KWAME NKRUMAH UNIVERSITY OF SCIENCE AND

TECHNOLOGY

THE EFFECT OF SUPPLY CHAIN AGILITY ON HUMAN LOGISTICS PERFORMANCE: MEDIATING EFFECT OF LEADERSHIP

By:

BISMARK SACKEY

(PG 9276321)

(MSC. LOGISTICS AND SUPPLY CHAIN MANAGEMENT)

A Thesis Submitted to the Department of Supply Chain and Information Systems of the Kwame Nkrumah University of Science and Technology School of Business, in partial fulfilment of the requirements for the award of the degree of

MASTER OF SCIENCE (LOGISTICS AND SUPPLY CHAIN MANAGEMENT)

NOVEMBER, 2023

DECLARATION

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

Bismark Sackey …..... …….

(PG 9276321) Signature Date

Certified by:

Mr Benjamin Cosmos Osei …… ……

(Supervisor) Signature Date

Certified by:

…… …….

(Head of Department) Signature Date

DEDICATION

This study is dedicated to God Almighty, my wife, Caroline Sackey and two children Jordan & Dorinda and my mother for all your support. I appreciate the efforts of all friends and colleagues who in diverse ways contributed to the success of this study. God richly bless all of you.

KNUST

ACKNOWLEDGEMENT

I thank God Almighty for his enablement. I am also grateful to my supervisor Mr Benjamin Cosmos Osei who guided me through this long essay period. Finally, I appreciate the efforts of all the management of McDan Shipping and Logistics, Global Cargo & Commodities Ltd, FedEx Ghana, Unilever Ghana and Fan Milk Ltd in Ghana who in diverse ways contributed to the success of this study.

NYANSAPƆ WƆSANE NO BADWENMA

ABSTRACT

The aim was to investigate the effect of supply chain agility on humanitarian logistics performance: mediating effect of leadership. The specific objectives the study sought to achieve includes; to investigate the effect of supply chain agility on human logistics performance; to investigate the effect of leadership on human logistics performance and to investigate the mediating effect of leadership between supply chain agility and human logistics performance. A cross-sectional quantitative research approach was employed on a sample of two-hundred (200) respondents who were randomly selected. Questionnaire was employed using structured closed-ended 7-point Likert Scale. Descriptive statistics, such mean score, standard deviation, correlation, Multiple regression and Process Macro method were employed for interpretation. The study finding revealed that supply chain agility had direct significant effect on human logistics performance. The study revealed that leadership had direct significant relationship with human logistics performance. Leadership has full mediation effect on link between supply chain agility and human logistics performance. The study recommends that the firms should holistically developed supply chain agility framework that will serve as guideline upon which the firms and its actors along the supply chain can use in their humanitarian support activities to disaster victims. The implication is that it will help the firms to be successful in navigating change which will lead to effective preparedness and adopt to the new normal of quickly supporting disaster victims.

KNUST

TABLE OF CONTENTS

DECLARATION ii
DEDICATION iii
ACKNOWLEDGEMENT iv
ABSTRACT v
TABLE OF CONTENTS vi
LIST OF TABLES x
LIST OF FIGURES xi
LIST OF ABBREVATIONS xii
CHAPTER ONE 1
INTRODUCTION 1
1.1 Background of the Study 1
1.2 Statement of the Problem 4
1.3 Objectives of the Study 5
1.4 Research Questions 5
1.5 Significance of the Study 6
1.6 Scope of the Study 7
1.7 Summary of Methodology 7
1.8 Organisation of the Study 8
CHAPTER TWO 9
LITERATURE REVIEW 9
2.1 Introduction 9
2.2 Conceptual Review 9
2.2.1 Supply Chain Agility 9
2.2.2 Humanitarian Logistics Performance 10
2.2.3 Effect of Supply Chain Agility on Human Logistics Performance 12
2.2.4 Mediating Role of Leadership 13
2.3 Theoretical Review 14
2.3.1 Relational View Theory 14
2.3.2 Resource-Based View 16
2.3.3 Contingency Theory 17
2.5 Conceptual Framework and Hypothesis Formulation 28

2.5.1 Supply Chain Agility and Human Logistics Performance 28
2.4.2 Leadership and Human Logistics Performance 29
2.5.3 Mediating Effect of Leadership between Supply Chain Agility and Human Logistics Performance 29
CHAPTER THREE 31
METHODOLOGY 31
3.1 Introduction 31
3.2 Research Approach 31
3.3 Research Design 31
3.4 Population of the Study 32
3.5 Sampling Technique and Sample Size 32
3.6 Data Collection Method/Procedure 33
3.6.1 Data Type and Source 33
3.6.2 Data Collection Instrument 33
3.6.3 Administration of the Questionnaire 34
3.7 Data Analysis 35
3.8 Model Specification 35
3.9 Validity and Reliability 36
3.10 Ethical Consideration 36
3.11 Chapter Summary 37
CHAPTER FOUR 38
DATA ANALYSES AND DISCUSSIONS 38
4.1 Introduction 38
4.2 Demographic Analyses of Respondents 38
4.3 Descriptive Statistics Results 40
4.3.1 Supply Chain Agility 40
4.3.2 Leadership 43
4.3.3 Human Logistics Performance 46
4.4 Reliability and Validity Test 48
4.5 Correlation Matrix 49
4.6 Effect of Supply Chain Agility, Leadership and Human Logistics Performance 50
4.7 Mediating Effect of Leadership on the Link between Supply Chain Agility and Human Logistics Performance 52
4.8 Discussions of Findings 53

4.8.1 Effect of Supply Chain Agility on Human Logistics Performance 53
4.8.2 Effect of Leadership on Human Logistics Performance 56
4.8.3 Mediating Effect of Leadership on Supply Chain Agility and Human Logistics Performance 57

KNUST

CHAPTER FIVE **59**
SUMMARY, CONCLUSION AND RECOMMENDATIONS **59**
5.1 Introduction 59
5.2 Summary of Findings 59
5.3 Conclusion 60
5.4 Recommendations 60
5.5 Theoretical Implication 61
5.6 Managerial Implications 62
5.7 Suggested Areas for Future Studies 63
REFERENCE **64**

KNUST

LIST OF TABLES

Table 1: Empirical Review Table…… 25

Table 2: Operationalization Table…….. 34

Table 3: Variables Description and Measurement.....36

Table 4: Demographic Profiles.....39

Table 5: Supply Chain Agility.....40

Table 6: Leadership 44

Table 7: Human Logistics Performance 47

Table 8: Results of Reliability and Validity 49

Table 9: Correlation Matrix.....49

Table 10: Effect of Supply Chain Agility, Leadership and Human Logistics Performance 50

Table 11: Leadership as a Mediator.....53

KNUST

LIST OF FIGURES

Figure 1: Conceptual Framework 28

KNUST

LIST OF ABBREVATIONS

HLP	Human Logistics Performance
HP	Human Performance
HSC	Human Supply Chain
LDH	Leadership
RV	Resource-Based View
SC	Supply Chain
SCA	Supply Chain Agility
SPSS	Statistical Package for Social Science
UN	United Nations

KNUST

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Today, the rapid rise in both natural and man-made disasters around the globe are posing serious challenges to human lives (Fosso, 2020). The causes of these disasters are attributed to climate change and activities of humans. The consequence of disasters has posed challenges for humanitarian firms that are engaged in managing disasters in order to relief the pains from the victims (Papadopoulos et al. 2017; Dubey et al. 2019; Jabbour et al. 2019). Studies have argued the guiding principles of humanitarian logistics that includes; right goods/services, right place, right time and right condition are considered critical factors for the success of humanitarian logistics performance (Behl & Dutta, 2019). In the Ghanaian environment, it is evident that Ghana has reported forty-nine (49) natural disasters that comprises floods and storms between 2011 and 2020 (Sasu, 2021). In the year 2020 alone, the country recorded three most serious disasters. However, the country recorded its peak of disasters in the year 2017, which had about twenty-seven (27) natural hazards (Ghana Statistical Service, 2021).Therefore, the occurrence of these natural disasters in Ghana often lead to destruction of properties and human lives. On the other hand, there has been series of motivation and pressure from all players in the country to holistically find the means in supporting the disaster victims through humanitarian assistance. Humanitarian assistance aims to save lives, alleviate suffering as well as protect humans as consequence of natural disasters (Ivanov & Dolgui, 2020). Humanitarian assistance aids people who have suffered the consequences of natural disasters, armed conflicts, and silent disasters (Haavisto & Goentzel, 2018).

Humanitarian organisations are needed to efficiently provide aid to the victims in need. Thus, humanitarian logistics is expressed as series of actions that are been undertaken by

humanitarian firms in attempt to move goods and services with the purpose of assisting the victims (Bhimani & Song, 2018). Globally, it recorded that there are number of people that are in need of assistance as result of natural disasters. Based on the report from United Nations, it estimated that about 76 million people in more than 31 countries that are in need of aid for about 400 natural disasters (United Nations, 2018). Oloruntoba and Kovács (2019) argue that humanitarian-related activities must increase their agility to meet the dynamic humanitarian needs due to disasters. Contra, it is believe that there is no single firm that has sufficient resources and capabilities to respond effectively to a major disaster (Altay et al. 2018). Therefore, firms operating in globalized era are encouraged to respond and adapt quickly to disasters (Em-dat, 2017). Bhimani and Song (2018); Lin et al., (2018) suggests that the ability to deal with the issue of disasters are best dealt with the adoption of agility. While there is rich body of literature on supply chain agility (Gligor and Holcomb, 2018; Blome et al., 2017; Tarafdar and Qrunfleh, 2016), research on the effect of agility is scanty apart from few notable exceptions (Whitten et al., 2018; Eckstein et al., 2019).

The concept of supply chain humanitarian logistics has numerous implications on the lives of victims and environment. In the context of agility and humanitarian logistics performance; Ivanov (2020), Dubey and Gunasekaran (2016) argue that agility in humanitarian supply chains is considered as desired capability that helps organizations to thrive and prosper in dynamic and uncertain environments. In support of the argument, Oloruntoba and Kovács (2019) points that agile humanitarian supply chain is vital for enhancing the effectiveness of disaster relief aid. Also, Altay et al. (2018), argues that humanitarian firms that adapts easily to the changes that occurs in a given society in terms of disasters with the objective of helping to meet the needs of the disaster victims through effective and efficient provision of goods and services. The implication is that the ability

for humanitarian firms for adopting supply chain agile tends to improve the humanitarian logistics performance (Kabra & Ramesh 2018; Gunasekaran et al. 2018).

While, discussing the agility and its implication on humanitarian logistics performance, the significance role of leadership cannot be ignored. Based on this, many firms and stakeholders are now taking serious concern on the infusion of leadership in every aspect of the supply chain humanitarian logistics due to the critical nature of the leadership that can help improve the reliability of the supply chain design (Sodhi & Tang 2019). Dubey et al. (2019); Dwivedi, Shareef, Mukerji, Rana, & Kapoor (2018) suggests that the ability to successfully perform humanitarian logistics operations cannot be well plan and articulated in order to achieve the intended objective without exhibiting a good leadership qualities and skills. Therefore, it is believe that a good leadership qualities and skills help in the planning and implementation of humanitarian logistics through efficient agility to help improve the humanitarian logistics performance. This has become vital for humanitarian firms to have great concern to leadership. The importance that is been attached to leadership is becoming very promising in the area of supply chain humanitarian logistics which is significant in improving the lives of victims in a disaster (Stewart & Ivanov, 2019). The infusion of leadership in supply chain humanitarian logistics has the ability to save life through easily procuring and transporting of goods and services to disaster victims. Hence, it is noted that the underlying importance of leadership serves as fundamental tool in improving supply chain humanitarian logistics performance. Therefore, Jermsittiparsert and Kampoomprasert (2019) claims leadership matters in supply chain humanitarian logistics performance. Therefore, the relevance of leadership in the context of the study indicates that leadership is conversely perceived to affect supply chain agility and humanitarian logistics performance as moderating variable.

1.2 Statement of the Problem

Humanitarian logistics performance is a key objective in ensuring that victims of disasters are not deprive of form of assistance to help alleviate their pains and based on this, supply chain agility plays a major role in achieving the human logistics performance targets. Hence, various studies have been conducted in relation to the linkage between agility and human logistics performance (Feizabadi, Gligor and Alibakhshi, 2021; Jermsittiparsert and Kampoomprasert, 2019; Basheer *et al.*, 2019; Gunasekaran, Papadopoulos, Dubey, Wamba, Childe, Hazen, & Akter, 2018; Behl & Dutta 2019). However, there has been some literatures that shows their argument concerning the linkage between supply chain agility and human logistics performance (Queiroz, Ivanov, Dolgui, & Wamba, 2020; Modgil, Singh, & Foropon, 2020; Wagner, Thakur-Weigold, Gatti, & Stumpf, 2020). Therefore, the argument has been whether there is need to build agility in human logistics supply chain, in order to move relief goods effectively and efficiently to areas of affected locations to improve human logistics performance has remained debatable. Prasad et al. (2019) suggests that supply chain agility tend to directly impact on human logistics performance. In support of the argument, Ponomarov and Holcomb (2019) points that the ability to effectively ensure that materials are been transported very easily and quick with the purposes of meeting the needs of disaster victims. This implies that there is direct relationship that exist between supply chain agility and human logistics performance. While, Dwivedi et al. (2018); Dubey et al. (2019) indicates that the ability to embrace the concept of supply chain agility tend to improve the performance of human logistics. Based on the resource-based view theory that suggests firms that understand how resources and capabilities can be used to gain competitive advantage along the supply chain (Hitt et al. 2016). This is achieve through the application of supply chain agility which helps impact directly on human logistics performance (Altay, Gunasekaran, Dubey, & Childe, 2018).

