

SUPPLY CHAIN RESPONSIVENESS AND FINANCIAL
PERFORMANCE OF LOGISTICS FIRMS: A
CONTINGENTDYNAMIC CAPABILITIES PERSPECTIVE

KNUST
By

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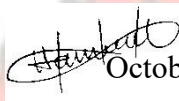


DECLARATION

“I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Kwame Nkrumah University of Science and Technology, Kumasi or any other educational institution, except where due acknowledgment is made in the thesis.”

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ABSTRACT

Logistics firms are critical nodes in many supply chains but operate in time-based, dynamic competitive environments where customers expect high levels of supply chain responsiveness at low prices. Past research on manufacturing supply chains and competitive priorities literature suggests that increasing supply chain responsiveness can have costbenefit trade-off consequences on financial performance. However, besides the concerns that such trade-offs vary across (logistics) service and manufacturing supply chains, previous theoretical and empirical perspectives overlook the boundary conditions of the performance effects of supply chain responsiveness. Accordingly, this study uses contingent-dynamic capabilities arguments to develop and analyze a conceptual model to describe the relationship between supply chain responsiveness and logistics firms' financial performance under varying price strategy conditions and customer dynamism. Primary data from 226 logistics firms in Ghana and moderated regression analysis are used to test the proposed conceptual model. Findings from the study indicate that although supply chain responsiveness has a positive relationship with financial performance, conditions of high prices or high customer dynamism weaken the relationship. The broad research implication of these results is that the supply chain responsiveness-financial performance relationship is context-dependent and should be theorized and analyzed accordingly. Practically, insights from the study suggest that, while investing in supply chain responsiveness, managers should carefully consider the extent to which firms' internal and external environmental factors foster the market value and profit-generation mechanisms associated with supply chain responsiveness. What is novel about this study is that, unlike previous studies, it uses a contingency approach to delineate and empirically demonstrate that supply chain responsiveness is not always a beneficial strategy for logistics firms.

DEDICATION

I dedicate this work to my dear late mother, Mrs. Juliana Sarkodie. You always sacrificed to get the best for me.

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TABLE OF CONTENTS

DECLARATION	i
ABSTRACT	ii
DEDICATION.....	iii
ACKNOWLEDGEMENT	iv
TABLE OF CONTENTS	v
LIST OF TABLES.....	viii
LIST OF FIGURES.....	ix

CHAPTER ONE

1 GENERAL INTRODUCTION

1

1.1. Background of the Study

1

1.2. Problem Statement

4

1.3. Research Question and Objectives

6

1.5. Contributions from the Study

7

1.6. Scope of the Study

9

1.7. Summary of Methodology

10

1.8. Organization of the Study

10

CHAPTER 2

11 LITERATURE REVIEW

11

2.1. Introduction	11
2.2. Conceptual Review	11
2.2.1. Supply chain responsiveness	11
2.2.2. Customer dynamism	18
2.2.3. Price strategy	19
2.2.4. Financial performance	20
2.3. Theoretical Review	21
2.3.1. Dynamic capabilities theory	21
2.3.2. Contingency theory	24
2.4. Empirical Review	25
2.4.1. Performance constructs in supply chain responsiveness research	25
2.4.2. Theoretical views on the performance effects of supply chain responsiveness	26
2.4.3. Performance effects of supply chain responsiveness and contingencies	29
2.4.4. Empirical context and methodology	29
2.4.5. Major issues in previous studies and the direction of the present study	29
2.5. Conceptual Model and Hypotheses Development.....	30
2.5.1. The supply chain responsiveness and financial performance link	31
2.5.2. The moderating effect of price strategy	33
2.5.3. The moderating effect of customer dynamism	35
2.6. Chapter Summary	37
CHAPTER THREE	
38	METHODOLOGY
.....	38
3.1. Introduction	38

3.2. Philosophical Perspective	38
3.3. Research Approach and Design	39
3.4. Empirical Setting and Population	41
3.5. Sample and Sampling Approach	42
3.6. Unit of Analysis and Key Informants	43
3.7. Construct Operationalization and Survey Questionnaire	44
3.8. Data Collection	48
3.9. Data Analysis	48
3.10. Ethical Consideration	51
3.11. Chapter Summary	52
CHAPTER 4	
53 RESULTS AND DISCUSSION	53
4.1. Introduction	53
4.1. Response Analysis and Profile Information	53
4.2. Measurement Model Analysis	57
4.3. Structural Model Analysis and Hypothesis Evaluation	63
4.4 Robustness Analysis	66
4.5. Discussion	67
4.5. Chapter Summary	70
CHAPTER 5	
71	
CONCLUSIONS AND RECOMMENDATIONS	71

5.1. Introduction	71
5.2. Summary of the Study's Findings	71
5.3. Conclusion	72
5.4. Recommendations	73
REFERENCE	77
APPENDIX: SURVEY INSTRUMENTS	89

LIST OF TABLES

Table 2.1. Definition, conceptualization, and measurement of supply chain responsiveness.	13
Table 2.2. Related past empirical studies.	27
Table 4.1. Early versus late respondents.	54
Table 4.2. Profile information.	55
Table 4.3. Effects of informant's managerial position level.	56
Table 4.4. Correlation between respondent competence and variables of interest.....	56
Table 4.5. Item descriptive statistics and results from exploratory factor and reliability	

analyses.	
59 Table 4.6. Results from confirmation factor analysis.	
60	
Table 4.7. Discriminant validity test (AVE-SV approach).	61
Table 4.8. Common method bias test.	62
Table 4.9. Correlation and descriptive results.	64
Table 4.11: SEM results (robustness check).	66

LIST OF FIGURES

Figure 2.1. Research attention to supply chain responsiveness.	12
Figure 2.2. Summary conceptual perspectives on supply chain responsiveness (SCR).	17
Figure 2.2. Conceptual model.....	30
Figure 4.1. Moderating effect of price strategy.	65
Figure 4.2. Moderating effect of customer dynamism.	65

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CHAPTER ONE

GENERAL INTRODUCTION

1.1. Background of the Study

Logistics firms are essential nodes in virtually all supply chains. They support and facilitate the flow of goods and services in business-to-business, business-to-consumer, and consumer-to-consumer supply chains. Among other things, such firms provide transportation and distribution platforms and services, freight consolidation and freight forwarding services, and warehousing, packaging, material handling, tracing & tracking, and product returns services, allowing manufacturers, raw and component suppliers, and other supply chain actors to focus on and exploit their core competences (International Finance Corporation, 2020).

Logistics firms contribute to supply chain value and profitability by creating and maximizing place utility, time utility, form utility, and possession utility for diverse socio-economic actors. Such value-additions translate into billions of dollars globally (Atayah *et al.*, 2022). For instance, the UK logistics sector contributes £127 billion Gross Value Added to the UK economy (Logistics UK, 2021), while in 2021, the U.S. business logistic cost rose by 22.4% to \$1.85 trillion, accounting for 8% of the 2021's US\$23 trillion GDP (Kearney, 2022). With a market size of about US\$8.6 trillion and an industry cost of US\$9.1 trillion, the global logistics sector accounts for international trade worth over €5.7 trillion (Statistica, 2022).

However, as in many sectors, logistics firms experience acute competition while their operations are overwhelmed by complexity, uncertainty, dynamism, and disruptions (Atayah *et al.*, 2022; Kumar and Bhatia, 2021; Banerjee, 2018). The negative impacts of the

Covid-19 pandemic on logistics firms' performance were significant (Singh *et al.*, 2020; Atayah *et al.*, 2022). Moreover, these firms were also the “Messiahs” not only for businesses and consumers but also to society as a whole, providing essential items (e.g., food and medical supplies) and linking disconnected socio-economic systems together (Singh, 2020). Therefore, understanding the drivers of the financial performance of logistics firms is paramount to ensuring their survival and safeguarding their critical contributions to the global economy.

The supply chain environment of most industries is constantly expanding and changing in form and structure, triggering uncertainties and unexpected disruptions. In particular, product life cycles are shortening, competition and product substitutes are amplifying, customers demand more value at low prices, and customers' requirements are volatile (Fianko *et al.*, 2022; Ataburo *et al.*, 2022). As a result, firms are compelled to offer cost-effective, flexible, and responsive solutions to achieve performance outcomes (Nenavani and Jain, 2021; Yang *et al.*, 2019; Moyano-Fuentes *et al.*, 2016). In this sense, scholars have proposed supply chain responsiveness as a crucial dynamic capability (Ayoub and Abdallah, 2019; Mandal, 2015) that can enable firms to simultaneously pursue multiple competitive priorities (e.g., flexibility, delivery, efficiency, quality priorities) to harness financial performance (Ataburo *et al.*, 2022; Nenavani and Jain, 2021).

Supply chain responsiveness, the ability of the firm to rapidly address diverse and changing customer market requirements, is a widely applied concept in manufacturing supply chains and has received growing scholarly attention (Nenavani and Jain, 2021; Giannakis *et al.*, 2019). Businesses have shown considerable interest in supply chain responsiveness investment. For example, the P&G Rakona plant is known for deploying advanced technologies to redesign its global supply chain to increase responsiveness. This company

is recognized for its flexibility and speed to respond to the diverse needs of partners in a time-effective manner (Brunsman, 2018). Again, DHL engages in innovative, flexible, and agile supply chain models that can respond to changing volumes, product cycles, and multichannel distribution demands. The company prioritizes technological advancement to keep up with rapid changes in customers, markets, and products and to stay ahead of the competition (DHL, 2022).

Past empirical studies suggest that investment in supply chain responsiveness pays off in varied ways: it enhances customer and market performance (Asamoah *et al.*, 2021; Kim and Lee, 2010), competitive advantage (Thatte *et al.*, 2013), operational performance (Nenavani and Jain, 2021; Mandal, 2015), and firm performance (Dobrzykowski *et al.*, 2015; Nenavani and Jain, 2021). However, literature analysis indicates that such empirical insights are based mainly on manufacturing firms (see Table 2.2) whose supply chain network and operational characteristics are quite distinct from those of services firms such as logistics firms. For example, compared to manufacturing firms, service firms generally follow a pull-demand supply chain model, keeping a minimal level of inventory and emphasizing customization and flexibility, making supply chain responsiveness more imperative for service firms. Meanwhile, increasing supply chain responsiveness might come at extra costs. Because there may be different magnitudes of efficiency and responsiveness trade-offs associated with pull and push supply chain models (Wagner *et al.*, 2012), it is crucial for research to examine the financial performance implication of supply chain responsiveness in logistics firms.

This research joins the scholarly conversation on the links between supply chain responsiveness and performance outcomes and seeks to extend the literature to the context of logistics firms.

It first examines whether previous findings on supply chain responsiveness and performance consequences are replicable in logistics firms. Second, unlike previous studies that assume supply chain responsiveness is universally beneficial, this research explores the internal and external contingencies that characterize the financial performance effect of supply chain responsiveness. Finally, the subsequent section problematizes the existing literature and how the present study extends current knowledge.

1.2. Problem Statement

Past empirical studies have essentially drawn on resource-based/ dynamic capabilities literature (e.g., Mandal, 2015; Story *et al.*, 2021; Thatte *et al.*, 2013) and organizational information processing theory (Yu *et al.*, 2019; Dobrzykowski *et al.*, 2015) to examine the benefits of supply chain responsiveness. These studies argue that supply chain responsiveness's benefits to firms may be in many ways (see, e.g., Nenavani and Jain, 2021; Yu *et al.*, 2019; Mandal, 2015; Thatte *et al.*, 2013). However, despite the valuable insights from previous studies, empirical understanding of the relationship between supply chain responsiveness and financial performance is scarce. As a result, there is a lack of explicit consideration of financial performance in previous studies. This research contends that financial performance represents the firm's bottom line (Gligor *et al.*, 2015). Still, it is also unique from the other performance outcomes considered in past studies (see Table 2.2 for details) because it is a function of the costs and benefits of producing and delivering products/services. Therefore, because supply chain responsiveness has both cost and benefit implications (Wagner *et al.*, 2012), an empirical assessment of the link between supply chain responsiveness and financial performance is imperative.

