuracy expressed as a proportion (.05)

After choosing the sample size, the researcher must now choose the sampling method for the study. The dream of any researcher would have been to collect data from every individual in a population. This scenario is only realizable while working with small groups of people. However, when the population of interest is large, this census method is not always applicable. Accessing prospective participants is also expensive, time-consuming, and difficult. Due to these problems, studies with large populations, such as this one, have relied on sampling techniques to select a representative sample from the population of interest (Malhotra, 2010). Researchers have access to two distinct sorts of sampling methodologies. A researcher may employ the probabilistic sampling technique or the non-probabilistic sampling technique, depending on the purpose of the investigation. A probabilistic sampling technique assures that every member of a given population has an equal chance of being included in the sample (Ahmed, 2016). Probability is used to select samples at random from a bigger population. Probabilistic samples include simple random sampling, stratified sampling, cluster sampling, systematic sampling, and multistage sampling. Non-probabilistic sampling approaches do not guarantee that each item has an equal chance of being selected for the sample (Ahmed, 2016). It is not based on probability, but rather on the researcher's discretion. Non-probabilistic sampling methods include convenience sampling, quota sampling, snowball sampling, and purposeful or subjective sampling.

This study uses a non-probabilistic sampling method based on participant convenience to choose its sample. The study utilized convenience sampling to acquire pertinent information from hotel employees who were available and willing to participate.

3.5 Data collection

The two types of data are primary and secondary. The word "primary data" refers to information that the researcher has collected firsthand. Secondary data is information that was acquired by a different source beforehand. questionnaires, personal interviews, observations, experiments, etc. Government-produced publications, websites, books, journal articles, internal records, etc. In this study, both primary and secondary data were utilized. The majority of the study's data was collected through the administration of a questionnaire. In contrast, secondary data was derived from scholarly articles. Using survey instruments, primary data from respondents were collected (questionnaires). The questionnaires were designed by the researcher with structured, closed-ended response options for each item or topic. Using closed-ended questions to get exact responses from survey respondents is appropriate. The questionnaire's Sections A and B were divided. In Section A, respondents were needed to submit demographic information, such as age, gender, amount of education, years of experience, etc. In Section B, respondents were required to provide detailed responses to questions regarding each of the three constructs: covid-19 management, employee engagement, and job happiness. The section B measurement results ranged from 1 for strongly disagree to 5 for highly agree. The study use the star rating of the relevant hospitality company as a measure of corporate strategy in order to investigate the contingency perspective. This permits an impartial evaluation of the strategic orientation of the hospitality institution and is consistent with the methods employed by Sun et al (2007: 567). Hotels with a higher star rating charge more for higher quality rooms, whereas hotels with a lower star rating charge less for more basic amenities. According to Sun et al. (2007), establishments with four and five stars are regarded to compete on the basis of service quality, whereas businesses with three stars or fewer are considered to compete on the basis of price. When respondents omitted information, other sources were consulted to ascertain the star rating of the establishment. The researcher will self-administer

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the questionnaires. To boost data gathering efforts, the researcher will appoint a representative at each of the 296 hospitality establishments in Ghana's Eastern, Ashanti, Greater Accra, and Central regions. The establishments are classified according to their star rating. Before administering the questionnaire, all respondents will receive a summary of the study's purpose and key themes. The respondents' anonymity will likewise be guaranteed. They will be reminded that participation in the study is entirely voluntary and not required. In the survey instructions, respondents' permission will be requested. Before communicating with respondents, an official letter will be addressed to establishments requesting permission to administer the survey to their personnel. Using a self-administered questionnaire, the data will be collected over the course of one month. To ensure privacy, respondents will be prompted to choose between hand delivery and online submission. Every survey will be administered in English. Only individuals having at least one year of experience in their current hotel who are directly or indirectly involved in the issues under investigation will be included in the study.

3.6 Data Processing and Analysis

To fulfill the goal outlined in chapter one, this study used descriptive analysis and multivariate data analyses such as factor analysis and Structural Equation Modeling (SEM). The Statistical Package for Social Sciences (SPSS) version 26.0 and Smart PLS 3 will be used as analysis tools. The SPSS program will be used for data coding and inputting, as well as data cleaning and exploration before the data set was transferred to Smart PLS for further analysis. Before being transferred, the collected data will be checked to reduce errors and confirm that all of the scores were within the scale range used and that no values will be entered incorrectly.

3.7 Reliability and Validity

Measurement plays a vital role in any research. Reliability and validity are the two most important fundamental features in the evaluation of any measurement instrument for good research. They are the most appropriate concepts for the introduction of remarkable settings in business research. Mohajan, (2017), stressed that reliability identifies the faith that one can have in collected data from the identified instrument. Thus, it is the degree to which any measuring tool controls for random error. Validity on the other hand represents the truthfulness of findings.

3.7.1 Reliability

Cronbach alpha (the most often used indicator of reliability) and composite reliability were utilized to assess the research instrument's dependability in this study (Cooper & Schlinder, 2006; Cronbach, 1951). Cronbach alpha is a measure of the correlations between the various items used to assess a construct (Creswell, 2014). Despite the fact that the literature says that correlation coefficients of 0.7 and higher are acceptable (Hair et al., 2010), other researchers believe that in exploratory investigations, a correlation coefficient of 0.5 is adequate reliability (Malhotra & Birks, 2007). In light of this, this study used Cronbach alpha and composite reliability tests, which are routinely used in SEM research, to examine the research instrument's dependability (see Hair et al., 2010). Due to the limitations of relying just on Cronbach's alpha, a composite reliability test was conducted to assess the overall reliability of the full set of items used to measure each construct. A composite reliability score of less than 0.6, according to Hair et al. (2014, p.102), indicates weak internal consistency dependability, but indicator values of 0.6 and above are regarded as acceptable.

3.7.2 Validity

The content validity of this study was determined by soliciting the opinions of other experts in the field as well as a pre-test of the measuring equipment (Ghauri & Gronhaug, 2005). The researcher established validity by enabling marketing professionals (from academia and practice) to examine the suggested scale for the study and then pre-testing the questionnaire. This stage's contributions were then incorporated into the final instrument that was administered. Construct validity is divided into two types: convergence and discriminant validity (Hair et al., 2010). Discriminant validity explains the distinctions between different constructs by ensuring that the items used to measure one construct are distinct indicators of that construct (Hair et al., 2013). This implies that correlations between items measuring distinct constructs must be low or very low (Malhotra, 2010).

Convergent validity, on the other hand, explains the close relationship between a construct's numerous metrics. As a result, it assures that the framework's numerous constructs are accurately reflected by their distinct metrics (Hair et. al., 2014). The following steps are advised to satisfy the criterion for convergent validity. All factor loadings should be significant, meaning they should be 0.6 or higher (Chin, 1998). Each construct's Composite Reliability (CR) should be 0.7 or greater (Hair et al., 2016). Estimates of Average Variance Extracted (AVE) should be 0.5 or above (Hair et al., 2016; Henseler et al., 2009). The square root of the minimum average variance extracted (AVE) must be greater than the strongest inter-construct correlation for a reflective scale to satisfy the requirements for discriminant validity (Barclay et al., 1995; Fornell & Larcker, 1981; Hair et al., 2016). An author can also check the item cross-loadings to make sure there aren't any substantial cross-loadings. The Fornel and Lacker criterion alone is not conclusive on discriminant validity, according to recent research on variance-based structural equation modeling (Henseler et

al., 2015). In addition to the Fornel and Lacker criterion, the authors advocate using the heterotrait-monotrait ratio (HTMT) of correlations. Cross loadings of indicators, according to the authors, account for 0% of discriminant validity, whereas Fornell-Larcker and HTMT criteria account for 20.82 percent and 97 to 99 percent of discriminant validity, respectively. They used three HTMT criteria to test discriminant validity: HTMT specificity ratio of 0.90, HTMT specificity ratio of 0.85, and HTMT inference score ranging from -1 to 1 (-1 HTMT 1), with the HTMT specificity ratio of 0.85 being the most cautious approach.