Although research have investigated into supply chain and human logistics performance in separates studies (Falagara & Wakolbinger, 2019; Baramichai, Zimmers & Marangos, 2017; Tang & Tomlin, 2018), there is much literature focus on supply chain agility which have dominated among the review literatures. However, it is discovered that the success of supply chain network especially in the context of human perspective cannot achieve its purpose without consideration of leadership. Hence, Behl and Dutta (2019); Maestrini, Luzzini, Maccarrone and Caniato (2017) points out that the presence of leadership that gives short and long term planning in the supply chain and human logistics activities have been ignored. Although there are studies on supply chain agility and human logistics performance, they have been concentrated at higher developed countries with very little done at the lower developing countries; hence, the study created an issue gap. Based on this, the study is set out to investigate the effect of supply chain agility on human logistics performance: mediating effect of leadership.

1.3 Objectives of the Study

The main purpose is to investigate the effect of supply chain agility on humanitarian logistics performance: mediating effect of leadership. The study specifically addressed the following objectives:

1. To investigate the effect of supply chain agility on human logistics performance.
2. To investigate the effect of leadership on human logistics performance.
3. To investigate the mediating effect of leadership between supply chain agility and human logistics performance.

1.4 Research Questions

This research sought to achieve these stated objectives by answering the following questions on the research.

1. What is the effect of supply chain agility on human logistics performance?
2. What is the effect of leadership on human logistics performance?
3. What is the mediating effect of leadership between supply chain agility and human logistics performance?

1.5 Significance of the Study

The significance of the study is categories into theoretical and managerial perspectives. In the theoretical perspective, there is inadequate empirical evidence arguing on leadership which mediates the effect of supply chain agility on human logistics performance in Ghanaian environment and thus leaving empirical gap. It is evident that works conducted by (Feizabadi, Gligor and Alibakhshi, 2021; Jermsittiparsert and Kampoomprasert, 2019; Basheer *et al.*, 2019); Gunasekaran *et al.*, 2018) concentered their works in developed countries in relation to supply chain agility on humanitarian logistics performance.. However, it was identified that none of these studies focused their work in the area of Ghanaian context in connection with supply chain agility on human logistics performance. Surprisingly, it is evident that there has been literature gap concerning the effect of supply chain agility on humanitarian logistics performance in context of Ghanaian firms. Based on this, the study to a large extent tends to investigate the effect of supply chain agility on human logistics performance; mediating role of leadership. Therefore, to a large extent investigating these variables holistically makes contribution to theory building.

Managerially, the outcome of the study result will inform stakeholders of firms in terms of policy direction with respect to human logistics performance. Stakeholders will benefit from the results since it will help in the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods and materials, as well as related information, from the point of origin to the point of consumption for the purpose of

alleviating the suffering of vulnerable people. The outcome of the results will serve as framework for specific players in both public and private sectors.

1.6 Scope of the Study

The study is based on the theme concerning the effect of supply chain agility on human logistics performance: mediating effect of leadership. The study employs five key Ghanaian firms. Thus, three (3) of the firms are from the Transport and Logistics Industry namely; DHL Ghana Ltd, Global Cargo & Commodities Ltd and FedEx Ghana while two (2) of the firms are from the consumable industry namely; Unilever Ghana and Fan Milk Ltd.

1.7 Summary of Methodology

The study adopts quantitative research approach. The justification for the selection of the said research approach is that quantitative research produces objective data that can be clearly communicated through statistics and numbers. Also, it allows for adequate numerical data that is involve with hypothesis analysis. Based on this, the study adopts descriptive and explanatory research strategy. The motivation for the adoption of descriptive research is that it helps provide vivid and concise description of the study results as well as validate the results of the study. Again, the justification for adoption of the explanatory research is that it helps in the measurement of two or more variables at the same time. The study sample consists of five (5) Ghanaian firms in the logistics & transport industry as well as consumable goods industry respectively. The justification for selecting the firms are based on their first five ranking firms in the transport and logistics industry in Ghana as at 2021. The firms consists of McDan Shipping and Logistics, Global Cargo & Commodities Ltd, FedEx Ghana, Unilever Ghana and Fan Milk Ltd. Based on this, the study total sample size consists of the two-hundred (200) respondents from all the five

companies. The study adopts simple random sampling technique to solicit for the study respondents. The justification of the said sampling is that it helps reduce biases due to equal chance of representation. The study employs primary source of information through the usage of questionnaire. The study employs mean, standard deviation, correlation and multiple regression. Also, the study employs the usage of bootstrapping method through the help of the process macro to establish the mediating role of leadership between supply chain alignment and humanitarian logistics performance.

KNUST

1.8 Organisation of the Study

The study is categories into five main divisions. Chapter one presents the background of the study, problem statement, objectives and research questions, significance of the project, scope as well as the summary of the methodology. Chapter two presents the review of the literature. Thus, the literature is sub-group into conceptual literature, theoretical literature, empirical review as well as conceptual framework. Chapter three showcases the methods and procedure use to conduct the study. This involves the adoption of research approach, research design, population of the project sampling size and technique, data collection instruments, model specification, diagnostic testing, variable description and measurement as well summary of the chapter. Chapter four presents the results and discussions of the study in line with the theme of the study. Chapter five presents the findings, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This part of the study concentrate on reviewing the literature in line with the "*the effect of supply chain agility on humanitarian logistics performance: mediating effect of leadership*". The review of the literature is divided into conceptual review, theoretical review, empirical review and conceptual framework.

2.2 Conceptual Review

The conceptual review presents and discusses the concepts in line with the theme concerning the supply chain agility on humanitarian logistics performance: mediating effect of leadership. Based on this, the conceptual concept was categorised into different sections that involves supply chain agility, humanitarian logistics performance, effect of supply chain agility on human logistics performance and mediating role of leadership.

2.2.1 Supply Chain Agility

Supply chain agility is explained as the means through which supply chain respond quickly and effectively to the market changes (Swafford et al. 2016). Gligor and Holcomb (2018) indicates that supply chain agility is expressed as the ability for firms to effectively adjust their tactics along the supply chain to be able to respond quickly to any unforeseen changes and threat that might occur in the environment. Gligor and Holcomb (2018) suggests that supply chain agility ensures competitive advantage. Basheer *et al.* (2019), argues supply chain agility tend to have influence on the performance of a relief operation. This implies that the adoption of SC agility tend to deal with swift way of taking care of relief operation. The SC agility provides assistance to a supply chain network with the purposes of dealing with any unforeseen events or damages been cause by the external forces. The success end pint of the SC agility to help provide efforts to accomplish the require service or product

delivery on time (Kabra & Ramesh, 2018). Studies have notice that supply chain needs agility within it to help ensure successful operations. Azadegan and Dooley (2017) point out that majority of the researchers found within the area of supply chain recognize the importance of the need for SC agility which depends on the speed and quickness in dealing with any challenges that occurs.

The importance of SC agility has gain prominence and significance in area of supply chain humanitarian (Qin & Nembhard, 2015). Hence, supply chain agility deals with the quickness that is been attach in dealing with unforeseen situations or events (lawler &Worley, 2016). Young (2017) argues that needs to be well developed in order to survive in competitive workforce. Therefore, the workforce needs to have the skills and capabilities to deal with any unforeseen events that might occur (Cegarra-Navarro et al., 2016). The best way for in dealing with this situation or challenge is through supply chain agility (Idris & Al-Rubaie, 2013). Firms are considered agile at point where these firms are quick to adapt to changes that happens in the work environment (Charbonnier-Voirin, 2021).

2.2.2 Humanitarian Logistics Performance

Humanitarian logistics is explained as the process of planning, organizing, implementation as well as controlling of the efficient, flow and storage of goods and materials together with its related information from the pint of origin to the final destination of consumption (Thomas & Kopzcak 2015). The primary objective is to ensure the provision of such goods and materials to affected victims with the aim of alleviating the suffering of vulnerable victims (Kovács & Spens, 2017). Zeimpekis, et. al. (2013) indicates that humanitarian logistics can be compare to commercial logistics (managing the flow of goods, information and finances). However, the humanitarian logistics does not considers profit as a major

means of consideration but goes beyond profit making (Thomas & Kopczak, 2015). Also, humanitarian logistics serve as series of activities that are been perform to support disaster victims at the time of need (Kovács & Spens, 2017). Humanitarian logistics had similar features with business logistics which involves planning, warehousing, and tracking (Thomas & Kopzcak, 2015).

Humanitarian logistics aim to ensure that there is reduction in the suffering of vulnerable or victims (Kovács & Spens, 2017). Van-Wassenhove (2016) argues that logistics is considered as significant part of the human supply chain since it has effects on performance. Moreover, logistics in humanitarian serve as major aid in assisting in the supply or delivering of the supporting goods and materials to the victims at hand. This helps to bridge the gap between the preparedness, response and distribution from the point of origin to the final destination of the victims (Van-Wassenhove, 2016). The importance that is been attach to humanitarian logistics can make the difference as to whether the operations succeed or fail (Van-Wassenhove, 2016).

The situation that arises from humanitarian logistics calls for high reliability and adaption in order to meet the vulnerable people (Chandes & Paché 2020). Venkatesh et al. (2019) argues the resultant complex nature of the humanitarian crises calls for organisations such as government, civil society, private companies, military agencies as well as relief firm. This form of chain of network regarding humanitarian supply chain consists of these actors aim to provide their level of assistance to the affected vulnerable victims. This form of assistance takes in the form of medical supplies, food, and other aid resources (Dubey & Gunasekaran 2016; Yadav & Barve, 2015). Fosso-Wamba (2020) shows that humanitarian supply chains include all activities associated with the preparation and management of necessary resources during natural or man-made disaster relief operations. Abidi et al.

(2013) shows that humanitarian logistics aim to optimize the process of delivering the goods and materials to the victims. Nikbakhsh and Farahani (2011), the field of logistics in the context of humanitarian operations has attracted considerable attention due to the need for logistical systems that are capable of dealing with different kinds of disasters and disruption management (Heaslip & Barber 2014).

2.2.3 Effect of Supply Chain Agility on Human Logistics Performance

Studies have shown their views and concerns in divergent ways concerning the relationship between supply chain agility and human logistics performance. Based on this, Vecchiato (2015) indicates that there is direct linkage that exist between supply chain agility and human logistics performance. This implies that the ability for firms to quickly response to unforeseen situations and events helps resolve the vulnerable victims. In support of the argument, Kovacs and Tatham (2019) indicates that the ability for firms to be effective in their response rate in terms of quickly responding to occurrence of disaster to help improve the state of the victims to its original state. Ghosh and Murthy (2016) indicates that the ability to continuously adjust and adapt strategic direction in the form of supporting disaster victims with resources helps improve human performance.

Studies that addressed the contention of the positive impact of SC agility on human performance postulated that supply chain agility arms organizations with competitive privileges (Yusuf et al. 2014). Through their comprehensive study, Yusuf et al. (2014) revealed that supply chain agility has a significant influence on competitive objectives and human performance. However, Eckstein et al. (2019) empirically demonstrated that supply cahin agility significantly influences both cost performance and human performance. This is consistent with Liu et al. (2013), who measured firms' performance via multiple constructs: operational, and human performance. A more recent study conducted by Tse

et al. (2016) claimed that SC agility has a significant influence on human logistics performance (Gligor & Holcomb, 2018).

2.2.4 Mediating Role of Leadership

Leadership is very essential within the supply chain. Therefore, Hogg et al. (2017) argues that the ability to manage diverse disaster relief in a more effective manner in order to achieve success requires more effective leadership. Salem et al. (2019) indicates that the success level of ensuing that disaster reliefs are properly and effectively perform require leadership qualities and skills. This shows that leaders are essential and key in coordinating and motivating all the relief operations that occurs within the supply chain for the betterment of supporting the vulnerable victims. The leaders are require to engage in subgroup leadership, which refers to leading distinct subgroups (Salem et al. 2019). Therefore, such leaders understand that maintaining a positive vison, developing good model, creating intellectual stimulation as well as having high performance expectation help ensure coordinate how agile the support tend to be to achieve humanitarian logistics performance. This shows that the relationship that exist between supply chain agility and humanitarian logistics performance is not direct. However, the linkage that exist between supply chain agility and human logistics performance need effective leadership to ensure it success and performance (Hartog & Verburg, 2017).

Balcik et al. (2020) argues that there are different interest in humanitarian support activities since disaster relief environments mostly engages international and non-government agencies such as NGOs, military, government, local and other third parties logistics service providers. Hence, it is important to have leadership since such group mostly have high level of diversity among the organisations due to their individual interest (Kirkpatrick & Locke, 2016). Therefore, this calls for leadership since it is considered beneficial as it does

not invoke identity crises among these organisations (Sharif & Irani, 2017). Rather, it respects the identity of each organisation and welcomes diversity as an important characteristic for effectively managing disaster relief efforts. Following leadership theory (Hogg et al. 2017), argue that leaders cultivate unique and beneficial traits via team meetings, personal conversations or after-work occasions, which build special bonds amongst diverse groups engaged in disaster relief operations. These traits often help leaders to resolve conflicts that are a result of a lack of transparency (Kirkpatrick & Locke, 2016). In this way, the study view leadership as complementary to human logistics performance and supply chain agility. Leadership has been known as mediator in the linkage between SC agility and human logistics performance (Frese, Beimel & Schoenborn, 2013). In other words, instead of a direct influence from SC agility on human performance, leadership first affect SC agility that, in turn, impacts the human performance. This is known as the direct and indirect effects (Sharif & Irani, 2017).