Moreover, by ignoring the boundary conditions of the link between supply chain responsiveness and performance in general (Table 2.2), previous studies follow the false presumption that supply chain responsiveness is always beneficial and that differences in an internal or external operating environment do not matter. Achieving higher levels of supply chain responsiveness at low operational efficiency/cost is difficult (Wagner *et al.*, 2012; Lee, 2004). There are monetary costs associated with increasing supply chain responsiveness (e.g., expenditure on modifying standard operating procedures to shorten customer lead time). Again, increasing supply chain responsiveness may disrupt existing operating routines, undermining operational efficiency. Additionally, as supply chain responsiveness is underpinned by operational flexibility (Williams *et al.*, 2013), it restricts standardization and economies of scale of operations. By implication, since price levels of services primarily depend on costs of operations (Morris and Calantone, 1990; Swink *et al.*, 2005), it appears high prices, relative to low prices, when bundled with increased supply chain responsiveness, would benefit financial performance more. Low prices are considered orderwinners when service levels are constant (Wiengarten *et al.*, 2019; Quesada *et al.*, 2008). Moreover, customer value theory (Zeithaml *et al.*, 2020; Zeithaml, 1988) and competitive priorities literature (Quesada *et al.*, 2008; Ferdows and De Meyer, 1990) suggest that high supply chain responsiveness, high prices configuration might be less competitive and beneficial compared to high supply chain responsiveness, low prices configuration.

Furthermore, the need for and strategic value of supply chain responsiveness is frequently associated with environmental variables, particularly customer dynamism (Ataburo *et al.*, 2022; Nenavani and Jain, 2021). However, beyond concerns about the sufficiency of dynamic environments for boosting supply chain responsiveness (Ataburo *et al.*, 2022), there is a lack of theory and evidence on whether dynamic environments are necessary

conditions for deriving superior financial benefit from supply chain responsiveness. When customer requirements are fast-changing, firms with low supply chain responsiveness may struggle to enhance customer value and profitability. Additionally, increasing supply chain responsiveness under low conditions of customer dynamism is not economically prudent in that the costs of such investment may outweigh the corresponding customer value-additions. Notwithstanding, other things being equal, the costs of increasing supply chain responsiveness amplify for firms that serve more dynamic customers than those that serve customers with more stable characteristics (Lee and Griffith, 2019). Therefore, the benefits of investing more in supply chain responsiveness in dynamic customer environments can be canceled off by its corresponding high costs.

An additional shortcoming in the extant literature is that empirical analysis of the relationship between supply chain responsiveness and performance largely ignores servicefocused supply chains. Meanwhile, manufacturing and service supply chain environments differ on several dimensions. For example, high customization (or low standardization) and low inventory are distinctive features of service supply chains, which have significant implications on the cost-benefit consequences of supply chain responsiveness. Therefore, to evaluate the generality of existing arguments and cross-validation of previous research findings, empirical analysis of the performance outcomes of service supply chains is essential.

1.3. Research Question and Objectives

This study answers the following research question: *how and when does supply chain responsiveness relate to financial performance using logistics firms in Ghana as an empirical setting*. The study uses the dynamic capabilities theory to analyze whether supply chain responsiveness positively or negatively relates to the financial performance of logistics firms. In addition, it extends the dynamic capabilities theory to the contingent theory to analyze the moderating effects of price strategy and customer dynamism on the link between supply chain responsiveness and financial performance of logistics firms. Formally stated, the study addresses three related research objectives:

- 1) To examine the extent to which supply chain responsiveness is related to financial performance;
- 2) To explain the extent to which price strategy moderates the link between supply chain responsiveness and financial performance; and
- 3) To examine how customer dynamism moderates the link between supply chain responsiveness and financial performance.

1.5. Contributions from the Study

This study advances multiple streams of literature, including but not limited to supply chain responsiveness research, competitive priorities literature, and the dynamic capabilities theory. Two contributions result from the study's empirical analysis of the link between supply chain responsiveness and financial performance using data from logistics firms. First, the study expands the limited empirical studies on the performance outcomes of supply chain responsiveness. By focusing on a previously underexplored performance outcome, financial performance (Table 2.2), this study evaluates whether similar conclusions about the benefits

of supply chain responsiveness can be achieved while considering financial performance. Second, given the lack of empirical consideration of service firms in previous studies, data from logistics firms allows the present research to broaden the contextual scope of existing empirical understanding of the supply chain responsiveness-performance linkage. Though the supply chain operations of service firms are distinct and can have different implications on the financial performance outcome of supply chain responsiveness, findings from this study generally suggest that financial performance is greater for logistics firms that have stronger supply chain responsiveness than those with weaker supply chain responsiveness. This finding aligns typically with and strengthens the conclusions from previous studies (e.g., Nenavani and Jain, 2021; Dobrzykowski *et al.*, 2015; Thatte *et al.*, 2013).

Notwithstanding, price strategy and customer dynamism moderate the relationship between supply chain responsiveness and the financial performance of logistics firms. Along this line, insights from this study question the assumption that supply chain responsiveness is always better and expounds on the price strategy and customer dynamism contingencies that underlie the financial performance effect of supply chain responsiveness. Furthermore, the study highlights the complexities of this relationship by presenting theoretical insights on how price strategy or customer dynamism may positively and negatively moderate the supply chain responsiveness-financial performance relationship. To this end, the present study offers an improved understanding of the existing theoretical literature and provides richer practical guidelines for supply chain responsiveness investment and returns decisions.

Additionally, this study contributes to the literature on competitive priorities and supply chain-environment fit. Some scholars agree that firms can simultaneously pursue multiple competitive priorities, such as supply chain responsiveness and low prices (Banchuen *et al.*,

2017; Ferdows and De Meyer, 1990), although there can be trade-offs (Wagner *et al.*, 2012). However, there is a lack of empirical understanding of how supply chain responsiveness interacts with price strategy to affect specific performance outcomes. The present study's consideration of how price strategy moderates the supply chain responsiveness-financial performance relationship addresses this shortcoming of the competitive priorities literature. This line of inquiry, which further considers the moderating effect of customer dynamism, advances the limited knowledge of the supply chain strategy-environment fit and performance relationship in the competitive priorities literature (Wiengarten *et al.*, 2019; Wagner *et al.*, 2012).

The present study further extends the narrowed applications of the dynamic capabilities theory to supply chain responsiveness research (e.g., Ayoub and Abdallah, 2019; Mandal, 2015). Compared to previous studies, this study uses a contingent-dynamic capability perspective to demonstrate how blindly following the logic of the dynamic capabilities theory to assume that the supply chain responsiveness is always beneficial may lead to wrong conclusions. Overall, insights from this study illustrate how contingent-dynamic capability models better explain the relationship between supply chain responsiveness and performance.

1.6. Scope of the Study

Conceptually, this study focuses on the intersection between supply chain capabilities, competitive priorities literature, and the supply chain strategy-environment fit literature (Wagner *et al.*, 2012; Wiengarten *et al.*, 2019). From these aspects of the supply chain literature, the study uses the dynamic capabilities theory and the contingency theory to

theorize and empirically analyze how supply chain responsiveness, independently and in conjunction with price strategy and customer dynamism, account for heterogeneity in financial performance. The data for the empirical work is from logistics firms in Ghana.

1.7. Summary of Methodology

This study follows a deductive approach and employs a survey design to collect empirical data from 226 logistics firms operating in Ghana. Senior managers of the firms provided the data through a face-to-face, drop-and-collect questionnaire administration approach. The constructs were measured with previous indicators and were pretested to ensure reliability and validity. In addition, the study employed covariance-based confirmatory factor analysis to validate the study's measurement indicators before testing its hypotheses. The hypotheses were tested using moderated regression analysis to test.

1.8. Organization of the Study

This study is organized into five chapters. Chapter one presents the background of the study and the study's problem statement, research objectives, significance, and methodology. Chapter two reviews the conceptual literature on supply chain responsiveness, customer dynamism, price strategy, and financial performance. Again, it analyzes empirical literature on the performance consequences of supply chain responsiveness. The dynamic capabilities theory and the contingency theories underpinning the study are also discussed.

Moreover, the chapter develops the study's conceptual model and hypotheses. Chapter three discusses the study's research design, empirical setting, population, sample and sampling approach, unit of analysis and key informants, measurement and questionnaire development, data collection strategy, data analysis strategy, validity, reliability, and ethical considerations. Chapter four focuses on data analysis and presentation results. It additionally

discusses the implications of the results for theory and practice. Finally, chapter five summarizes the key conclusions of the study's findings and discusses the study's limitations and directions for future research.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

This chapter discusses conceptual and empirical literature on the supply chain responsiveness concept, focusing on its conceptual domain and performance implications.

In addition, the conceptual and empirical literature on the moderating variables is reviewed.

Furthermore, a discussion of the study's theoretical perspective, contingent-dynamic capabilities theory, is presented. This is followed by formal specifications of the research hypotheses and the underlying theoretical arguments.

2.2. Conceptual Review

This section discusses the conceptual domains of the study's core concepts (supply chain responsiveness, customer dynamism, low-price strategy, and financial performance). It further explains how each idea is conceptualized and operationalized in the study.

2.2.1. Supply chain responsiveness

The responsiveness idea is important to many fields of study including strategy, marketing, and supply chain management, and it has particularly received exponential scholarly attention in the last decade (Figure 2.1). Nonetheless, there is a lack of consensus on the meaning and measurement of supply chain responsiveness (Table 1). In its dictionary form,

responsiveness connotes a system's inclination to “act or respond readily or without hesitation” or the ability to produce or exhibit the desired reaction to an external stimulus (Merriam-Wester Online Dictionary). Responsive systems exhibit several important but related features: preparedness, alertness, swiftness, agility, etc. (Merriam-Wester Online Dictionary). As discussed in the following paragraphs, prior studies have used similar features to define and measure supply chain responsiveness.

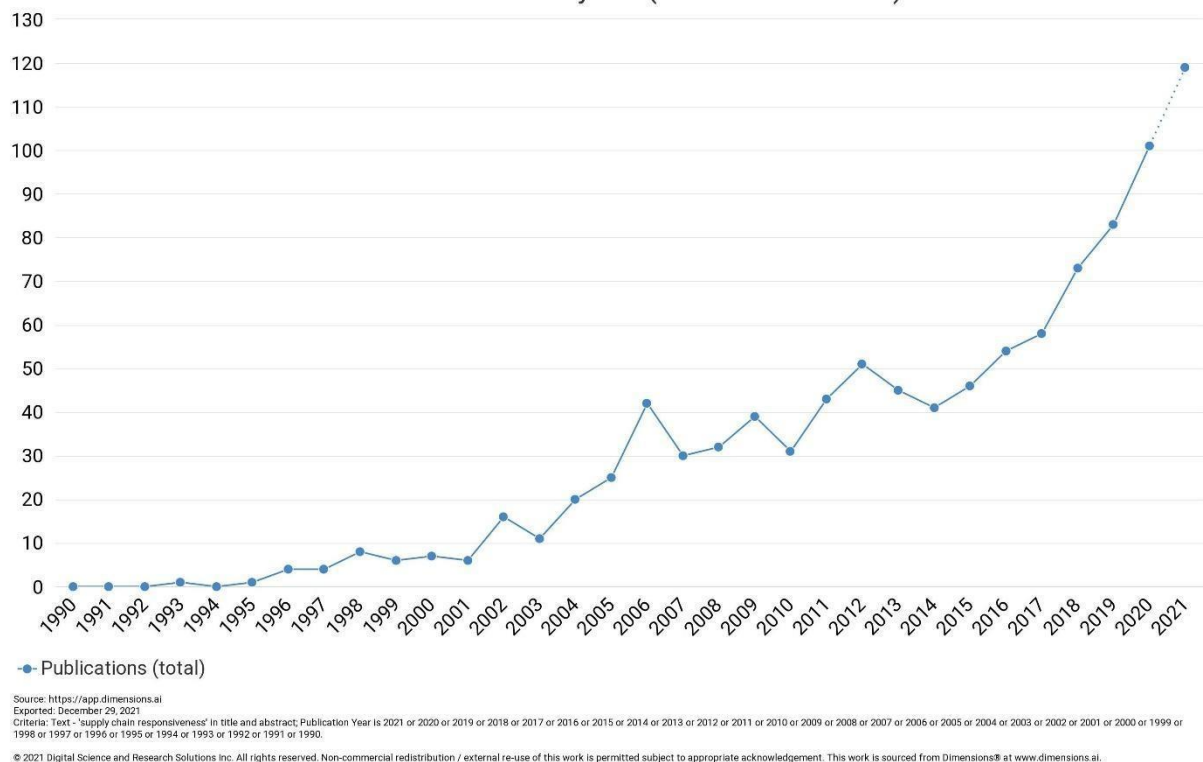


Figure 2.1. Research attention to supply chain responsiveness.