3.8 Ethical Consideration

Some ethical concerns identified in this current study include the use of appropriate references to avoid plagiarism. During the data collection procedure, survey participants were assured of data confidentiality and anonymity, and data access was restricted from third-party use. Also, participants were assured that the data would only be used for research purposes. Informed consent is one of the fundamental ethical difficulties in doing research identified by Jones et al. (2016). Participants were therefore consulted before participating in the survey to obtain their agreement for access to the research data. Furthermore, the study was carried out in accordance with all of the University's research ethics and conduct.

Profile of the Hospitality Industry

In recent decades, tourism and hospitality's contribution to the global economy has increased, and it has become the fastest-growing and most dynamic economic sector in a number of nations (Agbola et al., 2020). Tourism alone generated 10.4% of the global GDP and 10.6% of total employment in 2019, accounting for one out of every four newly created jobs worldwide (WTTC, 2021). Despite its substantial economic contribution, the industry is particularly susceptible to external shocks (Lee and Chen, 2020), such as the 1997 and 2009 financial crises, the 2003 SARS

outbreak, social unrest, natural disasters (e.g., earthquakes, floods), and the spread of coronavirus 2019 (COVID-19) (Zhang et al., 2021, Spanaki et al., 2021). External shocks, most notably the COVID-19 pandemic, much more extensive and pervasive than others, have a negative impact on the profitability of businesses across all industries (Wen et al., 2021). The hospitality industry bears the brunt of the consequences (Gursoy and Chi, 2020). As a highly contagious disease that may spread rapidly between humans (CDC, 2021), it instills widespread fear of contagion and motivates individuals to avoid high-risk activities, such as travel (Zheng et al., 2021). To prevent the spread of viruses, governments around the world-imposed travel restrictions (travel bans, visa controls, and quarantine), lockdowns, gathering restrictions, social distance, and other measures that limit the activities of individuals (Bharwani and Mathews, 2021). Because tourism requires travel, any hindrance to travel, such as fear or limitation, can have a big influence on the industry, resulting in a fall in travel demand (Yeh, 2021). In 2020, the number of international tourists decreased by 74%, or around 1 billion people, compared to the previous year. This recession returned the number of tourists to levels seen 30 years ago (UNWTO, 2021). The year 2021 was another challenging one, with arrivals staying 72% lower than before the pandemic (UNWTO, 2022).

In numerous developing nations, a 20-30% decline in foreign tourism receipts (exports) might result in a reduction of $300-450 billion, or one-third of 2019's $1.5 trillion. Taking into account prior market trends, COVID-19 will lose 5–7 years of development. According to the UNWTO, foreign visitor arrivals decreased by 4% in 2009 due to the global economic crisis, but by only 0.4% in 2003 due to the SARS pandemic. This scenario had a significant impact on the hotel business. In 2021, compared to 2020, hotel occupancy increased by 11%, but was still 33% below pre-pandemic levels. In 2020, hotel occupancy plunged dramatically to 40%; in 2021, it increased

by 11%, but was still 33% below pre-pandemic levels (BPS, 2022). Given the influence of the current worldwide pandemic with several waves on the trust of foreign tourists to travel and the freedom to travel between nations, hotels must adopt steps to manage the situation and raise their performance in order to survive.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, AND INTERPRETATION

4.0 Introduction

The fourth chapter conducts an analysis of the data presented in the third chapter. This chapter is broken up into four parts. The findings of the exploratory data analysis are presented in the first chapter, while information on the demographics is presented in the second chapter. Both descriptive and correlational aspects of the study were taken into consideration. The third component contains both the Confirmatory Factor Analysis as well as the Model Fit Index. The hypotheses of the investigation are tested using a structural model. The discussion will conclude with the key outcomes.

4.1 Exploratory Data Analysis

The nature of the first investigation of the data was exploratory. Early on, the data quality was evaluated using exploratory factor analysis. The most important tool was SPSS. Response rate, non-response bias, and typical method bias or variance are the subsections that are included in this section. Detailed explanations of the early data quality assessment tests and interpretation may be found in the sections that follow.

4.1.1 Response Rate

Response rates to surveys are often provided in the form of a percentage. To arrive at this figure, just divide the total number of questionnaires that were sent in by the final count of respondents who filled them out. Response rates in surveys that are higher than 50 percent are unusual. The dates were from October 5th to December 22nd, 2022 for the data collection. The research needed 296 people to take part, but a total of 300 were surveyed just in case. After determining whether or not each questionnaire is valid, an acceptable response rate for analysis is determined to be 97.7%, as seen in the table below. This results in 293 questionnaires that may be used.

Table 4.1: Data Response Rate

Distributed	Collected	Percentage of Usable
Response	293	97.7
Non-Response	7	2.3
Total	**300**	**100.0**

Source: Field Survey (2023)

4.1.2 Test for Common Method Bias and Sampling Adequacy

In the field of survey research, testing for CMB is essential because problems with CMB may lead to the connection between predictors and the dependent variable being distorted due to reliance on a single respondent (Podsakoff and Organ, 1986; Bahrami et al., 2022). As a consequence, incorrect judgments are made. Podsakoff et al. (2003) state that the origin of CMB may be traced back to either consistency or social desirability. Because CMB has the potential to affect data production, a variety of techniques may be used to reduce its effects. The results of the Exploratory Component analysis showed that the maximum amount of variation that could be attributed to a single factor was less than fifty percent, which provided support for Harman's strategy of focusing on a single factor. By utilizing principal component analysis, the study found that the variables accounted for 49.5% of the variance.

Table 4.2: Test for Common Method Variance (CMV)

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% Of Variance	Cumulative %	Total	% Of Variance	Cumulative %
1	8.918	49.546	49.546	8.918	49.546	49.546
2	2.106	11.702	61.247	2.106	11.702	61.247
3	1.252	6.957	68.204	1.252	6.957	68.204
4	.971	5.394	73.598			
5	.824	4.578	78.176			

6	.509	2.830	81.006
7	.494	2.746	83.752
8	.447	2.483	86.235
9	.393	2.186	88.420
10	.324	1.801	90.221
11	.306	1.698	91.920
12	.273	1.516	93.436
13	.230	1.277	94.713
14	.219	1.214	95.927
15	.217	1.206	97.133
16	.196	1.087	98.220
17	.164	.909	99.129
18	.157	.871	100.000

Extraction Method: Principal Component Analysis.