2.3 Theoretical Review

This part of the study ensures the review of theories that relates to the subject of the matter. Thus, the study theories used includes; relational theory, resources based theory and contingency theory. The importance of reviewing the theories is to help put the study into better context in line with theme of the study. Below are the theories been explained based on the theme of the study.

2.3.1 Relational View Theory

The theory of relational view (RV) is based on the assumption arguing that organisations can attain competitive advantage via relational benefits that are ascertained from collaborative relationships (Dwivedi et al. 2018). This implies that the theory of relational view points that the influence of collaborative relationship is important in the given supply

chain integration (Dubey et al., 2019). This signifies that competitive advantage is gain through the addition of value creation initiatives by inter-firms resources. Based on this the theory of relational view, it is profitable to achieve success where there is mutually exchange of relationship (Brusset 2018). However, the success cannot be achieved in terms of relational view theory where firm tend to operate in insolation without having mutual contributions of collaboration partners (Brusset 2018). This shows that the sums of two or more relationship has a high chance of creating a successes than the individual frim trying to work on their own. Therefore, the theory of relational view tend to achieve competitive advantage only at a point where the firm internal resources and structure are operated and this is majority based on having good network and relationship along the supply chain (Gunasekaran et al., 2018). In the context of the study, the theory advocates that a proper integration, collaborative and effective relationships among the actors along the supply chain tend to proper deal with uncertainties that arises with human. Hence, the theory of Relational View believes that the ability to have cordial collaboration and relationship within the supply chain help in pull resources swiftly together to deal with uncertainties such as disasters. The implication is that the special relationship and collaborative that exist long the supply chain will help the firms to be agile and swift in mobilization of both financial and non-financial resources to help deal with any human uncertainties that arises in a given environment to save lives and rescue the suffering of vulnerable humans (Srinivasan & Swink, 2018).

The importance of the theory of Relational View to the study is that it is important task for firms to help resolve uncertainties, while source of the problem is the lack of collaboration and relationship among the actors within the supply chain. Therefore, the study proposes that there is the need for relational orientations that leads to improve collaboration and relationship among partners engage in humanitarian supply chain. Hence, the ability for

the firms to have good and cordial relationship will help the firms to be swift and agile their resources mobilization to help deal and rescue humans that are vulnerable in terms of uncertainties or disasters.

2.3.2 Resource-Based View

The theory of resources-based view (RBV) is based on ideology that shows that competitive advantage is gain as result of firms having resources or capabilities that is not easily to imitate (Ketokivi, 2016). This implies that firm ability to innovatively to have resources that are difficult for other competitors to acquire help allow the firm to gain competitive advantage (Walker et al. 2015). In the context of the study, it is important for firms to create distinct agility as supply chain property that tend to gain competitive advantage. Therefore, RBV has create ideology that surrounds the significance of resources uniqueness and imitability in gaining competitive advantage (Hitt et al. 2016).

Studies have argued concerning RBV which reveals that firms can achieve competitive advantage through effective creating of strategic resources and capabilities (Esper & Crook, 2014; Hitt et al., 2016). Eckstein et al. (2019) argues that supply chain agility is considered as capability an extension of RBV. Based on the study, the ability to infuse supply chain agility as a form of firm capabilities tend to enable the firm achieve effective coordination that will help in dealing with uncertainty situation on time (Augier & Teece (2019).

In the context of the RBV, the creation of competitive advantage through effective coordination between the actors along the supply chain and other resources in which leadership is key in ensuring that the activities are well coordinated to achieve it intended purposes (Gligor & Holcomb, 2018). Therefore, it is important for leaders to be committed in motivating other players within the supply chain with the purposes of ensuring smooth-

functioning routines. This shows that leadership qualities and skills are important in ensuring that the importance of acquiring resources and creating capabilities (Gligor & Holcomb, 2018). The importance of the theory to the subject matter under discussion shows that firms are able to improve humanitarian performance to gain competitive advantage is to ensure that there is unique resources of dealing with such situation of been more agile. Hence, in this, the importance of leadership is needed to coordinate and motivate swiftness in dealing with uncertainties that might occur among human to be able to rescue their vulnerabilities.

2.3.3 Contingency Theory

The theory of contingency is based on the assumption that firms need to adapt to environmental changes depending on the environmental conditions in which they operate (Donaldson, 2011). Based on the ideologies that is been ascertain from the contingency theory, the factor of top management commitment in form of leadership is identified as key contingent factor (Eckstein et al. 2019). In the context of the study, the ability to help improve humanitarian performance depends on how firms are agile with their resources mobilization as well as the key leadership skills needed to coordinate and motivate the resources effectively to help resolve any uncertainties that might occur in order to save lives and properties (Dubey et al. 2018). Therefore, it is important for firms to have contingency plan and this well-articulated through having effective leader that can coordinate and motivate all the resources to deal with the unforeseen disasters and uncertainties (Brandon-Jones et al. 2014). The importance of the contingency theory to the study is that it is important for firms to have contingency plan to deal with any uncertainties that occurs. This basically can be achieve with an effective leadership to help plan, coordinate and motivate to achieve the purposes of improving humanitarian performance.

2.4 Empirical Literature Review

Jermsittiparsert and Kampoomprasert (2019), empirically investigated the link between supply chain agility and humanitarian performance in Indonesia. The method used for the study was adopted in line with objective of the study; thus, quantitative approach. Three-hundred and sixty respondents were sampled for the study. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using correlation. The result showed that there is significant direct link between supply chain agility and humanitarian performance.

Dubey et al., (2020) investigated the link between supply chain agility and humanitarian logistics performance; mediating role of leadership in India. The method of approach used is known as quantitative approach. Based on the objectives of the study, descriptive and explanatory were applied. Three-hundred and fifty-two (352) sampled participants were used through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is direct link between agility and humanitarian performance while leadership partially mediated the link between agility and humanitarian performance.

Falagara and Wakolbinger (2019), empirically investigated the link between supply chain agility and humanitarian performance in Indonesia. The method used for the study was adopted in line with objective of the study; thus, quantitative approach. One-hundred and twenty (120) respondents were sampled for the study. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using correlation. The result showed

that there is significant direct link between supply chain agility and humanitarian performance.

Wamba and Akter (2019), determined the link between supply chain agility and humanitarian performance in Canada. The method used for the study was adopted in line with objective of the study; thus, quantitative approach. Four-hundred and ten (410) respondents were sampled for the study. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using correlation. The result showed that there is significant direct link between supply chain agility and humanitarian performance.

Humdan et al. (2020), determined the link between the supply chain agility and human performance in India. The method of approach used is known as quantitative approach. Based on the objectives of the study, descriptive and explanatory were applied. Six-hundred and fifty (650) sampled participants were used through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is direct link between SC agility and humanitarian performance.

Rahman et al. (2022), determined supply chain agility on firm performance in Turkey. The method of approach used is known as quantitative approach. Two-hundred and ten (210) sampled participants were used through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using correlation. The study revealed that there is direct correlation between SC agility and humanitarian performance

Fiorini et al. (2021) examined the link existing between SC agility and humanitarian performance in Brazil. Three-hundred and thirty (330) sampled participants were used through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is direct correlation between SC agility and humanitarian performance.

Sahin et al. (2017) investigated the role of agility in supply chain firm performance in Turkey. The method of approach used is known as quantitative approach. Based on the objectives of the study, cross-sectional research was applied. One-hundred and five (105) sampled participants were used through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is direct relationship between SC agility and humanitarian performance.

Dwivedi et al. (2018), investigated the role of leadership on humanitarian performance in Sweden. The method of approach used is known as quantitative approach. Based on the objectives of the study, cross-sectional research was applied. Three-hundred and fifty (350) sampled participants were used through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is direct relationship between leadership and humanitarian performance.

Ponomarov and Holcomb (2019), investigated the link between SC agility and sustainable performance in Australia. Two-hundred and sixty (260) sampled participants were used

through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is positive link between supply chain agility and humanitarian performance.

Kumar et al. (2022), investigated that the effect of SC agility on humanitarian performance; meditating role of leadership in era of covid-19 in Spain. The method used for the study was adopted in line with objective of the study; thus, quantitative approach. Six-hundred and twenty (620) respondents were sampled for the study. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is direct link between agility and humanitarian performance while leadership fully mediated the link between agility and humanitarian performance.

Vanov (2020), investigated the link between leadership and human performance in Germany. The method of approach used is known as quantitative approach. Based on the objectives of the study, cross-sectional research was applied. Two-hundred and seventy (270) sampled participants were used through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is direct relationship between leadership and humanitarian performance.

Al-Romeedy (2019), determined the effect of supply chain agility on logistics humanitarian performance in Egypt. The method used for the study was adopted in line with objective of the study; thus, quantitative approach. Two-hundred (200) respondents

were sampled for the study. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analyzed using regression. The result indicated that there is direct significant link between supply chain agility and HSC performance.

Kwateng et al., (2022), investigated the link between supply chain agility and humanitarian supply chain performance in Ghana. The method of approach used is known as quantitative approach. Two-hundred and fifty (250) sampled participants were used through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is direct link between supply chain agility and humanitarian performance.

Shafiq and Soratana (2019), investigated supply chain agility and human performance in Thailand. The method of approach used is known as quantitative approach. Three-hundred and fifty (300) sampled participants were used through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is direct link between SC agility and humanitarian performance.

Nayak and Choudhary (2022), investigated the effect of supply chain agility on humanitarian logistics performance in United Kingdom. The method of approach used is known as quantitative approach. Six-hundred and fifty (600) sampled participants were used through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved

questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is direct link between SC agility and humanitarian performance.

Behl and Dutta (2019), investigated the effect between SC agility and humanitarian performance in Romania. The method of approach used is known as quantitative approach. Two-hundred and fifty (250) sampled participants were used through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is direct link between supply chain agility and humanitarian performance.

Prasad et al. (2019), investigated supply chain agility and humanitarian performance in Indonesia. The method of approach used is known as quantitative approach. One-hundred and forty (140) sampled participants were used through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is direct link between supply chain agility and humanitarian performance.

Aurélie (2018), determined the link between SC agility and human performance in France. The method of approach used is known as quantitative approach. Four-hundred and twenty (420) sampled participants were used through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is direct link between supply chain agility and humanitarian performance.

Altay et al., (2018), examined the effect of supply chain agility on human performance; the mediating effect of leadership in United Kingdom. The method of approach used is known as quantitative approach. Based on the objectives of the study, descriptive and explanatory were applied. Two-hundred (200) sampled participants were used through selection criteria of simple random. The study participants were selected using simple random sampling. The instrument that was used to acquire the data involved questionnaire. Hence, the collected data was analysed using regression. The study revealed that there is direct link between agility and humanitarian performance while leadership partially mediated the link between agility and humanitarian performance.

KNUST

KNUST

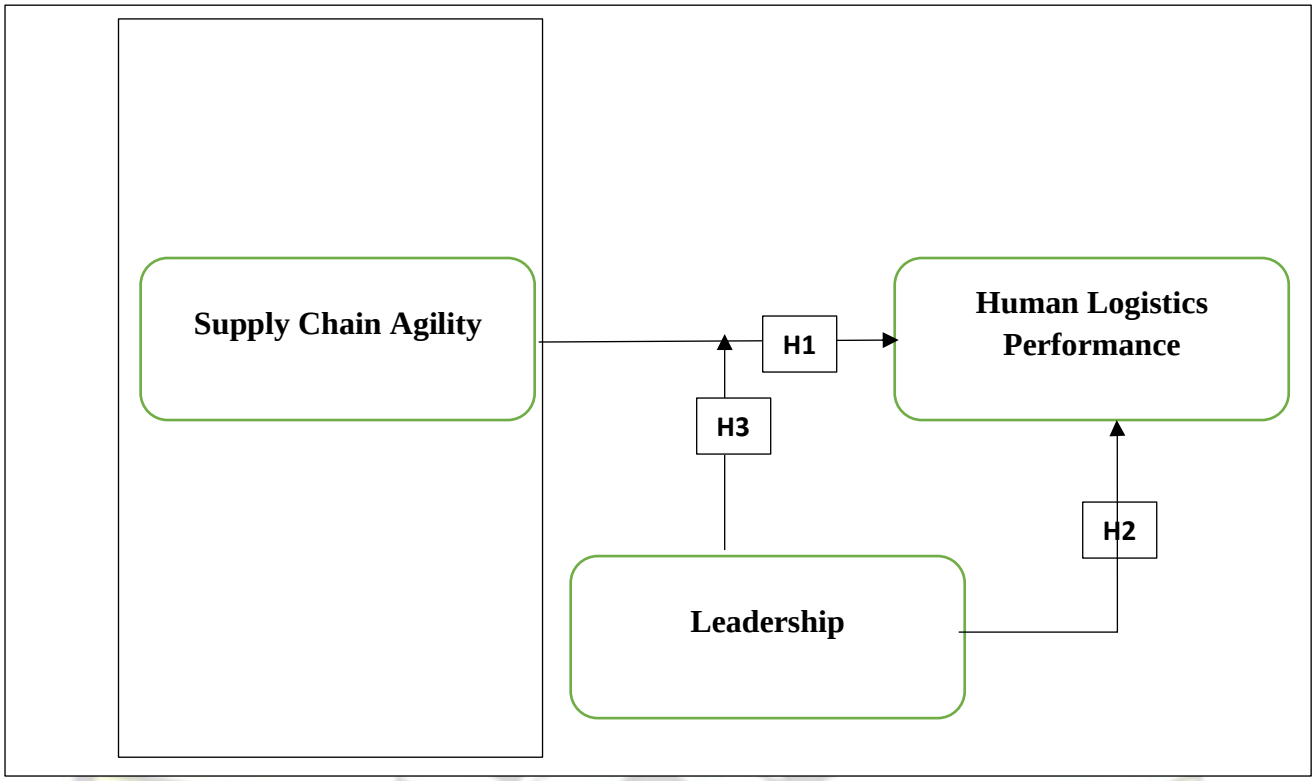
Table 1: Empirical Review Table

Author(s)	Year of Publication	Article Title	Research Question/Objective/Hypotheses	Method	Key Results
Jermsittiparsert and Kampoomprasert	(2019)	Supply chain agility and humanitarian performance in Indonesia	to determine the effect supply chain agility and humanitarian performance	Quantitative	The result found there is significant direct link between supply chain agility and humanitarian performance.
Dubey et al.,	(2020)	The link between supply chain agility and humanitarian logistics performance; mediating role of leadership in India	To investigate supply chain agility and humanitarian logistics performance; mediating role of leadership	Descriptive and explanatory were applied	The study revealed that there is direct link between agility and humanitarian performance while leadership partially mediated the link between agility and humanitarian performance.