Definitions of supply chain responsiveness share two common ideas: *customer-orientation* and *timeliness*. Supply chain responsiveness is a customer-focused concept (Kim *et al.*, 2013) in that it indicates how well a firm directs its effort toward addressing external customer requirements (e.g., Giannakis *et al.*, 2019; Fawzi and Abdallah, 2019; Gunasekaran *et al.* 2008). In terms of timeliness, supply chain responsiveness captures

delivery performance objectives relating to shorter customer lead time or order-fulfillment time (e.g., Nenavani and Jain, 2021; Giannakis *et al.*, 2019; Hum and Parlar, 2014).

Table 2.1. Definition, conceptualization, and measurement of supply chain responsiveness.

<i>Authors</i>	<i>Definition</i>	<i>Conceptualization</i>	<i>Sample measurement indicators</i>
Asamoah <i>et al.</i> (2021)	How the supply chain can be prompt and the extent to which it addresses the changing needs of customers with regard to their demand as well as responds to other changes in the dynamic business environment.	Multi-dimensional:	<ul style="list-style-type: none"> • Our operations system responds rapidly to changes in product volume demanded by customers • Our operations system responds rapidly to changes in product mix demanded by customers.
		<ul style="list-style-type: none"> • Supplier network responsiveness 	<ul style="list-style-type: none"> • Our major suppliers consistently accommodate our requests • Our major suppliers have outstanding on-time delivery record with us
		<ul style="list-style-type: none"> • Logistics process responsiveness 	<ul style="list-style-type: none"> • Our logistics system rapidly adjusts warehouse capacity to address demand changes • Our logistics system rapidly varies transportation carriers to address demand changes
Kim <i>et al.</i> (2013)	The ability of a supply chain to satisfy customers' needs (p. 5602)	Unidimensional	<ul style="list-style-type: none"> • Responsiveness to customer • Customer satisfaction • Responsiveness for satisfactions
Williams <i>et al.</i> (2013)	The ability to change or react to customer requirements with little penalty in time, effort, cost or performance	new product flexibility, volume flexibility, variety flexibility, modification flexibility	<ul style="list-style-type: none"> • We change quickly change the quantities for products we produce or handle • We can process a wide variety of product in our facilities • We perform product/service modifications quickly • The time required to develop and introduce new products is extremely low
Essuman <i>et al.</i> (2021)	The degree to which a firm addresses diverse customer needs in a timeeffective manner.	Unidimensional	<ul style="list-style-type: none"> • Speed in responding to the changes in the market (i.e., customer requirements). • Flexibility in responding to changing customer requirements.
Fawzi and Abdallah (2019)	The ability of the company's supply chain to respond effectively and rapidly to the changing needs and requirements of its customers.	Unidimensional	<ul style="list-style-type: none"> • Our supply chain is able to adjust capacity so as to accelerate or decelerate production in response to changes in customer demand • Our supply chain is able to meet special customer specification.

Giannakis <i>et al.</i> (2019)	The ability of a supply chain to respond to market demand in a timeeffective manner.	Multi-dimensional <ul style="list-style-type: none"> • Visibility of information across the supply chain • Rapid detection and reaction to supply chain risks • Flexibility of a supply chain 	Not applicable
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Table 2.1. Continued.

<i>Authors</i>	<i>Definition</i>	<i>Conceptualization</i>	<i>Sample measurement indicators</i>
Gunasekaran <i>et al.</i> (2008)	Ability of firm's supply chain to react quickly and cost effectively to changing market requirements.	Unidimensional	Not applicable
Hum and Parlar (2014)	The probability that an order placed now will be fulfilled within t time units.	Unidimensional	Time it takes to fulfil customer order
Jahre <i>et al.</i> (2015)	How quickly and effectively the supply chain responds to shifting market needs and competitive environments	Unidimensional	Not applicable
Moyano-Fuentes <i>et al.</i> (2016)	Ability to the simultaneous achieve <i>flexibility</i> and delivery performance	Multi-dimensional: <ul style="list-style-type: none"> • Flexibility performance 	<ul style="list-style-type: none"> • Our company can quickly modify products to meet our major customer's requirements • our company can quickly introduce new products into the market
		<ul style="list-style-type: none"> • Delivery performance 	<ul style="list-style-type: none"> • Our company has an outstanding on-time delivery record to our major customer • The lead time for fulfilling customers' orders is short
Nenavani and Jain (2021)	Responsiveness is the ability to react purposefully and within an appropriate time-scale to customer demand or changes in the marketplace.	Unidimensional.	<ul style="list-style-type: none"> • Our supply chain is able to handle difficult nonstandard orders. • Our supply chain is able to rapidly adjust capacity so as to accelerate or decelerate production in response to changes in customer demand.

Besides these characteristics, other scholars believe supply chain responsiveness encapsulates operations/manufacturing and or delivery flexibility (e.g., Chhetri *et al.*, 2021; Moyano-Fuentes *et al.*, 2016; Thatte *et al.*, 2013; Williams *et al.*, 2013). For instance,

Moyano-Fuentes *et al.* (2016) define supply chain responsiveness as the supply chain's ability to simultaneous achievement of *flexibility* and *delivery* performance; Chhetri *et al.*, (2021) contend that supply chain responsiveness is an organization's capability to *alter* its products at a short notice to fulfill uncertain and highly *diverse* customer demand depends on how responsive a supply chain is [italicized words are for emphasis].

From a supply chain or operations strategy standpoint, flexibility explains the extent to which a firm can alter its operations and delivery processes and capabilities to address changing and diverse customer requirements (Kim *et al.*, 2013; Williams *et al.*, 2013). Meanwhile, other scholars contend that manufacturing/operations/supply chain flexibility is a unique construct and it differs from but can drive supply chain responsiveness (Kim *et al.*, 2013). In William *et al.*'s (2013) view, the flexibility part of supply chain responsiveness is externally-focused (i.e., changing production or delivery quantities and quality to meet customer requirements) rather than internally-focused (e.g., altering human or machine resource quantity and quality). William *et al.* (2013) contend that the flexibility view of supply chain responsiveness focuses attention on tactical flexibilities that occur at the business unit level (e.g., manufacturing plant, product supply chain) rather than at the functional level or lower-level operations. Along this line, the authors argue that supply chain responsiveness manifests in four important areas: new product flexibility, volume flexibility, variety flexibility, and modification flexibility.

Moreover, some studies present supply chain responsiveness as an organizational/supply chain *capability* (Williams *et al.*, 2013; Kim and Lee, 2010), a supply chain *performance* dimension (Ataburo *et al.*, 2022; Moyano-Fuentes *et al.*, 2016), or both (Qrunfleh and Tarafdar, 2013). There is a lack of circumspection in the analysis of supply chain responsiveness as a capability or performance measure. For example, Qrunfleh and Tarafdar

(2013) stress that supply chain responsiveness is “an important indicator of how well the supply chain strategy fulfills its objectives since it denotes the ability of the supply chain to adapt to changing customer needs and ultimately lead to elevated performance” (p. 572). Per the present study’s focus on examining financial performance as a function of variations in supply chain responsiveness using the contingent-dynamic capabilities standpoint, supply chain responsiveness is conceptualized as a capability of the firm, specifically a dynamic capability that enables the firm to orchestrate adaptive and rapid responses in an effort to meet customer market demands.

As shown in Table 2.1, the dimensionality of supply chain responsiveness is equally equivocal: while some studies analyze the concept as *unidimensional* (e.g., Essuman *et al.*, 2021; Fawzi and Abdallah, 2019; Kim *et al.*, 2013; Kim and Lee, 2010), others consider it as *multidimensional* (e.g., Giannakis *et al.*, 2019; Moyano-Fuentes *et al.*, 2016; Williams *et al.*, 2013). However, the latter conceptualization focuses on different dimensions of the concept. Nenavani and Jain (2021) note that a production system's response time and consumers' willingness to wait comprise supply chain responsiveness; Asamoah *et al.* (2021) and Thatte *et al.* (2013) conceptualize and operationalize supply chain responsiveness in terms of operations systems responsiveness, supplier network responsiveness, and logistics responsiveness; Williams *et al.* (2013) draws on flexibility literature to propose that supply chain responsiveness comprises four distinct reflective components: new product flexibility, volume flexibility, variety flexibility, and modification flexibility; Moyano-Fuentes *et al.* (2016) view is that flexibility performance and delivery performance measures of operations performance constitute supply chain responsiveness while Giannakis *et al.* (2019) identify supply chain information visibility, supply chain risk detection and reaction, and supply chain flexibility as supply chain responsiveness elements.

Due to the lack of agreement on the multi-dimensional view of supply chain responsiveness, this present research follows a unidimensional idea to define and measure supply chain responsiveness as a supply chain capability construct that explains the extent to which firm operations and distribution systems can rapidly and flexibly react to customer market requirements (Gunasekaran *et al.*, 2008; Moyano-Fuentes *et al.*, 2016). This conceptual approach to supply chain responsiveness incorporates core aspects of the concept as present in both the unidimensional and multidimensional views: supply chain responsiveness is a customer-facing concept (Giannakis *et al.*, 2019; Kim *et al.*, 2013); it is about speed in serving customer markets (Nenavani and Jain, 2021; Hum and Parlar, 2014); it connotes the idea of flexibility directed at helping customer markets (Chhetri *et al.*, 2021; Williams *et al.*, 2013), and tend to focus on downstream aspects of the supply chain (Williams *et al.*, 2013).

<i>Existing perspectives on SCR:</i>	<i>SCR perspective adopted in the present study:</i>
<ul style="list-style-type: none"> • Customer-focused concept • Timeliness/speed concept • Flexibility concept • Capability versus performance concept • Unidimensional versus multidimensional concept • Supply chain level concept, operationalized perspective 	<ul style="list-style-type: none"> • Customer-focused concept • Timeliness/speed concept • Flexibility concept • Capability concept • Unidimensional concept • Supply chain level concept, operationalized from the focal firm's perspective

Figure 2.2. Summary conceptual perspectives on supply chain responsiveness (SCR).

Moreover, though supply chain responsiveness is often thought of as a supply chain level construct, empirical studies have measured and analyzed it from the focal firm's standpoint (Williams *et al.*, 2013; Qrunfleh and Tarafdar, 2013; Kim and Lee, 2010). Studies that use the supply chain as a reference frame for measuring supply chain responsiveness (Qrunfleh and Tarafdar, 2013; Kim and Lee, 2010) tend to assume that firms have independent supply

chains. Again, they assume their informants have an equal or similar level of understanding of the supply chain. This lack of clarity, however, can introduce measurement problems. For example, while asking respondents to indicate how responsive their "supply chain" is, some may consider the supply chain in this context as a dyad downstream or upstream supply chain network and a triad supply chain network in providing their responses. To avoid this concern, and following prior research (Moyano-Fuentes *et al.*, 2016), the present study operationalizes the concept from the focal firm perspective regarding how well the focal firm exhibits key supply chain responsiveness manifestations (Wagner *et al.*, 2012). Figure 2.2 summarizes this study's conceptualization and operationalization of supply chain responsiveness in relation to prior studies.

2.2.2. Customer dynamism

There is an ongoing discussion on the role and influence the business environment has on a firm's decisions and overall performance. The environment within which businesses operate has different dimensions, including but not limited to dynamism, complexity, uncertainty, and munificence (Fuentes-Fuentes *et al.*, 2004; Revilla *et al.*, 2010). In addition, the environment is made of different actors or agents at different levels (micro, aggregate, and macro) whose characteristics may interest and or influence the firm's decisions, activities, and outcomes: customers, suppliers, competitors, regulators, community, and so forth (Chhetri *et al.*, 2021).

This study focuses on the dynamism dimension of the environment and analyzes it at the customer level for at least two reasons. First, as explained in Section 2.2.1, the study's predictor variable, supply chain responsiveness, is a customer-focused construct. The responsiveness view of the supply chain management suggests that a firm's operations

should be planned and executed from a customer's perspective, as customers are perceived to be the blood life of many firms and their success (Richey *et al.*, 2021). Second, and relatedly, the idea of supply chain responsiveness is primarily characterized by changing customer requirements (Cui *et al.*, 2005; Richey *et al.*, 2021). Rapid changes in the requirements of customers call for organizations to modify their activities in terms of processes, goods and services, and systems to continue to meet changes in such requirements to be competitive (Cui *et al.*, 2005).