Source: Field Survey (2023)

The accuracy of the samples was further evaluated using the Bartlett sphericity test and the Kaiser-Meyer-Olkin (KMO) test. Based on the information in Table 4.3, the Kaiser-Meyer-Olkin Sampling Adequacy score was 95.9%, and Bartlett's test demonstrated statistical significance ($\chi^2 = 7450.902$, df: 120, $p < 0.000$). This provides proof that correct sampling procedures were followed.

Table 4.3: Bartlett's Test of Sphericity and KMO Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.959
Bartlett's Test of Sphericity	Approx. Chi-Square	7450.902
	df	120
	Sig.	.000

Source: Field Survey (2023)

4.1.3 Non-Response Bias

Non-response bias was investigated. Non-response bias occurs when a survey has fewer responders than the population. Low survey response rates induce non-response bias, which may undermine sample reliability and study generalizability. In this study, early and late responders were compared to reduce non-response bias. Oppenheim (2001) specified that "early responders" and "late respondents" should not differ in any model input variables. This demonstrates that non-response bias is not a concern and that the samples accurately represent the population. Early answers were 147 and late responses were 146. T-tests checked for non-response bias. The t-test showed no difference (see Table 4.4). The study shows that construct data from the first and last months are identical.

Table 4.4 Results of Independent-Samples t-Test for Non-Response Bias

	Group	Mean	F	Sig.	t
			Levene's Test for Equality of Variances		
Innovation Orientation	1	6.56	0.037	0.848	-0.535
	2	6.77			-0.535
Supply Chain Disruption Recovery	1	15.13	0.001	0.976	-0.335
	2	15.42			-0.335
Supply Chain Robustness	1	13.1	0	0.987	-0.081
	2	13.16			-0.081

Source: Field Survey (2023)

4.2 Profile of Respondents

The research collected background information on the respondents as well as information about small and medium-sized businesses (SMEs). The information that was acquired includes gender, age, education level, firm position, number of years of experience, company size, type of ownership, and number of employees. In order to account for non-responses, non-retrieval, and missing data, the research work provided at least fifty percent more questionnaires than the

required sample size. 293 respondents responded to the survey. The aforementioned information as well as respondent's background is included in Table 4.5.

Table 4.5: Profile of Respondents

Variables	Categories	Frequency	Percent
Gender	Female	140	47.8
	Male	153	52.2
Age	18 - 30 Years	76	25.9
	31 - 40 Years	115	39.2
	41 - 50 Years	79	27.0
	Above 50 Years	23	7.8
Level of Education	Bachelor Degree	69	23.5
	Diploma	82	28.0
	Graduate Studies (Master / Ph.D)	29	9.9
	HND	1	0.3
	Junior High School	32	10.9
	Senior High School	80	27.3
Your Position in the Firm	Business Owner	66	22.5
	Business Owner & Manager	143	48.8
	Employee (proxy)	7	2.4
	Manager	39	13.3
	Production Manager	31	10.6
	Sales executive	1	0.3
	Worker	6	2.0
How many years have you been working in your firm?	1-5 Years	85	29.0
	11-15 Years	80	27.3
	16 Years and Above	36	12.3
	6-10 Years	92	31.4
How many employees are in the firm?	30-99 employees	24	8.2
	6-29 employees	149	50.9
	Less than 5 employees	112	38.2

	More than 100	8	2.7
Type of Ownership	Fully locally owned	187	63.8
	Fully foreign-owned	76	25.9
	Jointly Ghanaian & foreign-owned	30	10.2
	Total	**293**	**100.0**

Source: Field Survey (2023)

47.8% of 293 valid responses were female, 52.2% male. According to this report, males outnumbered females. 25.9% were 18–30, 39.2% 31–40, 27.0% 41–50, and 7.8% beyond 50. According to statistics, most responders were 31–40. 23.5% held a bachelor's degree, 28.0% a diploma, 9.9% a master's or doctorate, 0.3% HND, 10.9% JHS, and 27.3% SHS. Statistically, most responders have a degree. 22.5 percent were firm owners, 48.8% owners and managers, 2.4% employee (proxy), 13.3% managers, 10.6% production managers, 0.3% sales executives, and 2.0% workers. Statistics showed most responders were business owners and managers. 29.0 percent had 1–5 years of experience, 27.3 had 11–15 years, 12.3 had more than 16 years, and 31.4 had 6–10 years. Most responders are 6–10 years experienced. 8.2% of 293 logistics service organizations had 30–99 workers, 50.9% had 6–29, 38.2% had less than 5, and 2.7% had more than 100. Most respondents employed 6–29 workers. Finally, 63.8% said Ghanaians owned the company, 25.9% said foreigners, and 10.2% said both. Most owned companies were local.

4.3 Correlation Analysis

The data shown in Table 4.6 reveals that there are very significant correlations between the three variables of innovation orientation, SC disruption recovery, and SC robustness ($r = 0.906$, $P < 0.05$; $r = 0.896$, $P < 0.05$; and $r = 0.921$, $P < 0.05$, respectively). For instance, a correlation value of 0.0 indicates that there is absolutely no link, 0.30 indicates that there is just a moderate correlation,

and 0.70-0.90 indicates that there is a considerable association. There is a considerable relationship between all of the different factors.

Table 4.6: Descriptive and Correlation Analysis

Construct	1	2	3
Innovation Orientation	1.000		
Supply Chain Disruption Recovery	0.906	1.000	
Supply Chain Robustness	0.896	0.921	1.000

Source: Field Data, 2023

4.4 Confirmatory Factor Analysis

Validity assessment of research models is crucial. The study's authors utilised Cronbach's alpha and the Composite reliability test to evaluate the model's consistency. To test the reliability of the model, we employed AVE and indication loadings. Cronbach's alpha was calculated to be 0.7, and a composite reliability score was utilised to examine the degree to which the various constructs in this research were consistent with one another. Table 4.7 shows that both Cronbach's alpha and the composite reliability index are higher than .80 (Hair, et al., 2016). The properties of the measurement model are supported by these results. There was no sign with loading below 0.7. Convergent validity may be established. For AVE values over 0.5, convergent validity was established. (Take a look at Table 4.7.) Table 4.7 shows that the T T-testound all of the variables to be statistically significant at the 1.96-percentile level and Sig. < 0.05. Check out Table 4.7 for more descriptive statistics. Calculated as: (Mean and Standard Deviation). The average in the table ranges from 2.024 to 2.440. The range of standard deviations was 1.052-1.577.