Falagara and Wakolbinger	(2019),	Supply chain agility and humanitarian performance in Indonesia	To investigate effect between supply chain agility and humanitarian performance	Quantitative	The result showed that there is significant direct link between supply chain agility and humanitarian performance.
Wamba and Akter	(2019)	supply chain agility and humanitarian performance in Canada	to scrutinize the interrelation between the supply chain agility and humanitarian performance	Quantitative	The result revealed there is significant direct link between supply chain agility and humanitarian performance.
Humdan et al.	(2020),	supply chain agility and human performance in India	To determined the effect of supply chain agility and human performance	Quantitative	The study revealed that there is direct link between SC agility and humanitarian performance.
Rahman et al.	(2022)	supply chain agility on firm performance in Turkey	To determine the effect of supply chain agility on firm performance	Quantitative	The study revealed that there is direct correlation between SC agility and humanitarian performance
Fiorini et al.	(2021)	the link existing between SC agility and humanitarian performance in Brazil.	To investigate the effect of SC agility and humanitarian performance	Cross-sectional Quantitative research method	The study revealed that there is direct correlation between SC agility and humanitarian performance

Sahin et al.	(2017)	the role of agility in supply chain firm performance in Turkey.	To determine the role of agility in supply chain firm performance	Quantitative research method	The study revealed that there is direct relationship between SC agility and humanitarian performance.
Prasad et al.	(2019)	Supply chain agility and humanitarian performance in Indonesia.	To investigate the impact of supply chain agility and humanitarian performance.	Quantitative research method	The study revealed that there is direct link between supply chain agility and humanitarian performance.
Aurélie	(2018),	SC agility and human performance in France	To examine the impact of SC agility and human performance	quantitative approach.	The study revealed that there is direct link between supply chain agility and humanitarian performance.
Altay et al.,	(2018),	the effect of supply chain agility on human performance; the mediating effect of leadership in United Kingdom	To determine effect of supply chain agility on human performance; the mediating effect of leadership in United Kingdom	Quantitative approach	The study revealed that there is direct link between agility and humanitarian performance while leadership partially mediated the link between agility and humanitarian performance

2.5 Conceptual Framework and Hypothesis Formulation



Source: Researcher Own Construct, (2022)
Figure 1: Conceptual Framework

2.5.1 Supply Chain Agility and Human Logistics Performance

It is quite evident from the literature review that there is a need for empirical investigation of supply chain agile and human logistics performance. There are considerable works on agile supply chain from commercial supply chain perspective but expect theoretical argument, the supply agility impact has not been tested in context to human supply chain performance. The scholars have highlighted the need for empirical investigation in human logistics performance (e.g., Wassenhove, 2016; Kovacs and Spen, 2017; Kovacs and Tatham, 2019; Cozzolino et al., 2012; Baldini et al., 2012). The researcher proposes a hypothesis;

H1: Supply chain agility has significant positive influence on human logistics performance.

2.4.2 Leadership and Human Logistics Performance

The theory of Relational view significantly view that the importance of information sharing is critical activity undertaken by any organisation to gain competitive advantage as well as ensuring efficient and effective operation of supply chains (Dubey et al. 2018). In order to gain prominent ground on how information sharing among partners in humanitarian supply chain enhances performance. The theory of RV argues that organisations can attain competitive advantage via relational benefits that are ascertained from collaborative relationships (Dwivedi et al. 2018). Chen and Paulraj (2014) indicates that leadership is key and critical in coordination and motivating that activities that occurs in the supply chain which tend to influence human logistics performance. In support of the argument, Salinas and Cole (2013) argues that leadership directly influence the success of human logistics in saving lives of disaster victims. Thus, the above discussion leads us to the following hypothesizes:

H2: Leadership has a significant positive effect on human logistics performance.

2.5.3 Mediating Effect of Leadership between Supply Chain Agility and Human Logistics Performance

Hogg et al. (2017) argues that the ability to manage diverse disaster relief in a more effective manner in order to achieve success requires more effective leadership. Salem et al. (2019) indicates that the success level of ensuing that disaster reliefs are properly and effectively perform require leadership qualities and skills. Arthur and House (2014) indicates that the relevance of leaders makes them understand that maintaining a positive vison, developing good model, creating intellectual stimulation as well as having high performance expectation help ensure coordinate how agile the support tend to be to achieve humanitarian logistics performance. This shows that the relationship that exist between supply chain agility and humanitarian logistics performance is not direct. However, the

linkage that exist between supply chain agility and human logistics performance need effective leadership to ensure it success and performance (Hartog & Verburg, 2017). The basis of this is that while there is a connection between SC agility and human logistics performance, the study suggest that this linkage is not direct. Thus, the study proposed the following hypothesis:

KNUST

H3: Leadership mediate the effect of SC agility on human logistics performance.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This part of the chapter presents the methodology of the study. The chapter is categorised into different sections. This includes, research approach, research design, population of the study, sample size and sample technique, sources of data, data collection instrument, model specification, measurement of variables, ethical consideration and finally, the summary of the chapter.

3.2 Research Approach

Quantitative research approach was employed based on the positivism stands on the subject matter. Based on this, quantitative research approach is explained as systematic approach in investigating into subject matter by gathering quantifiable data and performs statistical or numerical computation (Collis & Hussey, 2014). The motivation for the adoption of the quantitative research is based on the fact that it permits the study to collect data from larger respondents at a particular time. Also, it ensures the use of numerical data that allows for hypothesis analysis. Finally, the adoption of quantitative research helps produce an objective data that is communicated through number and statistics.

3.3 Research Design

The study employed cross-sectional study. The justification for the choice of said research method is based on the relative cost effective nature and convenient ways. Again, it allows all data to be collected at a point in time and gives room for the study to obtain a multiple outcomes relating to the project. Also, it ensures data collection from large pool of the study subjects as well as ensures comparison of difference between groups. The study adopts descriptive and explanatory research strategy. The motivation for the adoption of descriptive research is that it helps provide vivid and concise description of the study results as well as validate the results of the study. Again, the justification for adoption of

the explanatory research is that it helps in the measurement of two or more variables at the same time.

3.4 Population of the Study

The population of the study consist of Ghanaian firms in the logistics & transport industry and consumable goods industry respectively in Accra Metropolis. Based on this, the total population consists of four-hundred (400) Ghanaian firms' employees in the logistics & transport and consumable industry. The justification is based on being the first five ranking firms in the transport & logistics and consumables industry in Ghana as at 2021.

3.5 Sampling Technique and Sample Size

The total sample size consists of two-hundred (200) respondents from five (5) selected Ghanaian firms in the logistics & transport and consumable goods industry respectively. The justification for selecting the firms are based on their first five ranking firms in the transport & logistics as well as consumable goods industry in Ghana as at 2021. The firms consists of McDan Shipping and Logistics, Global Cargo & Commodities Ltd, FedEx Ghana, Unilever Ghana and Fan Milk Ltd. This was determined with the Yamane formulae for sample size calculation (Yamane, 1967). In the formula, the population of the study is represented as "N" =400, the margin of error is represented by "e" =0.05.

$$n = \frac{N}{(1 + N(e)^2}$$

$$\boldsymbol{n = \frac{400}{1 + 400(0.05)^2}}$$

$$\boldsymbol{n = 200}$$

The study employed simple random sampling technique to select the study participants. The study systematically randomly selected the study participants from the sampled firms.

The study ensured that the total number of available respondents who met the inclusion criteria were selected. Thus, the number was divided by a certain interval that enabled the sample size of 200 to be obtained among the respondents. The study ensured that the respondents were assigned a random numbers and in a process of respondents not consenting to take part in the study, the next available respondent was recruited until the targeted sample size was obtained. The selected study participants had least involve in humanitarian logistics activities. The justification for the choice of the said sampling technique is that it help provides equal chance of representation which helps reduce biases in the sample selection.

3.6 Data Collection Method/Procedure

3.6.1 Data Type and Source

The study employed first-hand information source, thus, the use of primary data. The primary data is expressed as the data that has not been used for any other research purposes (Robson, 2002). The motivation for selecting the said data is based on the reliability of the source of information since the data is directly collected the first time form the study respondents.

3.6.2 Data Collection Instrument

Questionnaire was employed as the study data instrument. The justification for the adoption of the use of questionnaire is that it provides avenue to use large number of respondents. The questionnaire was formed in line with the theme of the study, thus, the questions were designed to coincide with the specific objectives of the study. The questions were designed using closed-ended Likert scale format. The scale used ranges from strongly agree to strongly disagree, thus, using five-point scale. The first part of the questions were designed in connection with the demographic characteristics of the respondents. The questions involves the gender, age, education and years of working

experience. The second part of design of the questions deals with supply chain agility construct. The number of items under the construct that the respondents strongly agree to strongly disagree consist of five (5) items. Also, the third part of the designed of the questions deals with leadership construct. The number of items under the construct that the respondents strongly agree to strongly disagree consist of five (5) items. Finally, the fourth part of the designed of the questions deals with human logistics performance construct. The number of items under the construct that the respondents strongly-agree to strongly-disagree consist of five (5) items.

3.6.3 Administration of the Questionnaire

The administration of the study questionnaire was conducted using face-to-face contact with the study participants. The researcher sought an official approval from the management of the selected firms to solicit data information. The researcher therefore contacted individually all the respondents and administered the questionnaire. The study participants fully answered the questions without any self-assistance. This shows that the study participants willingly and freely answered the questions without any form of influence.

Table 2: Operationalization Table

Variables	Operationalization	Measurement
Supply chain Agility	Items 1-6	Likert scale 1-7; 1-totally agreed, 3-somewhat agreed, 2-uncertain;
Leadership	Items 7-11	Likert scale 1-7; 1-somewhat agreed 4-uncertain
Human Logistics Performance	Items 12-18	Likert scale 1-7; 4-totally agreed, 1-somewhat agreed, 2- somewhat disagree;

Source: Field data, 2023

3.7 Data Analysis

Data gathered was checked for completeness, entered and analyzed with SPSS version. The study analyzed the demographic characteristics descriptively. The demographic features were analysed using frequency and percentage. Also, the study analysed using correlation and regression concerning supply chain agility on human logistics performance (Objective 1). Again, the study analysed using correlation and regression concerning leadership on human logistics performance (Objective 2). Finally, concerning the mediating effect of leadership between supply chain agility and human logistics performance, the data was presented using bootstrapping method through the help of the process macro to establish the mediating role of leadership between supply chain agility and human logistics performance (Objective 3).

3.8 Model Specification

The study established the linkage between supply chain agility and humanitarian logistics performance; mediating effect of leadership based on the prior research conducted by (Dubey et al., 2020; Jermsittiparsert & Kampoomprasert 2019; Wamba & Akter, 2019). The study estimates the following model:

$$P = \beta_O + \beta_1 SCA + \beta_2 LDH + \varepsilon_t$$

Where:

HLP = Human Logistics Performance

SCA = Supply Chain Agility

LDH = Leadership

$\beta_O = constant\ of\ the\ model$

$\beta_1 + \beta_2 + \beta_3 = coefficient\ of\ the\ model$

$\varepsilon_t = stocastic\ error\ term.$

3.9 Validity and Reliability

The test of reliability and validity was performed. The purpose of conducting the test is help established consistency of the study questions in each construct. Therefore, reliability test was performed using similar studies questions in relation to topic under study. Hence, the similar studies adopted were from (Altay et al., 2018; Prasad et al., 2019; Dubey et al., 2020). Also, the study made used of Cronbach Alpha to test the reliability. Hence, the acceptable rate was considered to be 0.7.

3.9 Variables Description and Measurement

Table 3: Variables Description and Measurement

Abbreviation	Variable	Measurement	Expected sign
HLP	Human Logistics Performance (Dependent Variable)	This is measured by time of delivery, quality of delivered materials, reduction in loss of lives, reducing stock-out of necessary medicines, equipment and other necessary items.	
SCA	Supply Chain Agility (Independent Variable)	This is measured using demand fluctuations, supply disruptions, changes in delivery times	+/-
LDH	Leadership (Mediating Variable)	This is measured by the extent to which transformational and transactional leadership exhibit leadership behaviours.	+/-

Source: Author's own Construct, 2022

3.10 Ethical Consideration

Concerning the ethical consideration of the study, the study ensured that all the study participants were fully consulted and their consent were sought. The study ensured that the

respondents were assured of protecting identify. This shows that the study participants were not harm in any other way. Finally, the study ensured that ethical issues that relates to collection of data and presentation of the findings were considered.