Environmental dynamism refers to the rate and magnitude of irregular changes in environmental elements such as technology, suppliers, customers, and competitors (Kumar and Bhatia, 2021; Revilla *et al.*, 2010; Park *et al.*, 2019). By implication, customer dynamism explains the degree of irregular changes in customer characteristics and requirements (Lee and Griffith, 2019; Azadgan *et al.*, 2013; Cui *et al.*, 2005;) in terms of needs, tastes and preferences, demand, and order requirements. The global and technological nature of the business environment presents many opportunities to customers, causing rapid changes in customer characteristics and demand (Ataburo *et al.*, 2022). In a market where there is a quick change in customer requirements and competing firms' offerings, the customer market is said to be dynamic. Such an environment tends to be unpredictable and uncertain. Alternatively, customer dynamism is said to be low when the requirements of customers and market offers are relatively stable, i.e., the speed at which changes occur is less, and changes can be foreseen before their occurrences (Schilke, 2014).

2.2.3. Price strategy

Pricing is the most basic, yet critical marketing mix decision to be taken by many firms as it has direct implications on competitive advantage, revenue, and profitability (Batsakis et al., 2019; Jobber and Shipley, 2012; Avlonitis and Indounas, 2005). Pricing strategy is a concept that guides a firm's pricing activities for a particular product or service provided within a period (Morris and Calantone, 1990). Many authors argue that the basic foundation for pricing strategy is cost-based as cost indicates the efficiency and responsiveness of a company (e.g., Morris and Calantone, 1990; Avlonitis and Indounas, 2005; Swink *et al.*, 2005; Quesada *et al.*, 2008).

Companies adopt different pricing strategies ranging from low to high depending on several factors, including the cost of producing and delivering a product/service, competitor's pricing strategy, level of competitive intensity, customer price sensitivity level, product/service quality, firm's life cycle stage, market entry strategy (e.g., late entry), among others (Wilkie *et al.*, 2012; Hill, 2000). Manufacturing and operations strategy literature particularly identifies price as a critical order-winning strategy (Quesada *et al.*, 2008) that can be pursued at different phases of industry or product life cycle and price-sensitive markets (Hill, 2000). This study applies and analyzes price strategy in terms of the degree to which firms price their products/services lower than competitors' prices (Quesada *et al.*, 2008).

2.2.4. Financial performance

As in many business and management disciplines, financial performance represents the bottom-line performance of the firm that interests supply chain scholars (Wagner *et al.*, 2012; Swink and Schoenherr, 2014). However, the concept is not only scarcely defined in

prior studies but also it has been measured with different indicators. Some supply chain scholars have defined financial performance as “the improvement of economic goals based on revenue minus cost-based measures such as profitability, return-on-investment, and return-of-sales” (Chang *et al.*, 2016, p. 284).

Broadly, *revenue/income indicators* (e.g., sales revenue, operating income), *profit indicators* (e.g., gross margin, net income, return on investment, return on assets, return on sales, return on equity, stock market returns), and *growth indicators*, which may take the form of changes in revenue, profit, and market-based performance (e.g., sales growth, earnings growth), have been used to tap financial performance (Molina-Azorin *et al.*, 2009; Dossi and Patelli, 2010). In essence, profitability tends to be a central and frequently analyzed component of financial performance (Chang *et al.*, 2016; Molina-Azorin *et al.*, 2009), even in supply chain research (Chang *et al.*, 2016; Zhao *et al.*, 2015; Wagner *et al.*, 2012). Accordingly, and following Chang *et al.* (2016), this study defines and operationalizes financial performance as the degree to which a firm attains profit objectives.

2.3. Theoretical Review

Following related past studies (Ayoub and Abdallah, 2019; Mandal, 2015), this research uses the dynamic capabilities theory to first investigate the relationship between supply chain responsiveness and financial performance. Second, it extends this theory to the contingency theory to examine how low-price strategy and customer dynamism moderate the relationship between supply chain responsiveness and financial performance. A discussion on the two theories is presented next.

2.3.1. Dynamic capabilities theory

The dynamic capabilities theory is an extension of the resource-based theory with a primary focus on explaining heterogeneity in a firm's competitive advantage and other performance outcomes (Fainshmidt *et al.*, 2016). Unlike the traditional resource-based theory which focuses on different types and classes of firm resources (Barney, 1991), the dynamic capabilities theory is limited to "...higher-level competences that determine the firm's ability to integrate, build, and reconfigure internal and external resources/competences to address, and possibly shape, rapidly changing business environments" (Teece, 2012, p. 1395). In this context, "competences" represent some sort of capabilities of the firm or its constituents that enables it to "...perform a particular activity in a reliable and at least minimally satisfactory manner" (Helfat and Winter, 2011, p. 1244). For example, an activity requiring the firm and its supply chain members to quickly adjust their processes and offerings to meet changing customer requirements requires supply chain responsiveness, a specific capability that permits the firm's supply chain to reliably perform such an activity (Williams *et al.*, 2013; Wagner *et al.*, 2012). Helfat and Winter (2011) contrast dynamic capabilities with ordinary capabilities by arguing that "...a dynamic capability is one that enables a firm to alter how it currently makes its living." (p. 1244) but also note that some dynamic capabilities can have dual-purposes in the sense that while they exhibit dynamic capabilities' properties, they function as ordinary capabilities. By definition, ordinary capabilities enable firms to efficiently perform their current activities (e.g., production, delivery) (Teece, 2012). This study contends that supply chain responsiveness has such dual or ambidextrous purposes: the ability of the firm's supply chain to simultaneously engage in process and/or product modifications (flexibility) and deliver outputs to customers (delivery) (Moyano-Fuentes *et al.*, 2016; Williams *et al.*, 2013; Gunasekaran *et al.*, 2008).

Dynamic capabilities have been conceptualized and characterized in different ways in terms of dimensions, forms, level of abstraction, and where they reside within the firm (Helfat and Winter, 2011; Teece, 2014; Fainshmidt *et al.*, 2016). Teece (2007: 2014) identifies three aspects of dynamic capabilities: (1) capabilities for sensing threats and opportunities, (2) capabilities for seizing opportunities, (3) capabilities for transforming, enhancing, combining, protecting, and where necessary, reconfiguring the business enterprise tangible and intangible resources. In their analysis and synthesis of previous empirical studies, Fainshmidt *et al.* (2016) classified dynamic capabilities into lower-order dynamic capabilities (i.e., enable dynamic improvements to the activities of the firm) and higherorder dynamic capabilities (i.e., enable complex, strategic, and integrative change). Along this classification, supply chain responsiveness, as discussed in the earlier section, can be conceived as a lower-order dynamic capability. Fainshmidt *et al.* (2016) further identified specific organizational factors that have been theorized as dynamic capabilities including but not limited to research and development intensity/capability, marketing capabilities, learning capability, design management capability, risk management practices, innovation, new product development capability, alliance management capability, information technology, local responsiveness, control flexibility, market orientation, customer agility.

Importantly, dynamic capability theories contend that such dynamic capabilities may generate competitive advantage and superior financial performance (Teece, 2014; Fainshmidt *et al.*, 2016). The logic is that dynamic capabilities are valuable resources in the sense that they enable firms to adapt to changing requirements within their operating environments, or shape their environment (Teece, 2007). Such adaptation may manifest in modifications to existing processes, products, and services, and allow the firm to meet changing market requirements, gaining leadership in the competitive space and generating

superior financial outcomes (Teece, 2014). Moreover, dynamic capabilities can help firms better reposition and differentiate themselves from competitors (Teece, 2014). Furthermore, dynamic capability such as supply chain responsiveness because it facilitates speedy development and launching of new products/services and rapid delivery of services, give firms a first-mover advantage. Firms with stronger dynamic capabilities can attain sustained competitive advantage as such resources tend to be path-dependent and difficult/costly to build (Barney, 1991). In support of this, Fainshmidt *et al.*'s (2016) meta-analytic study show that higher-order dynamic capability, as well as a lower-order dynamic capability, is positively related to organizational performance.

2.3.2. Contingency theory

The contingency theory, a fundamental logic that underpins several organizational and strategic management theories (Van de Ven *et al.*, 2013), explains firm performance outcomes as a function of the extent of 'fit' or alignment between two or more organizational factors (Sirmon and Hitt, 2009). Contingency theorists argue that stronger levels of fit between resources and the contexts in which they are deployed generate superior performance. On the other hand, 'misfit', which represents structural incompatibility between resources and the contexts in which they are deployed, is expected to undermine performance outcomes (Van de Ven *et al.*, 2013; Donaldson, 2006).

Drawing on the contingency perspective, scholars have questioned the principles and the explanatory power of the resource-based theories including dynamic capabilities theory, and have advocated for the use of the contingency theory to elaborate on the boundary conditions of the firm resources-performance relationships (Sirmon and Hitt, 2009; Wilden *et al.*, 2013; Schilke, 2014). In particular, Teece (2014) argues that strong dynamic capabilities alone are

unlikely to generate competitive advantage while Wilden *et al.* (2013) emphasize that the benefits of dynamic capabilities are context-dependent. In this direction, several studies have demonstrated that integrating the contingency theory with the dynamic capabilities theory results in an enhanced understanding of why performance differs among firms (see e.g., Lam *et al.*, 2019; Piening and Salge, 2015; Wilden *et al.*, 2013; Schilke, 2014).

However, while the supply chain responsiveness-performance link has been theorized and tested using the dynamic capabilities theory (e.g., Ayoub and Abdallah, 2019; Mandal, 2015), the contingencies characterizing the relationship are unknown (see Table 2.2). Barreto (2010) stresses that research grounded in the dynamic capabilities theory should incorporate both internal and external contingencies that may enhance or undermine the efficacy of dynamic capabilities in driving performance. Accordingly, this research examines one internal contingency (i.e., price strategy) and one external contingency (i.e., customer dynamism) of the relationship between supply chain responsiveness and financial performance.

2.4. Empirical Review

This section of the chapter discusses past research linking supply chain responsiveness to performance (Table 2.2). In so doing, it highlights missing links in the such body of research while indicating the theoretical and methodological direction of the present research. The major themes presented in the review include performance constructs in supply chain responsiveness empirical research, theoretical anchors of the supply chain responsivenessperformance link, results on the link between supply chain responsiveness and performance, contexts of supply chain responsiveness empirical research, research

design, and data for supply chain responsiveness-performance research, and gaps and direction for the present study.

2.4.1. Performance constructs in supply chain responsiveness research

Previous supply chain responsiveness research has considered different performance constructs including operational performance (e.g., Nenavani and Jain, 2021; Yu *et al.*, 2019), competitive advantage (e.g., Thatte *et al.*, 2013), relational performance (Mandal, 2015), market-based performance (e.g., Asamoah *et al.*, 2021; Kim and Lee, 2010), and export performance (Ayoub and Abdallah, 2019). Though some of the studies highlight the financial implications of supply chain responsiveness (e.g., Dobrzykowski *et al.*, 2015; Qrunfleh and Tarafdar, 2013), explicit consideration of financial performance in terms of profitability is underexplored.

2.4.2. Theoretical views on the performance effects of supply chain responsiveness

Previous studies have drawn on different theories to explain the performance benefits of supply chain responsiveness, the majority of which include the resource-based theory (e.g., Asamoah *et al.*, 2021; Thatte *et al.*, 2013) and its emergent views (e.g., dynamic capabilities theory) (Ayoub and Abdallah, 2019; Mandal, 2015) and the organizational information processing theory (Yu *et al.*, 2019; Dobrzykowski *et al.*, 2015). Still, other studies have applied the contingency theory (Nenavani and Jain, 2021) to explain the performance consequence of supply chain responsiveness or agility. In applying these theories, scholars contend that supply chain responsiveness is an important driver of multiple firm performance outcomes. The current study extends the dynamic capabilities theory to the contingency theory to develop and test how supply chain responsiveness affects financial performance under varying conditions of customer dynamism and low-price strategy.

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Table 2.2. Related past empirical studies.

<i>Author/s (year)</i>	<i>SCR construct</i>	<i>Contingency variables</i>	<i>Performance type</i>	<i>Theoretical perspective</i>	<i>Context and data</i>	<i>Key findings</i>
Nenavani and Jain (2021)	Supply chain responsiveness		Operational performance	Contingency theory	Manufacturing firms in the western part of India Survey, structured questionnaire both online and offline (detailed personal interview).	SCR is positively associated with operational performance.
Asamoah et al. (2021)	Supply chain responsiveness	Logistics process responsiveness ²	Customer development	Resourcebased view	Manufacturing and service industries in Ghana. Questionnaire-based survey	Logistics process responsiveness directly enhances customer development. Operations systems responsiveness directly enhances customer development and indirectly enhances it through improved logistics process responsiveness.
Yu <i>et al.</i> (2019)	Supply chain responsiveness		Operational performance	Organizational information processing theory	Multi-manufacturing sector in China Survey data	Supply chain responsiveness has a positive relationship with operational performance.
Dobrzykowski <i>et al.</i> (2015)	Responsive strategy	Absorptive capacity ²	Firm performance	Information processing theory	Multi-industry, multi-country survey data	Responsive strategy has a positive U-shape relationship with absorptive capacity. Responsive strategy does not directly affect firm performance. Absorption capacity positively mediates the relationship between responsive strategy and firm performance.