Table 4.7: Confirmatory Factor Analysis

Scales	Codes	Outer Loadings	Mean	Standard deviation	Skewness	T statistics (|O/STDEV|)	P values
Innovation Orientation (CA = 0.943; CR = 0.964; AVE = 0.899)	IO1	0.929	2.365	1.162	1.064	77.741	0.000
	IO2	0.963	2.157	1.164	1.415	166.677	0.000
	IO3	0.952	2.14	1.199	1.304	124.380	0.000
Supply Chain Disruption Recovery (CA = 0.970; CR = 0.975; AVE = 0.848)	SCDR1	0.893	2.222	1.175	1.274	50.159	0.000
	SCDR2	0.940	2.212	1.146	1.424	92.376	0.000
	SCDR3	0.899	2.29	1.172	1.172	50.292	0.000
	SCDR4	0.942	2.171	1.153	1.476	95.035	0.000
	SCDR5	0.929	2.024	1.193	1.555	79.902	0.000
	SCDR6	0.934	2.102	1.158	1.548	87.249	0.000
	SCDR7	0.906	2.256	1.165	1.246	47.339	0.000
Supply Chain Robustness (CA = 0.965; CR = 0.972; AVE = 0.852)	SCR1	0.927	2.126	1.203	1.314	84.123	0.000
	SCR2	0.934	2.102	1.199	1.379	85.300	0.000
	SCR3	0.954	2.041	1.179	1.577	139.484	0.000
	SCR4	0.892	2.229	1.225	1.067	53.392	0.000
	SCR5	0.930	2.188	1.169	1.393	76.683	0.000
	SCR6	0.899	2.44	1.145	1.052	49.602	0.000

Source: Field Data, 2023

4.3.1 Discriminant Validity

The study also examined the differences between constructs (Hair et al., 2010; Henseler et al., 2016b). When assessing discriminant validity, each latent variable's square root of the AVE (diagonal value) must be bigger than the construct's maximum correlation. Table 4.8 shows discriminant validity. Again, multicollinearity is not present (Byrne, 2013). Discriminant validity has been proven as all of the HTMT values are below 0.90 or 0.85, as shown in Table 4.8. Discriminant Validity Using HTMT Table 4.8. HTMT and Fornell and Larcker criteria showed discriminant validity. Table 4.8 reveals that innovation orientation is 0.948 with itself, 0.906 with SC disruption recovery, and 0.896 with SC robustness. SC disruption recovery was 0.954 with itself and 0.921 with SC robustness. SC robustness correlated with 0.923.

Table 4.8: Fornell-Larcker criterion

Construct	1	2	3
Innovation Orientation	0.948		
Supply Chain Disruption Recovery	0.906	0.954	
Supply Chain Robustness	0.896	0.921	0.923

Source: Field Data, 2023

4.3.2 Model fitness indices

The values for the Extracted-Index Fitness, SRMR, Root Mean Square of Approximation, and Chi-Square are all appropriate (Table 4.9). Both the rare and extracted indices are much lower than 0.9, the threshold for acceptability. Considering that the square of the residual is not close to zero, the root demonstrates that the residual is unsatisfactory. The Root Mean Square Approximation and the Total Residual Value are both unacceptable. These numbers are much larger than 0.1 and 3. This suggests that all relevant factors need to be taken into account in future research. A SRMR

of 0.036 was found in Table 4.9, which is within the range of values considered acceptable in this

research. Chi-square = 1001.485, and the normed fit index was 0.868.

Table 4.9: Model fitness indices

Model fitness indices	Estimated model
SRMR	0.036
d_ULS	0.172
d_G	0.650
Chi-square	1001.485
NFI	0.868

Source: Field Data, 2023

4.3.3 Predictive Relevance (R^2 and Q^2)

As shown by the coefficient of determination analyses, the independent factors do account for part

of the variance in dependent variable (R2). Calculating R2 indicates how well the result was

predicted by the independent variables. Predictive significance was defined as an R2 of 0.10 or

above by Falk and Miller (1992). Table 4.10 shows that both SC disruption recovery and SC

robustness have high levels of predictive accuracy (R2).

A second method for validating PLS models is using Q2 (Hair et al., 2020). This statistic is

generated by randomly removing a data point, replacing it with an appropriate value, then

computing the model's phase (Zhang, 2022). Model explanatory power and sample data

predictions are used in Q2 (Hair et al., 2020). This approximate value aids the blind method in

making sense of output data. When Q2 outcomes are better than expected and estimates are near

to baseline, accuracy increases (Zhang, 2022). For endogenous estimations to be valid, Q2 must

be greater than zero. Q2 greater than 0, 0.25, and 0.50 generates low, medium, and low predictions

from the PLS path model, respectively. (Zhang, 2022). In the second quarter, the study received

scores of 0.822 and 0.804, respectively, for SC disruption recovery and SC robustness (Table 4.10). All Q-square values over 0.5 indicate a highly predictive model fit.

Table 4.10: Predictive Relevance (R^2 and Q^2)

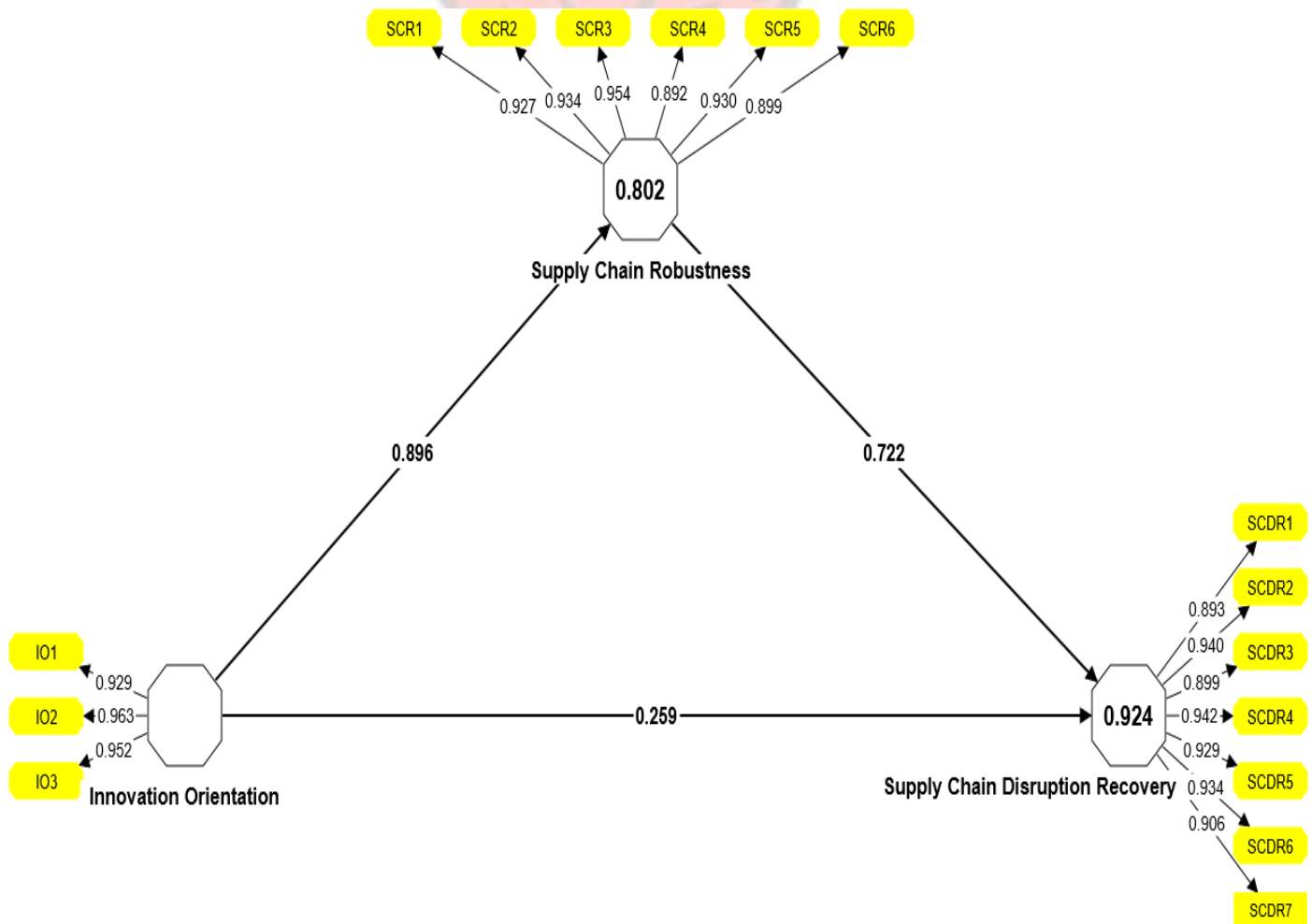| Construct	R-square	Q²predict
Supply Chain Disruption Recovery	0.924	0.822
Supply Chain Robustness	0.802	0.804