3.11 Chapter Summary

The study ensured that the methods used to conduct the project were clearly outlined. The study employs quantitative research approach. The study also employs cross section study. The study adopts sample to represent a population. The study adopts primary data through the usage of questionnaire. The study made used of frequency, percentages, mean, deviation, correlation and regression in analyzing the gathered data. In the next chapter, the study tends to analyze and discuss the results.

KNUST

CHAPTER FOUR

DATA ANALYSES AND DISCUSSIONS

4.1 Introduction

The part of the study presents the result of the findings as well as discussion of the results in line with the topic under discussion. The chapter firstly presents the demographic features of the respondents while the next outline presents the descriptive results of the study constructs. Also, the chapter presents the reliability results of the constructs and this followed by the regression and mediation analysis. Lastly, the chapter presents the discussion of the results in line with the specific objectives.

4.2 Demographic Analyses of Respondents

The result shown in Table 4 in relation to demographic features of the study respondents. Based on this, the result show the educational background status of the respondents which revealed that 59% of the study participants had acquired first degree as at the time the study was conducted while 18% and 17% of the study participants hold second degree and diploma certificates respectively, Finally, the result indicated 6% of the study respondents hold A'level/O'level certificate at the time of conducting the study. The implication is that the study participants were fully educated and knowledgeable in the field of study.

Again, the result shown the number of working years of experience of the respondents. Hence, the result indicated that 68% of the study participants had working experience between 10 to 19 years. Next, 30% and 2% of the respondents had working experience between 1 to 9 years and 20 years respectively. The implication is the study participants were more experienced and this made them have in-depth knowledge in the field of study.

Table 4: Demographic Profiles

	Frequency	Percent
Education Status		
SHS/A'level/O'level	13	6
Diploma/HND	34	17
1st Degree	117	59
2nd Degree	36	18
Total	200	100
Years of Working Experience		
1-9 years	60	30
10-19 years	137	68
above 20 years	3	2
Total	200	100
Positions of Respondents		
Supply Chain Managers	50	25
General manager	67	33
Marketing/Sales Manager	54	27
Operations Manager	26	13
Other top management position	3	2
Total	200	100
Years of Holding Position		
1-9 years	140	70
10-19years	57	28
above 20 years	3	2
Total	200	100

Source: Field data, 2023

In addition, the result revealed that majority of the study participants representing 33% hold position of general managers while 27% and 25% of the respondents hold the position marketing/sales managers and supply chain managers respectively. The study revealed that 13% and 2% of the respondents hold positions of operations managers and other top management respectively. The implication is that the study participants were well vest in the field of study in terms of their knowledge in the study area.

Finally, the result revealed the number years respondents had hold their respective positions as shown Table 2. Based on this, the result indicated that 70% of the respondents

had being holding their positions between 1 to 9 years while 28% and 2% had being holding their current positions for 10 to 19 years and above 20 years respectively.

4.3 Descriptive Statistics Results

This section of the chapter presents the results concerning the descriptive statistics of the constructs. Based on this, the results were presented using mean, standard deviation, correlation, regression and process macro. Hence, the results were presented in line with the objectives of the study.

4.3.1 Supply Chain Agility

Table 5: Supply Chain Agility

Items	N	Mean	±SD
Our firm quickly detect changes in our environment	200	5.30	1.161
Our firm quickly sense threats in its environment	200	4.86	1.400
Our firm make quick decisions to deal with changes in environment	200	4.68	1.291
Our firm quickly response to the specification of orders as requested by our partners to deal with disaster victims	200	4.43	1.196
. Our firm possess quick strategic sourcing in dealing with humanitarian problems	200	4.42	1.254
Our firm adjust quickly to supply chain operations to the extent of executing decisions to deal with disaster victims	200	4.03	1.219
Average Mean		4.62	1.254

Source: Field data, 2023

The study revealed the results concerning supply chain agility as shown in Table 5. Based on this, the result revealed the study participants somewhat agreed to the statement which depicts that our firms quickly detect changes in our environment (5.30). This implies that

the firms were very agile in their supply chain activities in terms of effectively detecting any abnormalities that arose in the Ghanaian environment. This shows that the firms responded quickly numerous environmental changes that occurred in the form of natural disasters and accidents. The firms had humanitarian departments and teams that on real time basis were able detect the occurrence of any changes that occurred in the Ghanaian environment. The implication is that firms for instance were able to quickly provide the needed assistance to the people and victims of Apeate in South-Western Ghana for their dangerous accidents that occurred in the country in the year 2022. Hence, this form of agility in the works of the firms helped improved the state of conditions of the victims.

Also, the study indicated that the respondents somewhat agreed to the statement which depicts that firms quickly sense threats in its environment (4.86). This implies that the firms adjusted its strategy quickly towards dealing the threats that occurred within the Ghanaian environment. This shows that the firms sense of agility helped them assisted the numerous victims that found themselves in both accidents and natural accidents in the Ghanaian environment. Hence, the study showed that the firms sense of rapidly meeting the needs of the accidents and natural disaster victims through effective delivery of procurement materials. The implication is that this form of assistance were quickly sense by the firms which allowed the supply chain management teams of the respective firms to create sense of synergy among the firms which led to improve agility as well as improved the humanitarian performance of the victims.

Again, the result revealed that the study participants somewhat agreed to the statement which depicts that firms made quick decisions to deal with changes in environment (4.68). This implies that the firms effective agility in their supply chain processes helped improved the state of accident and natural disaster victims to their original state were very quick.

Hence, the firms ensured that quick decisions were regularly made to adjust to situations on the environment when accidents occurred. This shows that the firms did not hesitate but rather ensured that decisions concerning assisting victims that found themselves associated with disasters and accidents were being helped through various forms of assistance. The implication is that quick decisions which were made by the management of these firms helped quick delivery of both financial and non-financial assistance to the victims. Hence, the high level of support that were provided to the natural disasters victims that occurred in Keta Municipality concerning Keta tidal waves which caused about 3,000 homeless as well as huge explosion at Apiate in Bogoso District. This shows that these firms quick financial and non-financial interventions and assistance helped improved the damaged that have being caused towards the victims.

Further, the result revealed that the study respondents uncertain to the statements which depicts that firms quickly response to the specification of orders as requested by our partners to deal with disaster victims (4.43) and firms possess quick strategic sourcing in dealing with humanitarian problems (4.42). This implies that the firms worked effectively with external partners such as NGOs and other governmental agencies which helped provided support to accidents and natural disaster victims in the Ghanaian environment. This shows that the firms had dynamic strategy in line with humanitarian support which made it possible for the firms together with their partners to respond to request to support victims that were in need of financial and non-financial assistance. The implication is the agility of the firms in delivery support in the form of financial and non-financial to victims across the country which were urgent need of support as result of their being victim of such accidents and natural disasters. Based on this, the firms helped improved the performance of these victims both physically and mentally. This was achieved through the

effective responses and delivery of support to the victims that were involved in the accidents and natural disasters.

Finally, the result revealed that the study respondents were uncertain to the statement which depicts that firms adjusted quickly to supply chain operations to the extent of executing decisions to deal with disaster victims (4.03). This implies that the firms ensured concrete support for the accidents and natural disasters victims in the Ghanaian environment. Thus, the result showed that firms assisted victims with numerous materials as well as financial support which helped improved the loss of the victims. Hence, the delivery of the needed support in the form of both financial and non-financial items such as food, clothes, medicine, shelter etc were quickly provided to the affected victims. The implication is that the affected victims had the second chance receiving support from these humanitarian firms. Therefore, the affected victim's conditions were improved due to the effective and quick support that were provided by the firms.

4.3.2 Leadership

Concerning the result shown in Table 6 in relation to leadership construct, the result revealed that the study participants were uncertain to the statement which depicts the firms leaders provided appropriate model in handling humanitarian crisis (4.00). This implies that the firms had good and visionary leaders that ensured that effective model were adopted and applied in dealing with the humanitarian crises. They showed that the leaders that were found among the firms ensured that modern models which were dynamic were used to deal rapidly with the various humanitarian crises that occurred in the Ghanaian environment which involved accidents and natural disasters for the past years. The implication is that the leaders strategically innovation that took the form of adopting appropriate models. This helped the leaders to be able to align their beliefs and values with the overall goals of the firms in improving the lives of victims that found themselves in

difficult situations as result of accidents and disasters. This shows that the leaders played an effective role which ensured that the firms were committed in supporting and assisting humanitarian crisis. This form of leadership helped improved humanitarian performance which led to improved live saving among the victims.

Table 6: Leadership

Items	**N**	**Mean**	**±SD**
Our firm leaders provide appropriate model in handling humanitarian crisis	200	4.00	1.362
Our firm leaders create intellectual simulation to deal with humanitarian crisis	200	3.46	1.363
Our firm leaders ensure high performance expectation in dealing with humanitarian crisis	200	3.54	1.483
Our firm leaders have vision in reducing humanitarian crisis .	200	3.78	1.460
Our firm leaders provides contingency and performance rewards to help stimulate teams in responding to humanitarian crisis	200	3.71	1.259
Average Mean		3.70	1.385

Source: Field data, 2023

Also, the result revealed the respondents were uncertain to the statement which depicts that firm's leaders have vision in reducing humanitarian crisis (3.78). This implies that the firm's leaders had vison in which the vision was transferred into the culture of the firms. This showed that the leaders had short and long vision that geared towards improving humanitarian crises in the country. The leaders of the firms were able influenced top management hierarchy as well as the followers to understand the vision of reducing humanitarian crises in the Ghanaian environment. This made possible for the top management of the firms to set-up budgetary allocation for the leaders of the firms to use helped improved the lives of victims that found themselves in accidents and disasters. The

implication is that firm's leaders' visionary goals towards improving and reducing humanitarian crises were effectively achieved. This was due to the leaders exhibiting their qualities, skills, beliefs as well as vision which was transformed into the culture of the firms. Hence, the leaders ensured that vison of reducing humanitarian crises were provided through provision of relief items such as food, shelter, medicine, water, clothes as well as financial support which helped improved the performance of victims found within these crises.

Further, the result revealed that the study participants were uncertain to statements which depicts that firms leaders provides contingency and performance rewards to help stimulate teams in responding to humanitarian crisis (3.71) and firm's leaders ensured high performance expectation in dealing with humanitarian crisis (3.54). This implies that the leaders of the firms ensured that motivation schemes were instituted which helped encouraged partners within the supply chain to support humanitarian crises in the country. This shows that the leaders were able to stimulate the inner efforts of all their partners towards providing support to help improve the lives of victims that were found in accident and disasters. The implication is that the leader's consistent efforts that led to effective dealing of humanitarian crises helped saved a lot of lives that were found being victim of accident or natural disaster in the country.

Lastly, the result revealed that the study participants were uncertain to the statement which depicts that firm's leaders created intellectual simulation to deal with humanitarian crisis (3.46). This implies that the leaders of the firms created incentives for the partners along the supply chain. Hence, the leader's incentives encouraged the firms and its partners to provide the needed support to help support the needs of the victims involved in these crises. This shows that the leaders efforts was showed through finding middle grounds with the tax authorities which led to tax free on goods and services that were been used to support

the victims involved humanitarian crises. The implication is that this form of arrangements that were demonstrated by the leaders of the firms helped encouraged the partners along the supply chain to team up with the firms. This led to series of support to accident and natural disasters victims in which majority of the victims were relief of their pains due to the support both financial and non-financial.

KNUST

4.3.3 Human Logistics Performance

Concerning the result in line with the human logistics performance as shown in Table 7. Based on this, the result revealed that the study participants agreed that firms have reduced loss of lives of disaster victims (5.64). This implies that the firm's regular and consistent support using both financial and non-financial items such as food, clothes, water, shelter etc. Hence, the study showed that the firms agility helped increased the swift ways of dealing with humanitarian crises across the country. Based on this, the study revealed that the firms provided enough support to the victims of Apeate in Bogoso, Kintapo Waterfalls disaster as well as Keta Tidal waves. The implication is that this forms of support both financial and material helped ensured the lives of the victims were saved.

In addition, the result revealed that the respondents agreed that firms delivered quality materials to disaster victims (5.56). This implies that the firms ensured that quality materials were used to support the victims that were found at the mercy of accidents and natural disasters in the country. Hence, the management of the firms for instance supported the victims of Apeate at Bogoso with quality materials that consisted of tents, clothing, plastic cups, food including provisions and spices, water, insurance etc. The implication is that the firms quick material support to the victims of the accidents and natural disasters helped ensured that the victims are not deprived from any basic needs. This kind of support that were assisted to the victims helped brought the victims to their original state before the disasters occurred and hence improved humanitarian performance.

Table 7: Human Logistics Performance

Items	N	Mean	±SD
Our firm has absorbed huge loss of the disaster victims	200	4.52	1.382
Our firms has reduced the impact of loss by our ability to handle humanitarian crisis	200	5.23	1.459
Our firm has helped recovered disaster victims from crisis at less cost	200	4.30	1.371
Our firm ensured delivery of items on time to save loss of lives	200	5.52	1.395
Our firm deliver quality materials to disaster victims	200	5.56	1.539
Our firm has reduced loss of lives of disaster victims	200	5.64	1.277
Our firm has reduced stock-out of necessary medicines, equipment and other necessary items through donated items to disaster victims	200	3.03	1.266
Average Mean		4.83	1.384

Source: Field data, 2023

Also, the result revealed that the respondents agreed that the firms ensured delivery of items on time to save loss of lives (5.52) and somewhat agreed that firms have reduced the impact of loss by ability to handle humanitarian crisis (5.23). This implies that the firms were able to provide quick delivery of support in the form of materials and non-materials items to the accidents and disaster victims on time. The on-time delivery of these materials that were provided by the firms to the disasters victims helped ensured that save the lives of victims. The study recognized that the lives of these accidents and disaster victims were crucial based on timing interventions of support. Based on this, the firms ensured that their delivery of support to the disaster victims were provided very quick and on time. The implication is that the firms timely support of materials and non-materials helped reduced the loss of impact on the accidents victims which led to improve humanitarian performance.