Note: ¹ = Moderating variable; ² = Mediating variable.

Table 2.2. Continued.

<i>Author/s (year)</i>	<i>SCR construct</i>	<i>Contingency variables</i>	<i>Performance type</i>	<i>Theoretical perspective</i>	<i>Context and data</i>	<i>Key findings</i>
Ayoub and Abdallah (2019)	Supply chain agility	Supply chain responsiveness Supply chain innovativeness ²	Export performance	Resource view Dynamic capabilities theory	Multi-manufacturing sector in Jordan. Survey data	Supply chain agility directly and positively affects export performance Supply chain responsiveness and innovativeness mediate the relationship between supply chain agility and export performance.
Mandal (2015)	Supply chain responsiveness		Operational performance Relational performance	Dynamic capabilities theory	Multi-manufacturing sector in India Survey	Supply chain responsiveness has positive associations with operational and relational performance.
Thatte <i>et al.</i> (2013)	Supply chain responsiveness		Competitive advantage	Resourcebased view	Multi-manufacturing sector Survey data	Supply chain responsiveness is positively related to competitive advantage.
Qrunfleh and Tarafdar (2013)	Supply chain responsiveness		Firm performance	Resourcebased view	Manufacturing firms in the U.S. Survey data	Supply chain responsiveness has a positive association with firm performance.
Kim and Lee (2010)	Supply chain responsiveness		Market performance		Multiple industries Online survey data	Supply chain responsiveness influences market performance positively.

Note: ¹ = Moderating variable; ² = Mediating variable.

KNUST

28



2.4.3. Performance effects of supply chain responsiveness and contingencies

Largely, findings from previous studies indicate that supply chain responsiveness has a positive relationship with multiple performance outcomes (e.g., Nenavani and Jain, 2021; Asamoah *et al.*, 2021; Yu *et al.*, 2019; Ayoub and Abdallah, 2019; Mandal, 2015; Qrunfleh and Tarafdar, 2013). Dobrzykowski *et al.* (2015), however, find that responsive strategy does not directly relate to firm performance; rather, absorptive capacity mediates the link between responsive strategy and firm performance.

2.4.4. Empirical context and methodology

Previous studies have mostly used data from manufacturing settings to test the relationships between supply chain responsiveness and performance using survey methodology and crosssectional data (e.g., Nenavani and Jain, 2021; Yu *et al.*, 2019; Ayoub and Abdallah, 2019).

2.4.5. Major issues in previous studies and the direction of the present study

An analysis of the literature reveals some important shortcomings and avenues for future studies:

- 1) There is a dearth of empirical studies on the performance implications of supply chain responsiveness, especially in the area of financial performance.
- 2) Prior studies ignore the boundary conditions of the supply chain responsivenessperformance relationships, creating a paucity of knowledge of when

supply chain responsiveness is more or less beneficial. This study responds to this knowledge gap by analyzing how one internal (low price strategy) and one external (customer dynamism) organizational factors moderate the relationship between supply chain responsiveness and financial performance.

- 3) Given that previous studies focus on manufacturing supply chains, whose processes and contexts are different from those of service firms, the performance implications of supply chain responsiveness in service supply chains remain unclear. Considering this, the present study tests its hypotheses on data from logistics service firms.

2.5. Conceptual Model and Hypotheses Development

Following previous research applications, this study uses a contingent-dynamic capabilities perspective (Lam *et al.*, 2019; Schilke, 2014), an integration of the dynamic capabilities theory and the contingency theory, to propose a conceptual model (Figure 2.2) to answer its research questions.

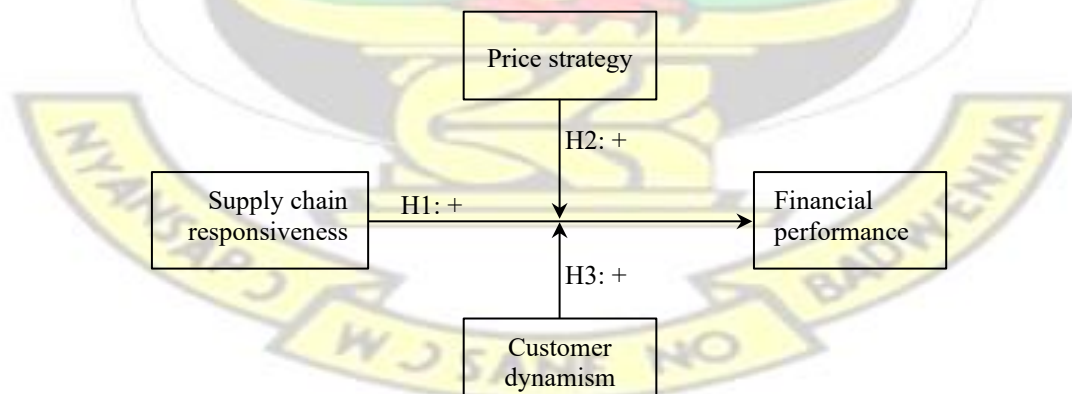


Figure 2.2. Conceptual model.

The model suggests that supply chain responsiveness has a positive relationship with financial performance (H1) and that this relationship is stronger for firms that emphasize low prices (H2) or operate in more dynamic customer markets (H3). The arguments for these hypotheses are developed next.

2.5.1. The supply chain responsiveness and financial performance link

As with any other organizational capability, supply chain responsiveness is latent, pathdependent, and requires resource commitment to develop it (Schilke, 2014; Teece, 2007). Such organizational capabilities make supply chain responsiveness a heterogenous resource because firms are less likely to possess and control the same level of supply chain responsiveness (Teece, 2014; Barney, 1991). Therefore, if any, the benefits of supply chain responsiveness are expected to be heterogeneous among firms.

Empirical findings from supply chain responsiveness research mostly reveal that supply chain responsiveness indicators are positively related to multiple performance outcomes, including operational performance (Nenavani and Jain, 2021; Yu *et al.*, 2019), relational performance (Manda, 2015), export performance (Ayoub and Abdallah, 2019), competitive advantage (Thatte et al. 2013), market performance (Kim and Lee 2010), and firm performance (Qrunfleh and Tarafdar, 2013). Therefore, based on these empirical indications, this study develops the hypothesis that supply chain responsiveness has a positive relationship with the financial performance of logistics service firms.

Supply chain responsiveness might enhance financial performance as it contributes to customer value (time utility) and first-mover advantage (Nenavani and Jain, 2021). In today's competitive environments, customers value and are willing to pay more for rapid and on-time delivery of products and services. Therefore, supply chain responsiveness firms may be better positioned to build, expand, and protect their customer base and revenue generation capacity. Customers' readiness to pay for shorter lead-time services can compensate for the extra cost of increasing supply chain responsiveness, benefiting financial performance. Being first to meet changing customer requirements can contribute to financial performance as it enables firms to differentiate themselves from competitors and build strong brand equity.

Scholars stress that firms with stronger supply chain responsiveness resources are more powerful in the competitive market, given that they are quicker and more effective at absorbing disruptions in the customer market (Nenavani and Jain, 2021; Fawzi and Abdallah, 2019). The contingency perspective (Nenavani and Jain, 2021) and dynamic capabilities theory (Teece, 2014) suggest that supply chain responsiveness can contribute to firms' ability to achieve *external fit* with the customer market. That is, supply chain responsive firms are effective at meeting the constantly evolving fluctuations in customer demographics, needs, expectations, and demands and competitor offerings and strategies (Nenavani and Jain, 2021). In the framework of the contingency theory and the dynamic capabilities theory, firms that attain such external fit can enjoy superior financial performance because they are able to secure and enrich their revenue and profit generation mechanisms. Moreover, responsiveness supply chains, especially in the service context, can gain some efficiency advantages because they operate a

pull-demand model, which allows them to minimize inventory and its holding costs (Nenavani and Jain, 2021). Therefore, the study tests the following hypothesis:

H1: Supply chain responsiveness has a positive relationship with financial performance.

2.5.2. The moderating effect of price strategy

The contingency theory contends that superior performance accrues to ‘fit’ between dynamic capabilities and the context in which they are deployed (Sirmon and Hitt, 2009; Wilden *et al.*, 2013). This study uses customer value logic (Zeithaml, 1988) to define ‘fit’ as situations where supply chain responsiveness is matched with low prices. The cumulative capabilities model of the competitive priorities literature indicates that some firms can concurrently pursue high supply chain responsiveness and lower prices (Banchuen *et al.*, 2017; Ferdows and De Meyer, 1990). On the other hand, ‘misfit’ captures situations where supply chain responsiveness is bundled with high prices.

Price strategy refers to the degree to which the focal firm prices its products and services lower than the prices of competitors (Wiengarten *et al.*, 2019; Quesada *et al.*, 2008). From the customer’s viewpoint, price represents the (monetary) sacrifice that has to be made to obtain a service/product; therefore, other things being equal, when high prices are higher, customers perceive the overall value of patronizing a service or buying a product to be lower (LeroiWerelds 2019). Therefore, in line with the competitive priorities literature, lower prices are order-winners, capable of expanding firms’ competitiveness and revenue generation mechanisms (Quesada *et al.*, 2008). Generally, it can be expensive to increase supply chain responsiveness;

therefore, higher prices should be charged for services associated with greater levels of responsiveness to enable the firm to be profitable, *ceteris paribus*. However, where two competitors are offering the same or similar level of supply chain responsiveness, greater sales are likely to accrue to the firm that charges lower prices. The reason is that higher prices lower the value customers obtain and as rational beings, customers seek to optimize value-formoney in their purchase decisions (Zeithaml *et al.*, 2020; Zeithaml, 1988).

Most industries today experience fierce competition. In addition, customers wield more power in today's supply chains and seek greater value for each dollar spent (Fianko *et al.*, 2022). In a service environment, customers are likely to view high supply chain responsiveness as a superior service quality (Nenavani and Jain, 2021), although they would demand high levels of such service levels at low prices (Cai and Yang, 2014). Thus, the value created for customers and accordingly levels of competitive advantage and sales resulting from matching high supply chain responsiveness with high prices might be lower than matching high supply chain responsiveness with low prices. More importantly, combining low supply chain responsiveness with either high or low prices produces lower value for customers, compared to when high supply chain responsiveness is bundled with low prices. Formally stated,

H2: Price strategy positively moderates the relationship between supply chain responsiveness and financial performance, such that the relationship is positive and stronger for firms with lower prices than those with higher prices.

2.5.3. The moderating effect of customer dynamism

In their seminal work, Teece *et al.* (1997) define dynamic capabilities to mean “...the firm's ability to integrate, build, and reconfigure internal and external competences to address *rapidly changing environment*” (p. 516) [italicized words are for emphasis]. By implication, this definition characterizes dynamic capabilities with environmental dynamism and tends to suggest that such capabilities are more useful and beneficial in high dynamic environments than in stable environments (Helfat and Martin, 2011). This argument has received some empirical support (e.g., Karna *et al.*, 2016; Drnevich *et al.*, 2011).

Unlike other forms of dynamic capabilities (see Fainshmidt *et al.*, 2016), empirical understanding of how environmental dynamism variables moderate the performance effects of supply chain responsiveness is scarce; thus, it is challenging applying the contingency approach to define the notion of ‘fit-performance’ relationship while analyzing how customer dynamism moderates the link between supply chain responsiveness and financial performance. To proceed, the present study follows the evidence from Karna *et al.*'s (2016) meta-analysis study to argue that the contribution of supply chain responsiveness to financial performance increases with increasing conditions of customer dynamism.

Customer dynamism refers to the degree to which customer requirements change rapidly (Lee and Griffith, 2019). High dynamic customer environments are characterized by frequent changes which cannot be anticipated. In contrast, a low customer dynamic environment is characterized by infrequent changes; firms in such environments can anticipate customer requirements and plan accordingly (Cui *et al.*, 2005; Schilke, 2014). Supply chain

responsiveness is a customer-focused dynamic capability that enables firms to attain *external fit* with a changing customer market (Fawzi and Abdallah, 2019; Nenavani and Jain, 2021). Therefore, on the face of it, it appears irrational to increase investment in supply chain responsiveness in stable customer markets as the costs (i.e., monetary, lack of economies of scale) of such investment may outweigh or lower the associated financial benefits.