Source: Field Data, 2023

Figure 4.1: Measurement Model Assessment

4.5 Hypotheses for Direct and Indirect Relationship

The second phase of the analysis which deals with the structural model evaluation is depicted in Figure 4.2 below. The result of the structural model evaluation is presented in Table 4.11 and Figure 4.2. The PLS bootstrapping with 5, 000 samples were used in testing the significance of the four (4) paths in the model. This study analyses the impact of innovation orientation on SC disruption recovery through the mediation effect of SC robustness. This section discusses the analyses of the direct and indirect relationships as shown in Table 4.11 and Figure 4.2.

Table 4.11: Hypotheses for Direct and Indirect Relationship

Path	Path Coefficient	T statistics (|O/STDEV|)	P values	Hypothesis Validation
Innovation Orientation -> Supply Chain Disruption Recovery	0.259	5.897	0.000	Accepted
Innovation Orientation -> Supply Chain Robustness	0.896	44.166	0.000	Accepted
Supply Chain Robustness -> Supply Chain Disruption Recovery	0.722	17.955	0.000	Accepted
Innovation Orientation -> Supply Chain Robustness -> Supply Chain Disruption Recovery	0.647	15.668	0.000	Accepted

Source: Field Data, 2023

Table 4.11 reveals that innovation orientation and SC disruption recovery are significant (B = 0.259, t = 5.897, P = 0.000, and Sig < 0.05). Innovation orientation positively influenced SC disruption recovery since the p-value for H1 was less than 0.05 and the path coefficient was positive. Innovation orientation enhances SC disruption recovery. Innovation boosts SC disruption recovery by 25.9%.

Innovation orientation impacts SC robustness (B = 0.896; t = 44.166; P = 0.000; Sig < 0.05). Innovation orientation positively influenced SC robustness, since the path coefficient was positive and the p-value for H2 was less than 0.05. Innovation orientation improves SC robustness since the path coefficient is positive. Innovation orientation makes SC robustness 89.6%.

SC robustness influenced SC disruption recovery (B = 0.722; t = 17.955; P = 0.000; Sig < 0.05). SC robustness positively influenced SC disruption recovery, corroborating the third hypothesis (H3). With SC robustness, SC disruption improves. SC robustness improves disruption recovery by 72.2%.

SC robustness indirectly influenced innovation orientation and disruption recovery (B = 0.647; t = 15.668; P = 0.000; Sig < 0.05). Since H4 was smaller than 0.05 and the path coefficient was positive, SC robustness positively influences innovation orientation and SC disruption recovery. The positive path coefficient shows that SC robustness largely influences innovation orientation-SC disruption recovery relationships. SC robustness mediates 64.7% of IO-SCDR link.
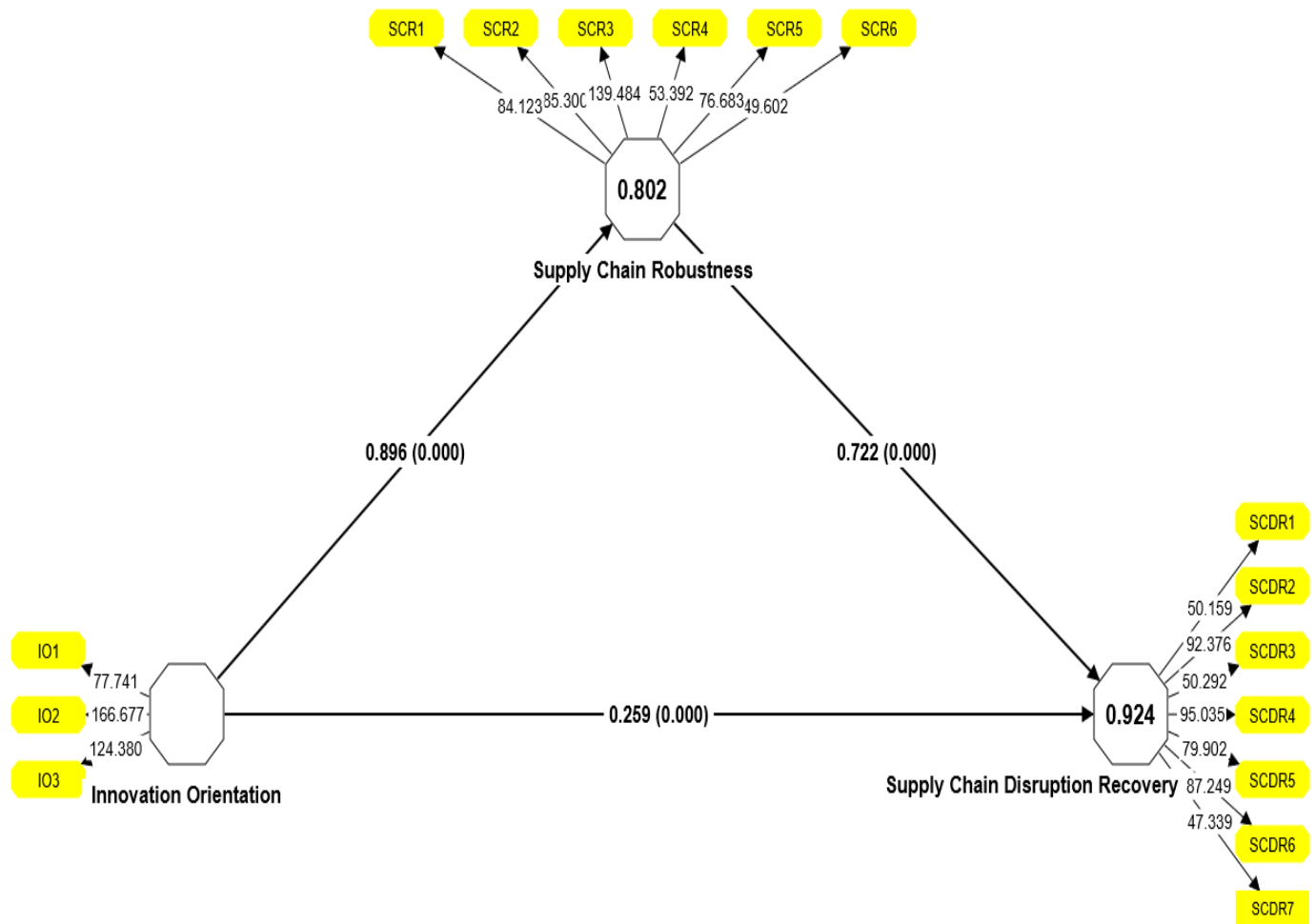
Figure 4.2: Structure Model Evaluation

4.6 Discussion of Key Findings

This research examined innovation orientation and SC disruption recovery through SC robustness. This section discussed major results in light of previous ideas and investigations.