Again, the result revealed that the study participants somewhat agreed to the statements which depicts that firms have absorbed huge loss of the disaster victims (4.52) and firms have helped recovered disaster victims from crisis at less cost (4.30). This implies that firm's consistent support to accidents and disaster victims were hugely absorbed by the firms in terms of their support to rescue the victims. This showed that the level of loss that these victims have incurred as a result of the accidents and natural disasters were hugely absorbed by the firms through their financial and non-financial support. The implication is that firm's consistent support to the disaster victims were exempted from tax. This reduced the burden of tax component to these firms. This shows that the cost that were involved in supporting the victims through the firms support were reduced due to the exemption of tax component from the tax authorities in the country.

Finally, the result revealed the study respondents somewhat disagree that firms have reduced stock-out of necessary medicines, equipment and other necessary items through donated items to disaster victims (3.03). This implies that the firm's provided adequate resources in the form of materials to meet the high demand from the disaster victims. Hence, this shows that the firms were determined and continuously ensured that donations support were provided to the victims that were involved in the disasters. The implication is that the firm's ability to meet the high demand needs of the accidents victims through the provided support helped improved the lives of the victims.

4.4 Reliability and Validity Test

Concerning the reliability and validity of the study construct's as shown in Table 8 below. The result revealed average Cronbach Alpha for all the constructs depicting 0.859. This implies that the variables under each construct's is said to pass the test. This is because all the variables exceed the threshold of 70% of the alpha rate.

Table 8: Results of Reliability and Validity

	Number of Items	Cronbach Alpha
Supply chain Agility	6	0.800
Leadership	5	0.891
Human Logistics Performance	7	0.887
Cronbach Alpha	18	0.859

Source: Field data, 2023

4.5 Correlation Matrix

Concerning the result that relates the correlation as shown in Table 9. Based on this, the result shown that all the coefficients variables of the correlation were less than 0.6. The result is affirmed by Pedron et al. (2020), which signified that there is no issue in relation to multicollinearity of the results of the study variables.

Table 9: Correlation Matrix

Variables	**1**	**2**	**3**	**Mean**	**SD**
Supply Chain Agility	1			4.62	1.254
Leadership	0.411**	1		3.70	1.385
Human Logistics Performance	0.332**	0.603*	1	4.83	1.382

**Significant at the 0.05 level, respectively (two-tailed)

Correlation coefficients is significant at 5%.

Source: Field data, 2023

Based on the result shown in Table 9, the result revealed that there is direct significant correlation between supply chain agility and human logistics performance (r=0.332, p-value < 0.05). The result is in line with the work by Dubey et al., (2020) and Falagara and Wakolbinger (2019), which established that there is direct link between supply chain agility and humanitarian performance. The implication of the result is that the firms

ensured quick delivery in terms of provided support both financial and non-financial to the victims of accidents and disasters in the Ghanaian environment. The resultant effect is that the lives of the victims were saved and improved as result of the effective agility that occurred along the supply chain of the firms.

Also, the study revealed that there is direct significant correlation between leadership and human logistics performance (r=0.411, p-value < 0.05). The result is in line with the work by Chen and Paulraj (2014) and Hogg et al. 2017), which established that there is direct link between leadership and human logistics performance. The implication of the result is that the leadership qualities, skills, vison, motivation and innovation that were exhibited by the leaders of the firms helped facilitated and improved the humanitarian support that were provided to the victims. Hence, the leadership of the firms ensured that vison of improving humanitarian crises were provided through provision of relief as well as financial support which helped improved the performance of victims found within these crises.

4.6 Effect of Supply Chain Agility, Leadership and Human Logistics Performance

Table 10: Effect of Supply Chain Agility, Leadership and Human Logistics Performance

Items	Human Logistics Performance	Std. Error	Sig.
	Step 1		
	Beta (t-value)		
Constant	0.034 (2.216)	.015	0.000
Supply Chain Agility	0.096 (2.457)	.039	0.000
Leadership	0.214 (3.147)	.068	0.000
R	0.617		
R Square	0.514		
F-statistics	104.134**		
ΔR Square	0.509		
ΔF	104.134		

Significant at 95% Confidence Interval
Source: Field data, 2022

Based on the result concerning the effect of supply chain agility, leadership and human logistics performance as shown in Table 10. Hence, the result revealed the estimate of regression model which indicated 50.9% (adjusted R square = 0.509) variability in human logistics performance. This signified that the occurrence of variability in the dependent variable that is represented by human logistics performance is wholly explained by supply chain agility and leadership as the independent variables. The result is also explained in different words which shows that supply chain agility and leadership together contributed about 50.9% of the human logistics performance

Also, the result revealed that supply chain agility coefficient indicated 0.096 at 5% significant level. This shows that there is direct significant link between supply chain agility and human logistics performance (B= 0.096; T= 2.457; SE=.039, P-value = 0.000). This implies that a unit change supply chain agility tend to directly cause change of 9.6% change in human logistics performance and verse versa. This shows that HI is fully supported which signified that there is direct significant link between supply chain agility and human logistics performance. The result is consistent with the works by Nayak and Choudhary (2022) and Aurélie (2018), which established that supply chain agility positively impact on human performance. The implication of the result is that the firm's agility that were executed along the supply chain ensured effective and quick delivery and support to accidents and disasters victims in the Ghanaian environment. Hence, the firm's quick interventions and support that were provided in the forms of materials and non-material tend to improve human performance. This was achieved as result of the timely and quickness of the firms supporting the victims which helped saved lives as well as improved the living the conditions of the victims. The results conforms to the studies conducted by Prasad et al. (2019) and Al-Romeedy (2019), which indicates that supply chain agility had direct influence on human performance.

The result indicated that there is direct significant link between leadership and human logistics performance which indicated coefficient of 0.214 at 5%. Thus shows that leadership has direct significant link (B= 0.214, T= 3.147, SE=.068, P-value = 0.000) on human logistics performance. This implies that a unit change in firm's leadership tend to exerts a 21.4% change in human performance and verse versa. This shows that H2 is fully supported which shows that there is direct link between leadership and human logistics performance. The result is line with the works by Salinas and Cole (2013) and Altay et al., (2018), which argues that leadership directly influence the success of human logistics in saving lives of disaster victims. The implication of the result is that the leaders of the firms aligned their beliefs and values with the overall goals of the firms. This helped ensured that the leaders helped facilitated both financial and non-financial support to accidents and disaster victims which helped saved lives and ensured that the victims were brought to their original state before the disaster occurred. This form of leadership helped improved humanitarian performance which led to improved live saving among the victims. The result buttresses with the work by Dubey et al., (2020) which indicates that leadership has strong direct link with human performance.

4.7 Mediating Effect of Leadership on the Link between Supply Chain Agility and Human Logistics Performance

Concerning the result in line with mediating effect of leadership on link between SC agility and human performance as shown in Table 11. Based on this, the result revealed that leadership has significant full mediation effect (βeta = 0.385, p-value<0.05) on the link between SC agility and human performance GSCM with non-zeros within the 95% confidence interval (Low = 1.119, high = 3.357). The result indicated that based on the 200 bootstrap samples, there is direct significant link between SC agility and human performance which is mediated by leadership (*a*b* = .385, Bootstrap CI95 = 1.119 and

3.357). Therefore, the result revealed that leadership mediated (full mediation) the link between SC agility and human logistics performance. Therefore, the H3 is accepted.

Table 11: Leadership as a Mediator

Mediation Model**:**

					95% Confidence Interval	
Variable/Effect	B	SE	T	Prob.	Low	High
Direct Effect						
SC Agility → Human Performance	0.096	0.039	2.457	0.000	2.350	4 .124
SC Agility → Leadership → Human Performance	0.263	0.074	3.541	0.000	1.252	2.643
Effect						
Direct Effect	0.385	0.035	2.301	0.000	1.119	3.357
Indirect Effect	0.156	0.061			0 .021	1.241
Total	0.341	0.094	3.621	0.000	1.216	4.598

Based on 200 Bootstrap Samples

Source: Field data, 2023

4.8 Discussions of Findings

4.8.1 Effect of Supply Chain Agility on Human Logistics Performance

The study revealed that supply chain agility had direct significant effect on human logistics performance. The result conforms to the work by Jermsittiparsert and Kampoomprasert (2019), Ghosh and Murthy (2016) indicates that the ability to continuously adjust and adapt strategic direction in the form of supporting disaster victims with resources helped improved human performance. This implies that the firms were very agile in their supply chain activities in terms of effectively detecting any abnormalities that arose in the Ghanaian environment. This shows that the firms responded quickly to numerous environmental changes that occurred in the form of natural disasters and accidents. This made the firms to institute humanitarian departments and teams that on real time basis

were able detect the occurrence of any changes that occurred in the Ghanaian environment. The implication is that firms were able to quickly provide the needed assistances to the people and victims of Apeate in South-Western Ghana, Waterfalls disaster as well as Keta Tidal waves for their dangerous accidents that occurred in the country. Hence, this form of agility in the works of the firms helped saved lives of the accidents victims as well as improved the state of conditions of the victims. The result is line with the work Dubey et al., (2020) and Falagara and Wakolbinger (2019), which established that supply chain agility had significant direct link with human performance.

Further, the study revealed that the firms adjusted its strategy quickly towards dealing the threats that occurred within the Ghanaian environment. This shows that the firms sense of agility helped them assisted the numerous victims that found themselves in both accidents and natural accidents in the Ghanaian environment. Hence, the study showed that the firms sense of rapidly meeting the needs of the accidents and natural disaster victims through effective delivery of procurement materials. The implication is that this form of assistance were quickly sense by the firms which allowed the supply chain management teams of the respective firms to create sense of synergy among the firms which led to improve agility as well as improved the humanitarian performance of the victims. Hence, the on-time delivery of these materials that were provided by the firms to the disasters victims helped saved the lives of victims. The study recognized that the lives of these accidents and disaster victims were crucial based on timing interventions of support. Based on this, the firms ensured that their delivery of support to the disaster victims were provided very quick and on time. The implication is that the firms timely support of materials and non-materials helped reduced the loss of impact on the accidents victims which led to improve humanitarian performance. The result conforms to the work by Wamba and Akter (2019), which established that supply chain agility directly impact on human performance.

Also, the study revealed that the firms ensured that quick decisions were regular made to adjust to situations on the environment when disasters occurred. This shows that firms did not hesitate but rather ensured that decisions concerning assisting victims that found themselves associated with disasters and accidents were being helped through various forms of assistances. The implication is that quick decisions which were made by the management of these firms helped quick delivery of both financial and non-financial assistance to the victims. Hence, the high level of support that were provided to the natural disasters victims that occurred in Keta Municipality concerning Keta tidal waves which caused about 3,000 homeless as well as huge explosion at Apeate in Bogoso District. This shows that these firms quick financial and non-financial interventions and assistance helped improved the damaged that have being caused towards the victims. The implication is that the firm's quick decision making helped them to meet the high demand needs of the disasters victims through the provided support helped improved the lives of the victims. The result is in line with the work by Humdan et al. (2020), which established that there is direct significant link between supply chain agility and humanitarian performance.

Lastly, the result revealed that the firms ensured concrete support for the accidents and natural disasters victims in the Ghanaian environment. Thus, the result showed that firms assisted victims with numerous materials as well as financial support which helped improved the loss of the victims. Hence, the delivery of the needed support in the form of both financial and non-financial items such as food, clothes, medicine, shelter etc were quickly provided to the affected victims. The implication is that firm's consistent support to the disaster victims were exempted from tax. This reduced the burden of tax component to these firms. This shows that the cost that were involved in supporting the victims through the firms support were reduced due to the exemption of tax component from the tax authorities in the country. Hence, the firms quick support delivery to disaster victims

helped improved human lives. The result is in line with the work by Fiorini et al. (2021) which indicates that supply chain agility has direct link with human performance.

4.8.2 Effect of Leadership on Human Logistics Performance

The study revealed that leadership had direct significant relationship with human logistics performance. The result is consisted with the works by Salem et al. (2019) and Sharif and Irani, 2017), established that there is a direct link between leadership and human performance. This implies that the firms had good and visionary leaders that ensured that effective model were adopted and applied in dealing with the humanitarian crises. This showed that the leaders that were found among the firms ensured that modern models which were dynamic were used to deal rapidly with the various humanitarian crises that occurred in the Ghanaian environment. The implication is that the leaders adopted appropriate models that helped the leaders to be able to align their beliefs and values with the overall goals of the firms. This shows that the leaders played an effective role which ensured that the firms were committed in supporting and assisting humanitarian crisis. This form of leadership helped improved humanitarian performance which led to improved live saving among the victims. The result is consisted with the work by Hogg et al. (2017), which indicates that leaders tend to direct and influence the activities of firms in supporting humanitarian activities which directly impact on the lives of the affected victims.