In fast-changing customer markets, speed and flexibility in meeting customer requirements are paramount for customers as such, supply chain responsiveness boosts customer value in dynamic markets. A greater level of customer dynamism induces greater uncertainty and creates challenges for cost-effective planning; yet, it also offers more opportunities for firms, particularly those with the capacity to rapidly respond to changes in customer requirements. Because supply chain responsiveness contributes to customer value, its value and order-winning potency might increase in high dynamic customer markets, relative to stable customer markets. On the other hand, firms with limited supply chain responsiveness resources may be disadvantaged as the value-creation expectations of customers amplify in high customer dynamism circumstances. Therefore, the study expects the following:

H3: Customer dynamism positively moderates the relationship between supply chain responsiveness and financial performance, such that the relationship is positive and stronger for firms in high dynamic customer markets relative to those in low dynamic customer markets.

2.6. Chapter Summary

This chapter has discussed the concepts of supply chain responsiveness, price strategy, customer dynamism, and financial performance and how they are applied in the present study. The chapter additionally analyzed past empirical studies on the performance effects of supply chain responsiveness, highlighting key shortcomings of this body of research and how the present study builds on and advances it. Moreover, the chapter reviewed the literature on the dynamic capabilities theory and the contingency theory and demonstrates how their integration may help generate richer insights into the relationship between supply chain responsiveness and financial performance under varying conditions of price strategy and financial performance. Furthermore, the chapter has presented and evaluated major conflicting views on the relationship between supply chain responsiveness and financial performance and the nature of the moderating effects of price strategy and customer dynamism on this relationship. In the end, the chapter presents testable arguments that supply chain responsiveness has a positive association with financial performance and that this relationship is stronger in low price strategy contexts (relative to high price strategy contexts) and also in high customer dynamism contexts (relative to low customer dynamism contexts). In the subsequent chapter, the empirical data and approach to testing these hypotheses are discussed.

CHAPTER THREE

METHODOLOGY

3.1. Introduction

The methodological approach for the study is presented in this chapter. Among other things, the chapter discusses the study's philosophical perspective, research design, empirical setting and population, sample and sampling approach, unit of analysis, key informants, construct operationalization, questionnaire development, data collection procedure, data analysis strategy, and ethical consideration.

3.2. Philosophical Perspective

This work is grounded in positivism, a dominant philosophical approach to supply chain research (Darby *et al.*, 2019; Golicic *et al.*, 2005). In using positivist tools (e.g., theory, measurement, statistics), supply chain researchers can theoretically explain and generate causal inferences about supply chain phenomena to offer useful guidelines for policy and practice (Golicic *et al.*, 2005). Positivists assume that research constructs exist in the real world. That is, the conceptual domains and existence of the study constructs can be theorized using logic, independent of the researchers' subjective views. This way, the construct can be quantified using standard measurement scales (Saunders *et al.*, 2019). These beliefs and assumptions contrast sharply with interpretivism approaches to research (Saunders *et al.*, 2019). For example, for interpretivists, reality is subjectively and socially constructed through interpretations and interactions between the researcher and the object of study. Interpretive studies seek meaning and interpretation of issues (Darby *et al.*, 2019).

Accordingly, this research draws on established theoretical lenses (dynamic capabilities theory and contingency theory) to test hypotheses relating to how and when supply chain responsiveness affects financial performance under varying conditions of low-price strategy and customer dynamism. This approach aligns with positivists' approach to quantitative research (Golicic et al. 2005), which has been used in previous empirical studies on the link between supply chain responsiveness and performance (e.g., Ayoub and Abdallah, 2019; Dobrzykowski et al., 2015; Wagner et al., 2012).

3.3. Research Approach and Design

There are several methods for conducting research which implies there are various data options as well as data gathering and analysis approaches offered and adopted by researchers (Bell et al., 2019). However, the nature of a particular study influences the design and, as a result, the strategy or approach to be used. The research approach, in general, refers to whether a study focuses on generating a theory based on the available evidence (inductive approach) or testing a hypothesis with an appropriate piece of empirical data (deductive approach) (Saunders et al., 2019). Consistent with the above-described positivist perspective, this study follows a deductive approach, focusing on testing hypotheses about the relationship between supply chain responsiveness and financial performance based on a contingent-dynamic capabilities perspective.

A research design is a blueprint or plan prepared expressly to respond to a research problem

(Bell *et al.*, 2019). The research design exists in different forms, including experimental design, survey design (cross-sectional or longitudinal survey), case study design, and comparison design, which serves as the framework for data collection and analysis (Bell *et al.*, 2019; Saunders *et al.*, 2019). Survey design (cross-sectional and longitudinal) and experiment are popular research designs linked with the deductive research technique (Bell *et al.*, 2019). However, in supply chain management research, where the focus is generally on explaining firm and supply chain level issues, survey design has been the traditional design used (Montabon *et al.*, 2018; Flynn *et al.*, 2018). Therefore, following examples of previous studies on the links between supply chain responsiveness and performance outcomes a cross-sectional survey design was employed in this study (e.g., Moyano-Fuentes *et al.*, 2016; Fawzi and Abdallah, 2019).

By using a cross-sectional design, data on the study variables were collected at a single point in time. Although a longitudinal design can be useful for testing causal models, it requires substantial time and budget to implement (Montabon *et al.*, 2018). Rindfleisch *et al.* (2008) note and assert that theoretically ground conceptual models, especially those that incorporate moderating and or mediating variables and control variables, enhance causal inferences in the sense that they reduce completing explanations and confounding results. Accordingly, this study carefully combines and applies two existing theoretical lenses to ensure that the results from its cross-sectional data are interpretable and meaningful. From the dynamic capabilities theory's standpoint, the study theorizes how financial performance covaries with supply chain responsiveness and particularly why changes in the latter variable are expected to trigger changes in the former variable (cf. Rindfleisch *et al.*, 2008). Additionally, the study incorporated

moderating variables alongside relevant control variables to account for spurious influences on the link between supply chain responsiveness and financial performance (cf. Rindfleisch *et al.*, 2008; Echambadi *et al.*, 2006).

3.4. Empirical Setting and Population

The study's hypotheses are tested on data from logistics service organizations in Ghana. In this study, logistics service organizations comprise companies that assist businesses with the transportation, warehousing, shipment, and distribution of goods among firms (Rajesh *et al.*, 2012). These firms include but are not limited to carriers/trucking firms, logistics brokers and agents, freight forwarders, and consolidators. In 2018, Ghana's logistics performance index, an indicator of the efficiency of a country's logistics activities and systems in the areas of quality of transport and logistics infrastructure, quality of logistics services, customers clearance processes, ease of shipment, shipment tracking, and tracing capabilities, and timely delivery of shipments, was 2.57 out of 5 (where 1 = low and 5= high), putting Ghana 106th on a global level. Importantly, Ghana's logistics performance index has been appreciating for the last decade (The World Bank, 2018). This is consistent with the findings from a recent survey by the Centre for Applied Research and Innovation in Supply Chain – Africa (CARISCA), suggesting growing logistics activities in Ghana for the first quarter of 2022 (CARISCA 2022).

Current and detailed information about the activities of such companies in Ghana is limited. A country-wide business establishment survey conducted by Ghana Statistics Service in 2014 provides some relevant pointers. The survey identified 2,849 businesses as transportation and storage service firms. The study additionally found that 90.45% of such firms employ less than

50 people, indicating that the target population for the present research is largely micro and small businesses (Ghana Statistical Service, 2015). The sector's annual revenue, cost of goods sold, and gross profit was estimated to be GHS8,419 million, GHS2,061 million, and GHS6,358 million, respectively (Ghana Statistical Service, 2017).

The target population for this study is made up of logistics service organizations operating in the Accra and Western regions of Ghana and are involved in local and or international supply chain operations. The Accra and Western regions were chosen as relevant and appropriate empirical contexts for this investigation for the following reasons. First, these regions are the business hub of Ghana where majority of logistics firms are located and international trade mostly takes place (Ghana Statistics Service, 2015). For example, Ghana Statistics Service's (2015) country-wide survey reveals that 60.2% and 8.9% of transportation and storage businesses are located in the Greater Accra and Western regions, respectively. Secondly, the regions are seen as political and administrative especially Accra as this is the place where all the headquarters of government ministries are located. However, most of the logistics firms are located there because of the availability of the sea harbors, airports, and big warehouses among others.

3.5. Sample and Sampling Approach

Due to a lack of current and comprehensive information about the target population, a pragmatic approach was used to obtain a suitable sample for the study (see e.g., Story *et al.*, 2015). The approach began with defining the sample selection criteria: the target firms (1) employ between 5 and 500 full-time employees, (2) had been in operation for at least three years, (3) have their

head offices located in the Greater Accra or the Western regions, and (4) have managers who meet the study's key informant criteria (see Section 3.6). Using this criterion, and drawing on the Ghana Business Directory – GhanaYello and Yellow Pages (Ghana), major online databases of firms in Ghana (Essuman *et al.*, 2020), information about 818 firms' locations and contact details were collated. Next, phone calls were made to solicit participation. In total, 479 firms agreed to participate in the study. However, when the participants were approached with a package of the fieldwork instruments (cover letter and questionnaire), 413 firms responded positively while 66 declined to part take in the study. A total of 245 questionnaires were retrieved over three (3) months. This sampling procedure compares well with some recent procedures (e.g., convenience, snowballing) implemented in supply chain responsiveness research (e.g., Nenavani and Jain, 2021; Fawzi and Abdallah, 2019).

Following an examination of the questionnaires for data quality issues (e.g., missing values), 226 usable questionnaires were retained, representing a 54.72% effective response rate. A sample size of 226 compares well with those reported in previous supply chain responsiveness research, for instance, Nenavani and Jain (2021) (sample size = 212), Williams *et al.* (2013) (sample size = 206), Kim and Lee (2010) (sample size = 184). Importantly, it meets minimize sample size requirements for the analyses of the study's measurement model using covariance-based confirmatory factor analysis (Bagozzi and Yi, 2012) and the structural model using moderated regression analysis (Hair *et al.*, 2019).

3.6. Unit of Analysis and Key Informants

The study's unit of analysis is logistics firms in Ghana. In line with previous research, a single key informant from each firm provided data for the study (e.g., Yang *et al.*, 2019; Qrunfleh and Tarafdar, 2013). Individuals with relevant domain and managerial experiences were considered (Nenavani and Jain, 2021; Williams *et al.*, 2013). Specifically, data from medium-to-large firms was provided by relevant functional-level managers (e.g., 75.22%) while the remaining, largely from small firms, were provided by top managers (CEO or general managers) (Flynn *et al.*, 2018).

3.7. Construct Operationalization and Survey Questionnaire

To enhance the reliability and validity of data, existing indicators were adapted to capture the study's constructs. As presented in the literature review chapter, the domain of each construct was analyzed and defined, before generating a pool of measurement indicators. Several efforts were made to ensure that the identified indicators tap into the operational definitions of the constructs they are supposed to measure and that the questionnaire is appropriately designed.

The study's supervisors and other academic researchers with vast scholarly experience in supply chain issues reviewed and revised the initial operational definitions and measurement indicators for the constructs. They further evaluated and suggested useful changes to the structure and content of the questionnaire. Next, the initial questionnaire was reviewed further based on results and comments from a pilot study involving 10 potential informants, i.e., MBA students who were logistics and transport managers. Information about the study's indicators included in the final questionnaire are as follows:

Dependent variable: Financial performance

An analysis of the empirical literature reveals that the typical indicators for financial performance are profit-oriented (e.g., gross margin, net income, return on investment, return on assets, return on sales, return on equity, stock market returns) (Molina-Azorin *et al.*, 2009; Dossi and Patelli, 2010; Chang *et al.*, 2016). This is the case with supply chain research focused on financial performance (e.g., Chang *et al.*, 2016; Zhao *et al.*, 2015; Wagner *et al.*, 2012). Accordingly, following previous supply chain research (Zhao *et al.*, 2015; Chang *et al.*, 2016), this study defines and measures financial performance as the degree to which a firm attains profit objectives. Specifically, this study uses three indicators were used to measure financial performance: (1) sales margin, (2) return on investment, and (3) overall profit (Zhao *et al.*, 2015; Chang *et al.*, 2016). Using a seven-point scale (1 = no improvement; 7 = significant improvement), the firms indicated the extent to which their performance improved in each of the three profit areas in the last two years.