4.6.1 Effect of Innovation Orientation on SC Disruption Recovery

The initial objective of this study looks at the influence of innovation orientation on supply chain disruption discovery among hospitality businesses. The result reveals that innovation orientation positively influenced SC disruption recovery since the p-value for H1 was less than 0.05 and the

path coefficient was positive. Innovation orientation enhances SC disruption recovery. Innovation boosts SC disruption recovery by 25.9%. The study concluded that management should embrace research-based developments to handle disruptions immediately, handle crises, and recover cheaply from disaster. Based on this finding, Sabahi and Parast (2020) examine whether innovative firms can withstand supply chain disruption and have found that innovative organizations are more robust to disruptions because innovation strengthens risk management capacities. Innovation is crucial to manage supply chain disruptions (Sabahi and Parast, 2020; Belhadi et al., 2021; Dovbischuk, 2022; Siagian, 2021; Fernando, 2022). Innovation is connected to producing market value (Cho and Pucik, 2005), reacting to uncertainty (Stevens and Dimitriadis, 2004), and surviving unpredictable or lagging demand cycles, making it a key facilitator of business competitiveness in the strategy literature (Fisher, 1997).

### 4.6.2 Effect of Innovation Orientation on SC Robustness

The second objective looks at the effect of innovation orientation on supply chain robustness among hospitality businesses. The result shows that innovation orientation positively influenced SC robustness, since the path coefficient was positive and the p-value for H2 was less than 0.05. Innovation orientation improves SC robustness since the path coefficient is positive. Innovation orientation makes SC robustness 89.6%. The study concluded that management should embrace research-based developments to resume regular operations quickly, if a severe security breach occurred, continue operating, if a major supply chain security compromise occurred, and quickly resume vital activities after system failure/interruption. Based on this finding, Golgeci and Ponomarov (2013) examined a firm's innovativeness, innovation magnitude, disruption severity, and supply chain resilience. They concluded that a firm's innovativeness and innovation magnitude are positively associated with supply chain resilience. Sabahi and Parast (2020) also concluded that an innovative firm environment would be more resilient to disruptions, because

innovation, directly and indirectly, helps firms fortify capabilities that positively affect risk management capability. According to Eshegheri and Korgba (2017), a company's capacity for innovation has a strong correlation to its resilience. Furthermore, Tahmasebifard et al. (2017) found that the use of novel technologies, procedures, and processes increases a company's responsiveness and flexibility. Prior to that, Gölgeci and Ponomarov (2013) stressed the importance of a company's propensity toward innovation in making the business more resistant to the effects of disruptions in its supply chain.

4.6.3 Mediating Role of SC Robustness

The last objective of this study looks at the mediating role of supply chain robustness in the relationship between innovation orientation and supply chain disruption discovery among hospitality businesses. The result shows that SC robustness positively influenced SC disruption recovery, corroborating the third hypothesis (H3). With SC robustness, SC disruption improves. SC robustness improves disruption recovery by 72.2%. The study concluded that management should resume regular operations quickly, if a severe security breach occurred, continue operating, if a major supply chain security compromise occurred, and quickly resume vital activities after system failure/interruption to handle disruptions immediately, handle crises, and to recover cheaply from disaster. The result also shows that SC robustness positively influences innovation orientation and SC disruption recovery. The positive path coefficient shows that SC robustness largely influences innovation orientation-SC disruption recovery relationships. SC robustness mediates 64.7% of the IO-SCDR links. The study concluded that management should resume regular operations quickly, if a severe security breach occurred, continue operating, if a major supply chain security compromise occurred, and quickly resume vital activities after system failure/interruption which can help them embrace research-based developments to handle disruptions immediately, handle crises, and to recover cheaply from disaster. A focus on

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innovation may lead to increased resilience. Robustness in a supply chain ecosystem is the system's ability to withstand unexpected events, human error, and fluctuations in the market (Wieland and Wallenburg, 2012; Shamout, 2020). Therefore, resilience is crucial during disruptions, as well-prepared supply chain and logistics networks that are cognizant of potential risks may significantly reduce or even prevent such risks from materializing (Kwak et al., 2018). Papadopoulos et al. (2017) found that a company with a strong focus on innovation was better able to mitigate disruption and minimize uncertainty, which in turn may have strengthened the resilience of the supply chain. In fact, managers must deal with supply chain disruptions caused by a variety of factors, including inadequate supplier-to-manufacturer communication, opportunistic supplier behaviour, truck driver or port worker strikes, terrorist attacks, information technology issues, industrial accidents, quality issues, operational issues, natural disasters, and governmental regulations (Ponis and Ntalla, 2016; Scholten and Fynes, 2017; Mizgieral, 2015; Wonget al., 2020 and Ivanov et al., 2017).
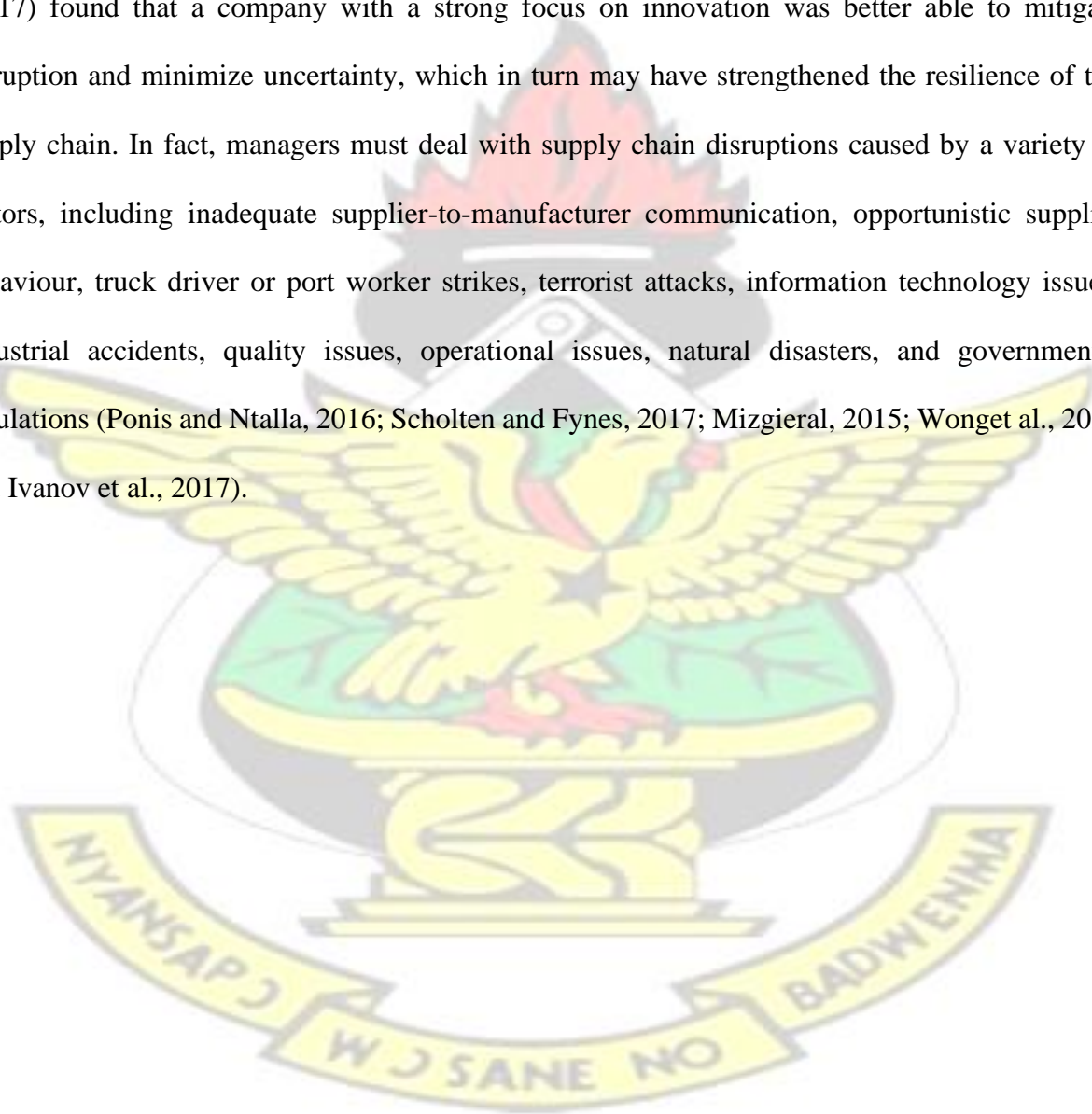
CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