Also, the result revealed that firm's leaders had vison in which the vision was transferred into the culture of the firms. This showed that the leaders had short and long term vision that geared towards improving humanitarian crises in the country. The leaders of the firms were able influenced top management hierarchy as well as the followers to understand the vision of reducing humanitarian crises in the Ghanaian environment. This made possible for the top management of the firms to set-up budgetary allocation for the leaders of the firms to use helped improved the lives of victims that found themselves in accidents and

disasters. The implication is that firm's leaders' visionary goals towards improving and reducing humanitarian crises were effectively achieved. This was due to the leaders exhibiting their qualities, skills, beliefs as well as vision which were transformed into the culture of the firms. Hence, the leaders ensured that vison of reducing humanitarian crises were provided through provision of relief items such as food, shelter, medicine, water, clothes as well as financial support which helped improved the performance of victims found within these crises. The result is in line with the work by Rahman et al. (2022) and Balcik et al. (2020), which established that there is direct link between firms' leadership and human performance.

Finally, the study revealed that the leaders of the firms created incentives for the partners along the supply chain. Hence, the leader's incentives encouraged the firms and its partners to provide the needed support to help support the needs of the victims involved in these crises. This shows that the leaders efforts was showed through finding middle grounds with the tax authorities which led to tax free on goods and services that were been used to support the victims involved humanitarian crises. The implication is that the arrangements that were demonstrated by the leaders of the firms helped encouraged the partners along the supply chain to team up with the firms. This led to series of support to accident and natural disasters victims in which majority of the victims were relief of their pains due to the support both financial and non-financial. The result was in line with work by Hartog and Verburg (2017), which indicates that firms leadership directly influence human performance.

4.8.3 Mediating Effect of Leadership on Supply Chain Agility and Human Logistics Performance

The study revealed that leadership has full mediation effect on link between supply chain agility and human logistics performance. The result conforms to the work by Dubey et al.,

(2020), which established that leadership full mediate the relationship between supply chain agility and human performance. This implies that the relationship that existed between supply chain agility and human performance, leadership was considered to be key. The result is consisted with the work by Salem et al. (2019), which indicates that the skill, vison and qualities of leaders are significant in discharging its performance along the supply chain. Hence, the significance of leaders in connecting the execution of supporting disaster victims of the needs.

However, the role of leaders is not wholly about ensuring provision of support of the victims but rather the timing of delivering of the support is very crucial in improving humanitarian performance. Based on this, the study has revealed that leadership is considered to serve as bridge that exist between supply chain agility and human performance. The result is in line with the work by Rahman et al. (2022), which indicates that leadership plays key role in ensuring the supply chain improved human performance. The implication is that the leader's consistent efforts that led to effective dealing of humanitarian crises helped saved a lot of lives that were found being victim of accident or natural disaster in the country.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The summary, conclusion and recommendation is the subject of discussion. Hence, the presentation of the summary of the findings is done in line with the specific objectives of the study. Next, the chapter presents the conclusion and recommendations of the study and finally, the study makes recommendations for future research.

5.2 Summary of Findings

Concerning the first objective of the study, supply chain agility has direct significant link with human logistics performance. This implies that firms were very agile in their supply chain activities in terms of providing support both financial and non-financial to the affected disaster victims in the Ghanaian environment. The implication is that the firms timely support of materials and non-materials helped reduced the loss of impact on the disaster victims which led to improve humanitarian performance.

Again, concerning the second objective, leadership had direct significant relationship with human logistics performance. This shows that the firms leaders adopted dynamic models which helped the leaders aligned their beliefs and values with the overall goals of the firms. This shows that the leaders played an effective role which ensured that the firms were committed in supporting and assisting humanitarian crisis. This form of leadership helped improved humanitarian performance which led to improved live saving among the victims.

Lastly, concerning the third objective, leadership has full mediation effect on the link between supply chain agility and human logistics performance. This shows that firm's leaders initiative tend to improve the level of support to disaster victims through effective agility along the supply chain which led to improve human performance.

5.3 Conclusion

The study concluded that supply chain agility had significant relationship with human logistics performance. This implies that the firms ensured that their delivery of support to the disaster victims were provided very quick and on time. The implication is that the firms timely support of materials and non-materials helped reduced the loss of impact on the disaster victims which led to improve humanitarian performance. Also, the study concluded that leadership had direct significant relationship with human logistics performance. The implication is that firm's leaders visionary goals towards improving and reducing humanitarian crises were effectively achieved. This was due to the leaders exhibiting their qualities, skills, beliefs as well as vision which were transformed into the culture of the firms. Hence, the leaders ensured that vison of reducing humanitarian crises were provided through provision of relief items such as food, shelter, medicine, water, clothes as well as financial support which helped improved the performance of victims. Finally, the study concluded that leadership has full mediation effect on relationship between supply chain agility and human logistics performance. This implies that leadership is considered to serve as bridge that exist between supply chain agility and human performance.

5.4 Recommendations

The study revealed that there is significant direct link between supply chain agility and human logistics performance. Based on this, the study recommends that the firms should holistically developed supply chain agility framework that will serve as guideline upon which the firms and its actors along the supply chain can use in their humanitarian support activities to disaster victims. The implication is that it will help the firms to be successful in navigating change which will lead to effective preparedness and adopt to the new normal of quickly supporting disaster victims.

The study revealed that there is direct significant relationship between leadership and human performance. Based on this, the study recommends that the top management of the firms should invest in leadership through training programs which will help improve their skills set, qualities, knowledge on human logistics. This will help the firm's leaders align their goals and vision with the firm's humanitarian policies which will improve supply chain agility as well as human performance.

Finally, the study revealed that leadership has full mediation effect on link between supply chain agility and human logistics performance. Based on this, the study recommends that the management of the firms should adopt the leadership traits of the leaders. Hence, this will allow the management of the firms to identify and associate themselves with these leadership traits which will be align with supply chain agility to improve human performance.

5.5 Theoretical Implication

The role of supply chain agility in improving human logistics performance context is well discussed in the literature (Brusset 2018). Likewise, the role of leadership for improving disaster response is well discussed in humanitarian literature Dubey et al. 2019). What is less understood is how relational view theory and contigency theory together influence agility in humanitarian supply chains. In this respect two key aspects of the study signify its contribution to advancing a theory of agility in the context of humanitarian supply chain performance. The study has attempted to explain swift agility using the theoretical lens of contingency theory. Hence, the study provide theory-driven empirical results, which further strengthens and corroborates previous work by demonstrating how supply chain agility and leadership, together, can explain swift agile amongst the actors engaged in disaster relief efforts. Secondly, by utilizing RV, the study add understanding of how to

improve responses to humanitarian disasters, which is a missing link in the humanitarian supply chain literature. Although Moshtari (2016) attempted to explain the role of collaboration using RV, the relationships between SCA, leadership and human logistics performance, which are analyzed in the study, have not been rigorously discussed so far in the literature.

KNUST

The research findings extend the work of Humdan et al. (2020), who discussed how supply chain agility can be defined using the humanitarian experience. However, what is absent from the literature is insights which can offer explanations as to how to build agility into the humanitarian supply, which prior studies have shown to be a desirable characteristic. The current literature argues for the need to build supply chain agility in humanitarian supply chain, whilst at the same to explaining how to measure agility; see, for example, Dubey and Gunasekaran (2016). Hence, in response to this, the study claim that by integrating contingency theory and RV, the study explain some unanswered questions. Hence, this further demonstrate how integration of these two independent organizational theories can provide a fresh perspective to explain some complex operational issues that are often ignored in real life situations.

5.6 Managerial Implication

In terms of application, the findings imply that management of firms should stress the role of SCA as a comprehensive concept in responding to market needs in a volatile environment. Therefore, SCA reflects one of its winning strategies in today's dynamic and competitive world. Hence, the result recommends that managers must thoroughly know the ramifications of agility to develop a mechanism for determining the procedures and identifying inequality in SC operation. This tend to help the firms to effectively deal with any unforeseen circumstance by way of ensuring effectively and quick delivery of support

to the disaster victims on time. The implication is that the firms timely support of materials and non-materials helped reduced the loss of impact on the disaster victims which led to improve humanitarian performance. Also, the mangers effective management of the SCA tend to help the firms to cut excess costs and deliver products to the consumer faster and more efficiently. Companies are able to make decisions quickly and flexibly and try to maintain their competitiveness even in the most adverse conditions. Supply chain agility is one of the most important factors affecting firms' performance in the case of challenging market competition for companies. Supply chain agility provides companies with maneuverability against their competitors and enables companies to gain a competitive advantage. Moreover, the study suggests that management of firms should consider supply chain agility as well leadership as key indicators that drive human logistics performance.

5.7 Suggested Areas for Future Studies

The study points out that it is difficult for the result to be generalized. This is because the sample size was small to be used to represent the entire population. Based on this, it is important for the future study to increase the size of the sample through the inclusion of other firms from neighbouring countries. The justification is that the study will make accurate conclusion on the topic under study. The study also identified that the information source was over relied on one single source. Thus, the use of quantitative research. Hence, it is important for future research to include the use of both qualitative and quantitative method. The motivation is to help ensure complementary of each of the method of study. Finally, it is important for future research to consider comparative analysis using both private and public firms with the purpose of expanding the scope of the study.

REFERENCE

Abidi, H., de-Leeuw, S. & Klumpp, M (2013). Measuring Success in Humanitarian SupplyChains. *International Journal of Business and Management Invention*, 2(8), 31-39 Adegan,

A., & Dooley, K. (2017). A typology of supply network resilience strategies: Complex collaborations in a complex world. *Journal of Supply Chain Management*, 57(1), 17–26.

Al-Romeedy, B. S (2019). Strategic Agility as a Competitive Advantage in Airlines - Case Study: Egypt Air. *Journal of the Faculty of Tourism and Hotels-University of Sadat City, 3(1), 1-5*

Altay, N., Gunasekaran, A., Dubey, R., & Childe, S. J. (2018). Agility and resilience as antecedents of supply chain performance under moderating effects of organizational culture within the humanitarian setting: A dynamic capability view. *Production Planning & Control, 29*(14), 1158–1174

Arthur, S & House, T (2014). Understanding, implementing and exploiting agility and leanness. *International Journal of Logistics: Research and Applications,* 5(1), 59–74.

Augier, M., & Teece, D. J. (2019). Dynamic capabilities and the role of managers in businessstrategy and economic performance. *Organization Science, 20*(2), 410-421

Aurélie, C (2018). A Model to Define and Assess the Agility of Supply Chains: Building on Humanitarian Experience. *International Journal of Physical Distribution & Logistics Management* 40(8/9), 722-741

Balcik, B., Beamon, B. M., Krejci, C. C., Muramatsu, K. M., & Ramirez, M. (2020). Coordination in humanitarian relief chains: practices, challenges and opportunities. *International Journal of Production Economics, 126*(1), 22-34

Baldini, G. (2012). 'Securing disaster supply chains with cryptography enhanced RFID', *Disaster Prevention and Management*, 21(1), 51–70

Baramichai, M., Zimmers, E.W., & Marangos, C.A. (2017). Agile supply chain transformation matrix: An integrated tool for creating an agile enterprise. *Supply Chain Management: An International Journal, 12*(5), 334–348.

Basheer, M., M., Siam, A. Awn & Hassan, S (2019), Exploring the role of TGM and supply chain practices for firm supply performance in the presence of information technology capabilities and supply chain technology adoption: A case of textile firms in Pakistan. *Uncertain Supply Chain Management*, 7(2): 275-288

Behl, A., & Dutta, P. (2019). Humanitarian supply chain management: A thematic literature review and future directions of research. *Annals of Operations Research, 283*(1), 1001–1044.

Bhimani, D & Song, F (2018). *Gaps between Research and practice in humanitarian logistics, Journal of Applied Business and Economics*, 18 (1), 1-67

Blome, C., Schoenherr, T., & Rexhausen, D. (2017). Antecedents and enablers of supply chain agility and its effect on performance: Adynamic capabilities perspective. *International Journal of Production Research, 51*(4), 1295–1318

Brandon-Jones, E., Squire, B., Autry, C. W., & Petersen, K. J. (2014). A Contingent Resource-Based Perspective of Supply Chain Resilience and Robustness. *Journal of Supply Chain Management*, *50*(3), 55-73

Brusset, F (2018). Antecedents and enablers of supply chain agility and its effect on performance: A dynamic capabilities perspective. *International Journal of Production Research*, 51(4), 1295–1318

Cegarra-Navarro, G. J., Wensley, K.P.A & Soto-Acosta, P (2016). Structured knowledge processes and firm performance: The role of organizational agility. *Journal of Business Research* 69(5)

Chandes, J., & Paché, G. (2020). Investigating humanitarian logistics issues: from operations management to strategic action. *Journal of Manufacturing Technology Management*.

Charbonnier-Voirin, G (2021). The impact of IT on supply chain agility and firm performance: an empirical investigation", *International Journal of Information Management*, 33(6), 909-916.

Chen, I. & Paulraj A. (2014). Towards a Theory of Supply Chain Management: The Constructs and Measurements, *Journal of Operation Management*, 22 (2), 119-150

Collis, J & Hussey, R (2014). Business research: A practical guide for undergraduate and postgraduate student. *Palgrave Macmillan*, 1(1), 230-301

Cozzolino, A., Rossi, S., & Conforti, A. (2012). Agile and lean principles in the humanitarian supply chain. The case of the United Nations world food Programme. *Journal of Humanitarian Logistics and Supply Chain Management*, *2*(1), 16–33.

Donaldson, S. I (2011). Organizational Management Theory. *Journal of Management Studies*, 1(2), 1-234

Dubey, R., & Gunasekaran, A. (2016). The sustainable humanitarian supply chain design: agility, adaptability and alignment. *International Journal of Logistics Research and Applications, 19*(1), 62–82.

Dubey, R., Gunasekaran, A., & Papadopoulos, T. 2019, Disaster relief operations: Past, present and future. *Annals of Operations Research, 283*(1–2), 1–8.