Independent variable: Supply chain responsiveness

Following prior research, the present study operationalizes the supply chain responsiveness concept from the focal firm perspective, in terms of how well the focal firm exhibits key supply chain responsiveness manifestations (e.g., Moyano-Fuentes *et al.*, 2016; Wagner *et al.*, 2012). Specifically, supply chain responsiveness was measured in terms of the extent to which firm operations and distribution systems are able to rapidly and flexibly react to customer market requirements (Gunasekaran *et al.*, 2008; Moyano-Fuentes *et al.*, 2016). Accordingly, four items

were identified to measure supply chain responsiveness: (1) on-time delivery of services to customers; (2) consistency in delivering services to customers on time; (3) timely introduction of new services to the market; (4) speed in adjusting to changes in the customer requirements. Based on a seven-point scale (1= not at all; 7 = to the greatest extent), the firms indicated the extent to which each indicator had characterized their supply chain operations in the past three years.

Moderating variables: Price strategy and customer dynamism

Price strategy is defined as the degree to which the firm prices its products/services lower than competitors' prices (Wiengarten *et al.*, 2019; Quesada *et al.*, 2008). Drawing on Quesada *et al.* (2008) and Wiengarten *et al.* (2019), two indicators were used to measure price strategy: *Compared to an average competitor in our immediate market*, (1) we have lower selling prices; (2) we are more consistent in offering lower prices. A seven-point scale which ranges from “1 = strongly disagree” to “7 = strongly agree” was used to evaluate each indicator.

Customer dynamism is the market-centered dimension of the environmental dynamism concept which explains the rate and volume of changes in customer requirements (Cui *et al.*, 2005; Azadgan *et al.*, 2013). Three indicators adapted from previous research (e.g., Cadogan *et al.*, 2009; Azadgan *et al.*, 2013) to measure customer dynamism: (1) customer needs in our industry are constantly changing; (2) what customers want from us changes very rapidly; (3) our customers often request us to do things drastically different from the way we have done them in the past. Each indicated was rated on a seven-point scale which ranges from “1 = strongly disagree” to “7 = strongly agree”.

Control variables and firm characteristics

To control for the potential inference of other internal and external factors the study included the following variables as covariates in the empirical analysis. Firm size, firm age, and nature of operations were included as control variables to account for firm-level effects. Firm size and firm age were operationalized as the natural logarithm transformation of full-time workforce size, and the natural logarithm transformation of the number of years of operations, respectively. Based on the frequency distribution results, one dummy variable was created for nature of operations: carrier firms = 1, otherwise = 0. To account for industry-level effects in addition to customer dynamism, the study included the scope firm's target market as a control variable. In line with the frequency distribution results, two dummy variables were created for scope of target market: local market only = 1, otherwise = 0; local and foreign markets = 1, otherwise = 0.

Informant profile

Important indicators were included in the questionnaire to ensure that only data provided by managers who meet the study's key informant criteria is used for testing the hypotheses. To this end, information about the informant's position, education level, industry experience, and position experience was captured. Following previous research (e.g., Essuman *et al.*, 2021), the study additionally evaluated the competence level of informants in areas: the level of knowledge of the survey items; the level of confidence in responses provided; the degree to which the responses reflect organizational situation using a seven-point scale (1= strongly disagree; 7 = strongly agree).

3.8. Data Collection

Survey studies rely on varied approaches to data collection (Saunders *et al.*, 2019). In the context of supply chain responsiveness research, the frequently used approaches include *online/web-based surveys* (Moyano-Fuentes *et al.*, 2016; Kim *et al.*, 2013; Qrunfleh and Tarafdar (2013), *hand-delivery/face-to-face surveys* (Ataburo *et al.*, 2022; Essuman *et al.*, 2021), and *mail surveys* (Asamoah *et al.*, 2021; Wagner *et al.*, 2012). This study used a face-to-face survey which involved delivering the questionnaires and cover letters to the key informants using trained fieldworkers and retrieving the completed questionnaires later on (Fawzi and Abdallah, 2019; Essuman *et al.*, 2021). This approach was deemed appropriate due to logistical constraints (e.g., lack of mailing lists and email contacts of the key informants). The informants were given 10 days to complete the questionnaires. All questionnaires retrieved within this period were classified as ‘early responses’ while those collected afterward were classified as ‘late responses’. This allowed the researcher to examine whether these response groups are different.

3.9. Data Analysis

As a quantitative study, statistical tools and procedures were followed to analyze the data. Three main analysis types were conducted: descriptive analysis, measure reliability and validity analysis, and structural model analysis.

Descriptive analysis. The descriptive analysis employed different statistical tools (e.g., frequency table, mean, standard deviation) to profile the firms and the respondents, and also understand the central tendency and distribution of the measurement items and the constructs.

Measurement reliability and validity assessment. Regarding the reliability analysis, Cronbach's alpha and composite reliability tests were used because the study uses multi-item reflective indicators to measure the constructs (Hair *et al.*, 2019; Bagozzi and Yi, 2012). These tests of reliability are concerned with the degree of internal consistency among a set of indicators representing a latent construct (Hair *et al.*, 2019). Cronbach's alpha and composite reliability thresholds of 0.70 and 0.60 were used to evaluate all indicators (Hair *et al.* 2019; Bagozzi and Yi, 2012).

Multiple tests were used to examine different aspects of construct validity: unidimensionality, convergent validity, and discriminant validity. Unidimensionality measures the degree to which a set of theoretical indicators have only one underlying construct (Hair *et al.*, 2019); convergent validity measures the extent to which a set of theoretical indicators capture a high proportion of variance in common (Hair *et al.*, 2019); discriminant validity assesses whether a set of theoretical indicators are empirically distinct from theoretical indicators (Hair *et al.*, 2019). Exploratory factor analysis and covariance-based confirmatory factor analysis were used to assess unidimensionality and convergent validity of the indicators while Fornell and Larcker's average variance extracted-shared variance (AVE-SV) criterion was used to assess discriminant validity (Voorhees *et al.*, 2016; Hair *et al.*, 2019). In both factor analyses, the indicators are to load high (at least 0.60) only their theoretical constructs with low cross factor loadings (below

0.30) to exhibit unidimensionality and convergent validity. These validity aspects were assessed further in terms of the extent to which a multi covariance-based factor analysis model which included all indicators of interest fits the research data (Hair *et al.*, 2019). Multiple recommended model fit criteria were used: Chi-square (χ^2) index, normed Chi-square ($\chi^2/\text{degree of freedom}$) index, root mean square error of approximation (RMSEA), non-normed fit index (NNFI), comparative fit index (CFI), standardized root mean square residual (SRMR) (Hair *et al.*, 2019; Bagozzi and Yi, 2012). Lastly, nomological validity, which relates to the degree to which constructs in a conceptual model are related in some theoretical sense, was assessed using correlation analysis (Hair *et al.*, 2019).

Structural model analysis. This study proposes a moderation model to investigate the relationship between supply chain responsiveness and financial performance. Accordingly, and following established convention (Aguinis *et al.*, 2017), moderated regression analysis was used to test the proposed conceptual model and research hypotheses. Because the study analyzes the effect of the independent variable and to mitigate multicollinearity concerns, the independent variable and the moderating variables were mean-centered before creating the interaction terms (Aguinis *et al.*, 2017).

To obtain consistent estimates and to address potential endogeneity concerns (Lu et al. 2018), the study controlled for factors that can affect the independent variable, dependent variable, or their relationship. The factors include firm size, firm age, nature of operations, and scope of target market. A dummy variable was created for nature of operations: carrier firms = 1,

otherwise = 0 while two dummy variables were created for scope of target market: local market only = 1, otherwise = 0; local and foreign markets = 1, otherwise = 0.

To evaluate the hypotheses relating to the main and moderating effects, a single model that includes the main, moderating variables, and the interaction terms along with the control variables were estimated as follows (Aguinis *et al.*, 2017):

$$\text{Financial performance} = \beta_0 + \beta_1\text{FS} + \beta_2\text{FA} + \beta_3\text{LM} + \beta_4\text{LFM} + \beta_5\text{CF} + \beta_6\text{SCR} + \beta_7\text{CD} + \beta_8\text{PS} + \beta_9\text{SCR} \times \text{CD} + \beta_{10}\text{SCR} \times \text{PS} + \varepsilon$$

Where β_0 = constant; β_{1-10} = respective regression coefficients for the independent variables in the equation; ε = residual term; FS = firm size; FA = firm age; LM = local market only; LFM = local and foreign market; SCR = supply chain responsiveness; CD = customer dynamism; LPS = Price strategy; SCR \times PS = interaction between SCR and PS; SCR \times CD = interaction between SCR and CD.

3.10. Ethical Consideration

The study complied with necessary ethical requirements. The methodology and survey instruments were evaluated and approved by the faculty's ethical review committee. Using a cover letter, the study's purpose and potential managerial implications were explained to the key informants. All participants consented to participate in the study and their anonymity was assured. Moreover, no information about the specific informants or their firms is reported in the study.

3.11. Chapter Summary

The methodology used in the study has been described and justified in this chapter. To summarize, the study employs a deductive-hypothesis testing approach and uses a crosssectional survey design. The empirical sample comprises logistics firms operating in Ghana.

Existing measurement indicators were adapted to measure the study's constructs and a structured questionnaire was administered to key informants to build a dataset for the study. Multiple statistical tools were used to validate the data before testing the hypotheses using moderated regression analysis.



CHAPTER 4

RESULTS AND DISCUSSION

4.1. Introduction

This chapter presents the study results and then discusses the implications of the results. The next section analyses the responses obtained and then profiles the sample and the informants. Next, measurement model analyses and results are presented. This is followed by structural model analyses and hypotheses evaluation. The subsequent section presents the discussion of the results. The last section is a chapter summary.

4.1. Response Analysis and Profile Information

The study uses survey data from 226 logistics firms in the Greater Accra and Western Regions of Ghana, who represent 54.72% of those the target population that received the research questionnaire. A sample size of 226 compares well with those reported in previous supply chain responsiveness research, for instance, Nenavani and Jain (2021) (sample size = 212), Williams *et al.* (2013) (sample size = 206), Kim and Lee (2010) (sample size = 184). Importantly, it meets minimize sample size requirements for the analyses of the study's measurement model using covariance-based confirmatory factor analysis (Bagozzi and Yi, 2012) and the structural model using moderated regression analysis (Hair *et al.*, 2019).

Overall, 245 questionnaires were retrieved from the field, 19 of which were considered nonusable due to either respondent incompetence (e.g., the respondent did not hold the preferred senior level management position or had less than one managerial experience) or high itemlevel missing values (i.e., more 5% of the total items were not completed). There were no obvious systematic patterns to the item-level missing value issues of the questionnaires excluded from

the study. Accordingly, the maximum likelihood model-based estimator was used to fix the remaining missing values in the data (Hair *et al.*, 2019).

Table 4.1. Early versus late respondents.

Variables of interest	Respondent group**	<i>n</i>	Mean	SD	<i>t</i>	<i>p</i>
Firm age	Early response	97	13.33	7.045	-.269	.788
	Late response	129	13.64	9.413		
Firm size	Early response	97	21.38	50.202	-.369	.713
	Late response	129	23.63	41.741		
Financial performance*	Early response	97	4.72	1.153	-.881	.379
	Late response	129	4.86	1.156		
Supply chain responsiveness*	Early response	97	5.07	1.269	-.111	.912
	Late response	129	5.09	1.171		
Price strategy*	Early response	97	4.211	1.586	-1.013	.312
	Late response	129	4.426	1.575		
Customer dynamism*	Early response	97	4.55	1.549	-1.752	.081
	Late response	129	4.91	1.492		

Notes:

- ¹Averaged scores of the valid indicators (see Table 4.6).
- **Early response represents questionnaires received within 10 workings days while the late response are questionnaires received during the next 10 working days.

Multiple approaches were used to examine nonresponse bias: the first involves a comparison between data provided by early respondents (questionnaires received within the first 10 working days) and late respondents (questionnaires received during the next 10 working days) while the second required comparing a key characteristic of the sample (e.g., firm size) to a previously reported a characteristic in a related population (Hulland *et al.*, 2017). An independent samples t-test reveals no significant difference between early respondent and late respondent reveals

(Table 4.1). An earlier census in 2014 suggests that an average logistics firm (transport and or warehouse service provider) in the study area had between 25 and 37 full-time employees (Ghana Statistical Service, 2015), which is comparable to that of the current study, 23 full-time employees approximately (Table 4.2). Therefore, while hypothesis-testing, instead of generalization, is the primary focus of this study, nonresponse bias does not constitute major concern in the study (Hulland *et al.*, 2017).

Table 4.2. Profile information.