5.0 Introduction

This section outlines and concludes the study's findings. The empirical results from the preceding chapter are summarized below. This chapter summarizes the study's results and conclusions on how innovation orientation enhances SC disruption recovery and how SC robustness affects the connection. The chapter discusses study limitations and suggests further research.

5.1 Summary of Findings

5.1.1 Effect of Innovation Orientation on SC Disruption Recovery

The initial objective of this study looks at the influence of innovation orientation on supply chain disruption discovery among hospitality businesses. The result reveals that innovation orientation positively influenced SC disruption recovery. Innovation orientation enhances SC disruption recovery. Innovation boosts SC disruption recovery by 25.9%. The study concluded that management should embrace research-based developments to handle disruptions immediately, handle crises, and recover cheaply from disasters.

5.1.2 Effect of Innovation Orientation on SC Robustness

The second objective looks at the effect of innovation orientation on supply chain robustness among hospitality businesses. The result shows that innovation orientation positively influenced SC robustness. Innovation orientation improves SC robustness since the path coefficient is positive. Innovation orientation makes SC robustness 89.6%. The study concluded that management should embrace research-based developments to resume regular operations quickly, if a severe security breach occurred, continue operating, if a major supply chain security compromise occurred, and quickly resume vital activities after system failure/interruption.

5.1.3 Mediating Role of SC Robustness

The last objective of this study looks at the mediating role of supply chain robustness in the relationship between innovation orientation and supply chain disruption discovery among hospitality businesses. The result shows that SC robustness positively influenced SC disruption recovery. With SC robustness, SC disruption improves. SC robustness improves disruption recovery by 72.2%. The study concluded that management should resume regular operations quickly, if a severe security breach occurred, continue operating, if a major supply chain security compromise occurred, and quickly resume vital activities after system failure/interruption to handle disruptions immediately, handle crises, and recover cheaply from disaster.

The result also shows that SC robustness positively influences innovation orientation and SC disruption recovery. The positive path coefficient shows that SC robustness largely influences innovation orientation-SC disruption recovery relationships. SC robustness mediates 64.7% of IO-SCDR link. The study concluded that management should resume regular operations quickly, if a severe security breach occurred, continue operating, if a major supply chain security compromise occurred, and quickly resume vital activities after system failure/interruption which can help them embrace research-based developments to handle disruptions immediately, handle crises, and to recover cheaply from disaster.

5.2 Conclusion

The main objective is to examine the effect of innovation orientation on supply chain disruption recovery and the mediating role of supply chain robustness in the innovation orientation and supply chain disruption recovery relationship with evidence from hospitality establishments in Ghana. Cross-sectional research was used. This survey was quantitative. Convenience sampling was adopted and selected 293 participants. Data gathering relied on a questionnaire. Statistical study using SPSS v26 and SmartPls v4. Data was analyzed descriptively and inferentially. The result

reveals that innovation orientation positively influenced SC disruption recovery and robustness. The result shows that SC robustness positively influenced SC disruption recovery and plays a positive role in the relationship between innovation orientation and SC disruption recovery. The study concluded that management should resume regular operations quickly, if a severe security breach occurred, continue operating if a major supply chain security compromise occurred, and quickly resume vital activities after system failure/interruption which can help them embrace research-based developments to handle disruptions immediately, handle crises, and to recover cheaply from disaster.

5.3 Recommendations for Management

This section offers stakeholder suggestions based on study results. These suggestions should be considered by management and academics.

➢ The result reveals that innovation orientation positively influenced SC disruption recovery. The study, therefore, concluded that management should embrace research-based developments to handle disruptions immediately, handle crises, and to recover cheaply from disaster.

➢ The result shows that innovation orientation positively influenced SC robustness. The study recommended that management should embrace research-based developments to resume regular operations quickly, if a severe security breach occurred, continue operating, if a major supply chain security compromise occurred, and quickly resume vital activities after system failure/interruption.

➢ The result shows that SC robustness positively influenced SC disruption recovery. The study therefore suggested that management should resume regular operations quickly, if a severe security breach occurred, continue operating, if a major supply chain security

compromise occurred, and quickly resume vital activities after system failure/interruption to handle disruptions immediately, handle crises, and to recover cheaply from disaster.

➢ The result also shows that SC robustness positively influences innovation orientation and SC disruption recovery. The study concluded that management should resume regular operations quickly, if a severe security breach occurred, continue operating, if a major supply chain security compromise occurred, and quickly resume vital activities after system failure/interruption which can help them embrace research-based developments to handle disruptions immediately, handle crises, and to recover cheaply from disaster.

5.4 Limitations and Recommendation for Future Research

This study restricts several research opportunities. First, hotel staff were sampled. Comparable research on managers may provide more generalizable findings. Cross-sectional research is hard to show causality. Longitudinal and panel data may be used in future causality studies. Quantitative analysis assessed SC resilience, innovation orientation, and SC disruption recovery. Comparable studies may need qualitative research. This study shows additional statistical analysis approaches may help future research. This study may be repeated in other countries to confirm findings.