Dwivedi, Y. K., Shareef, M. A., Mukerji, B., Rana, N. P., & Kapoor, K. K. (2018). Involvement in emergency supply chain for disaster management: A cognitive dissonance perspective. *International Journal of Production Research, 56*(21), 6758–6773.

Eckstein, D., Goellner, M., Blome, C., & Henke, M. (2019). The performance impact of supply chain agility and supply chain adaptability: the moderating effect of product complexity. *International Journal of Production Research*, *53*(10), 3028-3046.

Em-dat, A. M (2017). Multiple-buyer procurement auctions framework for humanitarian supply chain management. *International Journal of Physical Distribution & Logistics Management, 40*(3), 202–227.

Esper, S & Crook, N (2014). "Understanding and development of supply chain agility and flexibility: a structured literature review", *International Journal of Management Reviews*, 19(4), 379-407

Falagara S. I., & Wakolbinger, T. (2019). Outsourcing of humanitarian logistics to commercial logistics service providers: An empirical investigation. *Journal of Humanitarian Logistics and Supply Chain Management*, 9(1), 47–69

Feizabadi, J., Gligor, D. M & Alibakhshi, S (2021). Examining the synergistic effect of supply chain agility, adaptability and alignment: a complementarity perspective. *Journal of Supply Chain Management*, 26(4), 1-193

Fiorini, D., Gunasekaran A, Ambilkar P. (2021). COVID-19 and supply chain risk mitigation: A case study from India. *The International Journal of Logistics Management*. 2(1), 12-65

Fosso-Wamba S. (2020). Humanitarian supply chain: A bibliometric analysis and future research directions. *Annals of Operations Research*. 1(1), 1-231

Frese, M., Beimel, S., & Schoenborn, S. (2013). Action training for charismatic leadership: Two evaluations of studies of a commercial training module on inspirational communication of a vision. *Personnel Psychology, 56*(3), 671–697.

Ghana Statistical Service, (2021). Annual Report from Ghana Statistical Service concerning Natural Disaster in Ghana. Retrieved on March 1, 2023

Gligor, D.M., & Holcomb, M.C. (2018). Understanding the role of logistics capabilities in achieving supply chain agility: A systematic literature review. *Supply Chain Management: An International Journal*, *17*(4), 438–453.

Gunasekaran, A., Papadopoulos, T., Dubey, R., Wamba, S. F., Childe, S. J., Hazen, B., & Akter, S. (2018). Big data and predictive analytics for supply chain and organizational performance. *Journal of Business Research, 70*, 308–317

Haavisto, I., & Goentzel, J. (2018). Measuring humanitarian supply chain performance in a multi-goal context. *Journal of Humanitarian Logistics and Supply Chain Management*. 1(1), 1-124

Hartog, E & Verburg, S (2017). From arms-length to collaborative relationships in the supply chain. *International Journal of Physical Distribution & Logistics Management*, 20(9), 750–765

Hitt, M. A., Keats, B. W., & DeMarie, S. M. (2016). Navigating in the new competitive landscape: Building strategic flexibility and competitive advantage in the 21st century. *Academy of Management Perspectives, 12*(4), 22–42

Heaslip , G., & Barber, E. (2014). "Using the military in disaster relief: Systemising challenges and opportunities", *Journal of Humanitarian Logistics and Supply Chain Management*, 4(1), 60 – 81

Hogg, M. A., Van Knippenberg, D., & Rast III, D. E. (2017). Intergroup leadership in organizations: Leading across group and organizational boundaries. *Academy of Management Review*, *37*(2), 232-255.

Humdan, R., Haq, A.N. & Boddu, V. (2020). “Analysis of agile supply chain enablers for Indian food processing industries using analytical hierarchy process”, *International Journal of Manufacturing Technology and Management*, 29(1/2), 30-47

Lawler, K &Worley, S (2016). A balanced approach to building agile supply chains”, *International Journal of Physical Distribution and Logistics Management*, 36(6), 431-444

Idris, W. & AL-Rubaie, M. (2013). Examining the Impact of Strategic Learning on Strategic Agility, *Journal of Management and Strategy*, 4(2), 70-77.

Ivanov, D., & Dolgui, A. (2020). Viability of intertwined supply networks: Extending the supply chain resilience angles towards survivability. A position paper motivated by COVID-19 outbreak. *International Journal of Production Research, 58*(10), 2904–2915

Jabbour, C. J. C., Sobreiro, V. A., de Sousa Jabbour, A. B. L., de Souza Campos, L. M., Mariano,
E. B., & Renwick, D. W. S. (2019). An analysis of the literature on humanitarian logistics and supply chain management: Paving the way for future studies. *Annals of Operations Research, 283*(1), 289–307.

Jermsittiparsert, K & Kampoomprasert, A (2019). The Agility, Adaptability, and Alignment as The Determinants of The Sustainable Humanitarian Supply Chain Design. *Humanities & Social Sciences Reviews,* 7(2), 539-547

Kabra, G., & Ramesh, A. (2018). Information technology, mutual trust, flexibility, agility, adaptability: Understanding their linkages and impact on humanitarian supply chain management performance. *Risk, Hazards & Crisis in Public Policy, 7*(2), 79–103.

Ketokivi, M. (2016). Point–counterpoint: Resource heterogeneity, performance, and competitive advantage. *Journal of Operations Management, 41*, 75-76.

Kirkpatrick S.A., & Locke E.A. (2016). Direct and indirect effects of three core charismatic leadership components on performance and attitudes. *Journal of Applied Psychology*, 81(1), 36–51

Kovacs, G., & Spens, K.M. (2017). Humanitarian logistics in disaster relief operations. *International Journal of Physical Distribution and Logistics Managemen*t, *37*(2), 99–114

Kovács, G., & Tatham, P.H. (2019). Responding to disruptions in the supply network from dormant to action. *Journal of Business Logistics, 30*(2), 215–229.

Kumar, P., Singh, R. K., & Shahgholian, A (2022). Learnings from COVID-19 formanaging humanitarian supply chains: systematic literature review and future research directions. *An International Journal, 27*(3), 1003–1041.

Lin, X., Chung C., Goldsby T.J., , & Holsapple C.W. (2018). A unified model of supply chain agility: The work-design perspective. *International Journal of Logistics Management*, 19(3), 408–435

Liu, H.-F., Ke, W.-L., Wei, K. K., & Hua, Z.-S. (2013). The impact of IT capabilities on firm performance: The mediating roles of absorptive capacity and supply chain agility. *Decision Support Systems, 54*, 1452-1462

Maestrini, V., Luzzini, D., Maccarrone, P., & Caniato, F. (2017). Supply chain performance measurement systems: A systematic review and research agenda. *International Journal of Production Economics*, 183(1), .299- 315.

Modgil, S., Singh, R. K., & Foropon, C. (2020). Quality management in humanitarian operations and disaster relief management: A review and future research directions. *Annals of Operations Research*. 3(1), 175-231

Nayak, R & Choudhary, S (2022). Operational excellence in humanitarian logistics and supply chain management through leagile framework: A case study from a non-mature economy. Production Planning & Control 33(10):1-16

Nikbakhsh, D & Farahani, R (2011). Improving the coordination in the humanitarian supply chain: exploring the role of options contract. *Annals of Operations Research*, 1–26.

Oloruntoba, R., & Kovács, G. (2019). A commentary on agility in humanitarian aid supply chains. *Supply Chain Management: An International Journal, 20*(6), 708–716.

Papadopoulos, T., Gunasekaran, A., Dubey, R., Altay, N., Childe, S. J., & Fosso-Wamba, S. (2017). The role of big data in explaining disaster resilience in supply chains for sustainability. *Journal of Cleaner Production, 142*, 1108–1118.

Ponomarov, S.Y., & Holcomb, M.C. (2019). Understanding the concept of supply chain resilience. *International Journal of Logistics Management*, *20*(1), 124–143

Prasad, S., Woldt, J., Tata, J., & Altay, N. (2019). Application of project management to disaster resilience. *Annals of Operations Research*, *283*(1-2), 561-590

Qin, R. & Nembhard, D. (2015). Workforce Agility in Operations Management, *Surveys in Operations Research and Management Science*, 20, 55-69.

Rahman, H., Tokman M., & Wheeler A.R. (2022). A supply chain manager selection methodology: Empirical test and suggested applications. *Journal of Business Logistics*, 27(2), 163–190

Queiroz, M. M., Ivanov, D., Dolgui, A., & Wamba, S. F. (2020). Impacts of epidemic outbreaks on supply chains: mapping a research agenda amid the COVID-19 pandemic through a structured literature review. *Annals of Operations Research*. 1(2), 23-56

Salem, R., Cavazos,F., Poch,J., & Mouthon,p., (2019). "Deflection Methodology in Humanitarian Logistics: Developing an Application Agro Supply Chains", *British Journal of Applied Science & Technology*, 11(5), 1-11

Salinas, A & Cole, H (2013). Agility in humanitarian aid (NGO) supply chains. *International Journal of Physical Distribution & Logistics Management*, 40(8/9), 623–635.

Sahin, A., Ertem, M. A., & Emel, E., (2017). "Using containers as storage facilities in humanitarian logistics", *Journal of Humanitarian Logistics and Supply Chain Management*, 4(2), 286 – 307

Sasu, D. D (2021. Number of natural disasters reported in Ghana 2011-2020. Retrieved on March 5th, 2023

Shafiq, M & Soratana, K (2019). Lean and Agile Paradigms in Humanitarian Organizations' *Logistics and Supply Chain Management. Logforum* 15(1), 1-654

Sharif, A.M., & Irani, Z. (2017). Supply chain leadership. *International Journal of Production Economics, 140*(1), 57–68.

Sodhi, M. S., & Tang, C. S. (2019). Research opportunities in supply chain transparency. *Production and Operations Management, 28*(12), 2946–2959

Srinivasan, R., & Swink, M. (2018). An investigation of visibility and flexibility as complements to supply chain analytics: An organizational information processing theory perspective. *Production and Operations Management, 27*(10), 1849–1867

Stewart, M.,& Ivanov, D. (2019). Design redundancy in agile and resilient humanitarian supply chains. *Annals of Operations Research*. 1(4), 56-98

Swafford, P. M., Ghosh, S., & Murthy, N. (2008). Achieving supply chain agility through IT integration and flexibility. *International Journal of Production Economics, 116*(2), 288–297

Tang, C., & Tomlin, B. (2018). The power of flexibility for mitigating supply chain risks. *International Journal of Production Economics, 116*(1), 12–27.

Tarafdar, M., & Qrunfleh, S. (2016). Agile supply chain strategy and supply chain performance: complementary roles of supply chain practices and information systems capability for agility. *International Journal of Production Research*, *55*(4), 925-938

Thomas, A. S., & Kopczak, L. R. (2015). From logistics to supply chain management: The path forward in the humanitarian sector. *Fritz Institute, 15*(1), 1–15.

Tse, Y. K., Zhang, M., Akhtar, P., & MacBryde, J. (2016). Embracing supply chain agility: An investigation in the electronics industry. *Supply Chain Management: An International Journal, 21*(1), 140–156

Vanov, D. (2020). Viable supply chain model: Integrating agility, resilience and sustainability perspectives Lessons from and thinking beyond the COVID-19 pandemic. *Annals of Operations Research*. 1(1), 45-86

Van Wassenhove, L. N. (2016). Humanitarian aid logistics: Supply chain management in high gear. *Journal of the Operational Research Society, 57*(5), 475–489

Vecchiato, D (2015). Evaluation of agility in supply chains using fuzzy association rules mining", *International Journal of Production Research*, 49(22), 6651-6661.

Venkatesh, K., Harrison, A. & Christopher, M (2019). Measuring agile capabilities in the supply chain", *International Journal of Operations and Production Management*, 21(1), 126-147.

Walker, D., Matinheikki, J., (2015). IPD from a Lean Supply Chain Management Perspective. *International Journal Logistics Syst. Manage*, 26(1), 85-104

Wassenhove, L.V. (2016). Humanitarian aid logistics: Supply chain management in high gear. *Journal of the Operational Research Society*, *57*(5), 475–489

Wagner, S., Thakur-Weigold, B., Gatti, A & Stumpf, W (2020). Supporting collaboration in humanitarian supply chains–insights from a design science project. *Production Planning & Control*, *29*(14), 1130–1144

Whitten, G.W., Green, K.W., Jr., & Zelbst, P.J. (2018). Triple-A supply chain performance. *International Journal of Operations & Production Management*, *32*(1), 28–48.

Wamba, S & Akter, H (2019). Understanding, implementing and exploiting agility and leanness. *International Journal of Logistics: Research and Applications*, 5(1), 59–74.

Yadav, K. D & Barve, A (2015). Analysis of critical success factors of humanitarian supply chain: An application of Interpretive Structural Modeling. *International Journal of Disaster Risk Reduction* 12(1), 34-87

Yamane, Taro. 1967. *Statistics, An Introductory Analysis*, 2nd Ed., New York: Harper and Row.

Young, K (2017). "Performance measurement in humanitarian logistics: a customer-oriented approach", *Journal of Humanitarian Logistics and Supply Chain Management*, 4,(2), 198 – 221

Yusuf, Y. Y., Gunasekaran, A., Musa, A & Dauda, M (2014). A relational study of supply chain agility, competitiveness and business performance in the oil and gas industry. *International Journal of Production Economics*, 147(1), 531-543

Zeimpekis, J., Wang, Z., & Ren, F. (2013). Optimization of humanitarian relief supply chain reliability: A case study of the Ya'an earthquake. *Annals of Operations Research, 283*(1), 1551–1572

KNUST