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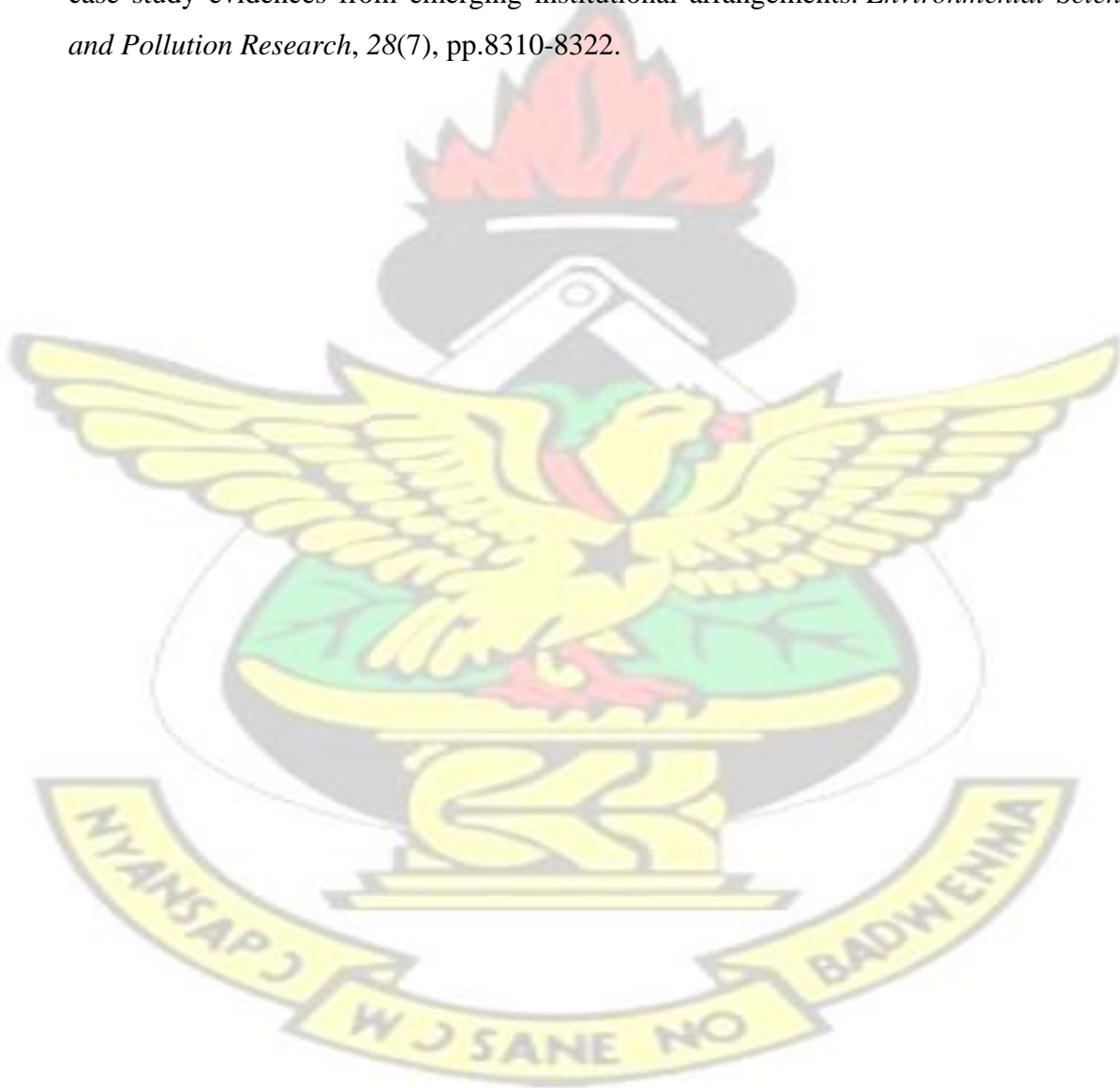
APPENDIX I

SURVEY QUESTIONNAIRE

Dear Sir/ Madam,

My name is ...., a postgraduate student at the Kwame Nkrumah University of Science and Technology, Kumasi, Department of Supply Chain and Information Systems. This survey instrument has been designed to enable me carry out research on the topic: **"The effect of innovation orientation on supply chain disruption recovery, the mediating role of supply chain robustness"**. Any information provided will be used for academic purposes ONLY. There are no risks associated with your participation, and your responses will remain confidential and anonymous.

SECTION A: RESPONDENT'S BIOGRAPHY AND COMPANY PROFILE

When completing this questionnaire, please tick **[√]** in the applicable box or provide an answer as applicable.

Please answer the following questions:

1. *Gender*: Male ☐ Female ☐
2. *Age*

   18-30 years ☐ 31-40 year's ☐ 41-50 years ☐ Above 50 years ☐
3. *Level of Education*

   Junior High School ☐ Senior High School ☐ Diploma ☐ Bachelor Degree ☐ Graduate Studies (Master / Ph.D.) ☐ Others ☐ For Others, Please

   specify:……………………
4. *Your Position in the Firm*

   Business Owner ☐ Business Owner & Manager ☐ Manager ☐ Production Manager

   ☐ Others ☐……………………………………………………………………

5. *How many years have your firm been in operation?*

   1 - 5 years ☐ 6 - 10 years ☐ 11 – 15 years ☐ 16 years and above ☐

6. *How many employees are in the firm?*

   Less than 5 employees ☐ 5 – 29 employees ☐ 30 – 99 employees ☐   More than 100 ☐
7. Type of ownership:

 [ ] Fully locally owned   [ ] Fully foreign owned   [ ] Jointly Ghanaian & foreign owned

SECTION B: Innovation Orientation

Please answer the following questions by considering the level of innovation acceptance in your relief activities. On a scale of 1 to 5 *(1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)* indicate your opinion *by ticking √ where appropriate* in the following statements.

Item	Statement	1	2	3	4	5
IO1	In our firms' operations, innovations based on research results are readily accepted					
IO2	The managers seek actively innovative ideas for operations management					
IO3	Innovation is accepted in the activities and management of our business					

SECTION C: Supply Chain Disruption Recovery

Over the last three years, in this company: (from 1–strongly disagree to 5–strongly agree):

Item	KM creation	1	2	3	4	5
KMC1	We can respond quickly to disruptions					
KMC2	We can undertake adequate response to crisis					
KMC3	We have response team for mitigating crisis Recovery					
KMC4	We have the ability to get recovery in short time					
KA1	We have the ability to absorb huge loss					
KA2	We can reduce impact of loss by our ability to handle crisis					
KA3	We can recovery from crisis at less cost					

SECTION D: Supply Chain Robustness (Sindhuja, 2020)

To what extent do the statements apply to your supply chain? (1 – strongly disagree; 5 – strongly agree): Definition: SCR is the ability of a supply chain to resist disruptions and changes and manage risks to continue normal operations. This also includes SC continuity planning and SC disaster recovery measures. It also covers the extent to which all the information communication activities are integrated among all the supply chain partners

Item	Statement	1	2	3	4	5
SCR1	Our organization has documented the measures to be taken when an emergency or disaster occurs, covering crisis communications, business process and IT resources recovery					
SCR2	Our organization has a written disaster recovery plan for systems, data and telecommunications					
SCR3	Our organization has a regular and auditable maintenance schedule for all of the business continuity plan components					
SCR4	Our organization would return to normal operations in short order, if a serious security breach was to happen					

SCR5	Our organization would not have problem with supply chain operations in the event of a significant security breach in the supply chain					
SCR6	Our organization has procedures that ensure speedy resumption of essential operations following system failure/interruption					

Thank you for participating in the survey.

Population	Manufacturing SMEs in Ghana
Sample Size	150 Manufacturing SMEs in Ghana
Sampling Technique(s)	Purposive and Convenience Sampling Techniques
Unit of Analysis	Firm Level
Respondent types	Owner, Top & Middle Level Managers in Logistics, Supply Chain and Operations.
Response per firm	1 response from one firm