Variable/category		Categorical data		Continuous data			
		Frequency	%	Min	Max	Mean	SD
Firm scope of	Local market only	78					
	Foreign market only operation	60	34.51	26.55			
	Both local and foreign markets	88	38.94				
Type of logistics	Carrier	90					
	Warehouse operator	33	39.8	14.6			
	Freight broker/agent firm	57	25.2				
	Freight forwarder/consolidator	37	16.4				
	Others	9	4.0				
Respondent's position	CEO/owner-managers	22	9.73				
	General Manager	34	15.04				
	Marketing/Sales Manager	65	28.76				
	Operations Manager	66	29.20				
	Logistics/Supply Chain Manager	39	17.26				
Respondent's education	Up to SHS/A' or O' Level	10	4.4				
	Up to Diploma/HND	60	26.5	48.7			
	Up to 1st Degree	110	17.3				
	Up to 2nd Degree	39					
	Up to PhD	7	3.1				
Firm age				3	60	13.51	8.462
Firm size (number of full-time employees)				5	480	22.67	45.473
Positional experience (years)				1	30	5.15	4.451

Note: $n = 226$.

About 80% of the sample are carriers (39.8%) or freight brokers, forwarders, and consolidators (41.6%). The sample either serves local market only (34.51%), foreign market only (26.55%), or both markets (38.94%) and had an average business experience (i.e., number of years of operations) of 13.51.

Table 4.3. Effects of informant's managerial position level.

Substantive variable	Informant's managerial position	n	Mean	SD	t	p
Financial performance	Functional level	170	4.84	1.153	.884	.378
	Top level	56	4.68	1.162		
Supply chain responsiveness	Functional level	170	5.09	1.153	.085	.932
	Top level	56	5.07	1.383		
Customer dynamism	Functional level	170	4.75	1.497	-.046	.963
	Top level	56	4.76	1.615		
Price strategy	Functional level	170	4.38	1.592	.702	.483
	Top level	56	4.21	.549		

Table 4.4. Correlation between respondent competence and variables of interest.

Variables	Financial performance	Supply chain responsiveness	Customer dynamism	Price strategy
Respondent competence	-.053	.091	.035	-.115

In line with previous research, a single key informant from each firm provided data for the study (e.g., Yang *et al.*, 2019; Qrunfleh and Tarafdar, 2013). Individuals with relevant domain and managerial experiences were considered (Nenavani and Jain, 2021; Williams *et al.*, 2013). Specifically, data from medium-to-large firms provided by relevant functional-level managers (e.g., logistics, supply chain, operations, or marketing managers (75.22%) while the remaining, largely from small firms, were provided by top managers (CEO or general managers) (Flynn *et*

al., 2018). Given in Table 4.3, a statistical analysis reveals data from the functional-level managers and the top-level managers are invariant (Essuman *et al.*, 2021a). On average, the informants had held position for 5.15 years and been in the logistics industry for about 8.21 years. Notwithstanding, the study followed previous research (e.g., Essuman *et al.*, 2021) to directly assess the competence level of informants in areas: knowledge of the survey items (mean = 5.94), confidence in responses provided (mean = 6.00), degree to which the responses reflect organizational situation (mean = 5.97). The mean results are statistically greater than the middle-point of the (i.e., 4.00) of the seven-point scale used to evaluate the items, suggesting that an average informant was competent (Essuman *et al.*, 2021). Furthermore, the study finds that the overall competence level (i.e., an average score of the three items) are not statistically related to the variables of interest (Table 4.4).

4.2. Measurement Model Analysis

In line with previous supply chain responsiveness research, a series of statistical analyses, including reliability analysis, exploratory factor analysis, and confirmatory factor analysis (Nenavani and Jain, 2021; Moyano-Fuentes *et al.*, 2016) were conducted to validate the items used to capture the study constructs. The analyses began with examining the descriptive statistics of the measures to determine whether they adequately characterize the study sample, whether there are enough variations in the data, and whether the distribution of the data normality assumptions (Hair *et al.*, 2019). As shown in Table 4.5, the results indicate that the mean scores for the measurement items range between 4.31 and 5.40, slightly above the middle point of the seven-point scales (i.e., 4.00) used to evaluate them. Also, the item-level standard deviations are all above 1.00, indicating relevant dispersions in the data. Importantly, the

skewness and kurtosis values were less than |1.00| and |2.00|, suggesting that the distribution of the data is satisfactorily normal (Kline, 2011).

The reliability of each set of items were assessed using Cronbach's alpha (Hair *et al.*, 2019).

Given in Table 4.5, the results reveal alpha values above .80, suggesting that the items exhibit strong internal consistency (Hair *et al.*, 2019).

Using exploratory factor analysis (EFA) along with principal component and Varimax as estimation and rotation techniques, respectively (Hair *et al.*, 2019), the study explored the unidimensionality of the items (see Table 4.5). Consistent with theoretical expectation, the analysis identified four factors, which together explained 77.187% of the data. Each factor's Eigenvalues is greater 1.00, with the first factor explaining less than 50% of the data (i.e., 30.966%). The associated Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) value was .702 and the Bartlett test of sphericity reached a statistical significance level (Chi-square $[\chi^2] = 1373.902$, degree of freedom (DF) = 66, $p < .01$), indicating sample size and factorability are not major issues. Importantly, results show that the items load high (i.e., loadings are above .80) on only single factors as proposed in the study, and that they load poorly (i.e., loadings are below .25) on constructs they are not designed to measure. These results suggest that the items are unidimensional (Hair *et al.*, 2019).

Covariance-based confirmatory factor analysis (CFA) with maximum likelihood estimator (Hair *et al.*, 2019) (in Mplus 7.4) was accordingly deployed to further examine the reliability and validity of the items (Nenavani and Jain, 2021; Moyano-Fuentes *et al.*, 2016). By using CFA as an additional analytical tool, the study accounted for measurement errors while examining the reliability and validity of the measurement items (Bagozzi and Yi, 2012).

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Table 4.5. Item descriptive statistics and results from exploratory factor and reliability analyses.

Measurement items ¹	Item descriptive statistics						Exploratory factor analysis (factor loadings)				Reliability
	Min	Max	Mean	SD	Skewness	Kurtosis	1	2	3	4	Cronbach's alpha
Supply chain responsiveness 1	1	7	5.32	1.40	-.93	.38	.821	-.105	.057	.120	.86
Supply chain responsiveness 2	2	7	5.40	1.25	-.61	-.10	.869	-.090	.099	.070	
Supply chain responsiveness 3	1	7	4.95	1.36	-.65	-.10	.841	.092	.125	.064	
Supply chain responsiveness 4	1	7	4.90	1.54	-.75	-.10	.802	.151	.206	.060	
Price strategy 1	1	7	4.31	1.77	-.23	-.98	.083	.162	.049	.927	.87
Price strategy 2	1	7	4.36	1.57	-.33	-.52	.158	.098	.089	.911	
Customer dynamism 1	1	7	5.06	1.70	-.55	-.82	.118	.821	.034	.240	.82
Customer dynamism 2	1	7	4.66	1.70	-.19	-1.15	-.019	.899	.020	.196	
Customer dynamism 3	1	7	4.54	1.91	-.17	-1.28	-.062	.826	.068	-.097	
Financial performance 1	1	7	4.73	1.34	-.49	-.16	.180	.029	.821	.062	.83
Financial performance 2	1	7	4.84	1.27	-.75	.72	.098	-.035	.887	.116	
Financial performance 3	1	7	4.84	1.39	-.84	.24	.122	.130	.847	-.024	
Eigenvalue	3.716	2.400	1.771	1.376	Variance explained (%)		30.966	20.004	14.754	11.463	
KMO = .720; $\chi^2 = 1373.902$; DF = 66; p = .000.											

Note: ¹ Item statements are presented in Table 4.6.

59
KNUST



Table 4.6. Results from confirmation factor analysis.

Construct/Measure (Cronbach's alpha/Composite reliability/Average variance extracted)	Factor loading (t-value)
Supply chain responsiveness ¹ (.844/.834/.629). <i>To what extent has each of the following characterized your company's supply chain operations in the last 3 years?</i>	-
on-time delivery of services to customers*	
consistency in delivering services to customers on time	.661 (fixed)
timely introduction of new services to the market	.863 (10.314)
speed in adjusting to changes in the customer requirements	.840 (9.884)
Price strategy ² (.874/.879/.784). <i>Compared to an average competitor in our immediate market, we have lower selling prices</i>	
	.918 (fixed)
we are more consistent in offering lower prices	.852 (7.377)
Customer dynamism ² (.821/.838/.639). <i>To what extent do you disagree or agree with the following statements?</i>	
Customer needs in our industry are constantly changing	.759 (fixed)
What customers want from us changes very rapidly	.963(10.737)
Our customers often request us to do things drastically different from the way we have done them in the past	.645 (9.802)
Financial performance ³ (.831/.801/.574). <i>To what extent has your company's performance improved in the last 2 years in terms... sales margin?</i>	
	.708 (fixed)
overall profit?	.831 (9.693)
return on investment?	.729 (9.176)
Model fit indices: $\chi^2 = 89.039$, $DF = 38$, $\chi^2/DF = 2.343$, RMSEA = .077, NNFI = .933, CFI = .954, SRMR = .056.	

Notes: ¹Items were evaluated on a 7-point scale ranging from "not at all (=1)" to "to the greatest extent (=7)"; ²Items were evaluated on a 7-point scale ranging from "strongly disagree (=1)" to "strongly agree (=7)"; ³Items were evaluated on a 7-point scale ranging from "no improvement (=1)" to "significant improvement (=7)". * Removed due to high correlated error term.

The four-factor EFA model reproduced a good fit to data after dropping one of the items for supply chain responsiveness: $\chi^2 = 89.039$, $DF = 38$, $\chi^2/DF = 2.343$, RMSEA = .077, NNFI

= .933, CFI = .954, SRMR = .056 (Hair *et al.*, 2019; Bagozzi and Yi, 2012). The results given Table 4.6 reveal that all factor loadings are greater than .60 and are statistically significant at 1%. The composite reliability and average variance extracted values of each set of factor loadings are all greater .60 and .50, respectively, demonstrating the unidimensionality and convergent validity of the items (Hair *et al.*, 2019; Bagozzi and Yi, 2012).

Based on rigorous analysis, Voorhees *et al.* (2016) show that Fornell and Larcker's average variance extracted-shared variance (AVE-SV) comparison (as well as the Heterotrait-Monotrait ratio [HTMT]) provides the best assessment of discriminant validity of measurement items. Using AVE-SV, the study finds that the average variance extracted values are all greater than the shared variances between the scales (Table 4.7), demonstrating the study's items exhibit discriminant validity (Voorhees *et al.*, 2016). Lastly, as theorized in *H1*, correlation analysis conducted reveals that supply chain responsiveness and financial performance are positively related, demonstrating nomological validity (Hair *et al.*, 2019) (see Table 4.7).

Table 4.7. Discriminant validity test (AVE-SV approach).

Constructs	Financial performance	Supply chain responsiveness	Price strategy	Customer dynamism
Financial performance	.57	.10	.02	.01
Supply chain responsiveness	.31	.63	.05	.01
Price strategy	.15	.22	.78	.07
Customer dynamism	.11	.08	.26	.64

Note: Values below the principal diagonal are average variance extracted, those below are zero-order correlations while those above are shared variances.

The study assessed whether and the extent to which common method bias describes the data using Lindell and Whitney's marker variable (MV) approach. The MV approach requires the use of a variable that is theoretically unrelated to the substantive variables, termed MV. The study included negative affectivity as the MV (Podsakoff *et al.*, 2003). Negative affectivity captures the degree to which the key informants exhibit disinclination or aversiveness (Watson *et al.*, 1988). Two items, adopted from Menguc *et al.* (2014), were used to measure negative affectivity: often, I get irritated at little annoyances; minor setbacks tend to irritate me too much. Each item was rated on a seven-point scale, ranging from strongly disagree (=1) to strongly agree (=7). A reliability test indicates that the two items have strong internal consistency (i.e., Cronbach's alpha = .877), meeting the requirement of a good MV (Lindell and Whitney, 2001). The average score was 3.35 with a standard deviation of 1.736. As shown in Table 4.8, the MV does not correlate with any of the substantive variables. To investigate common method bias further, the smallest positive correlation between the MV and one of the substantive variables ($r = .005$) was used to compute MV-adjusted correlations (Malhotra *et al.*, 2006). The results indicate that MVadjusted correlations, in terms of strength and direction and level of significance, are not different from the zero-order correlations. In summary, these results suggest that common method bias is less likely to unduly explain the study's main findings.

Table 4.8. Common method bias test.

Variables	Financial performance	Supply chain responsiveness	Customer dynamism	Price strategy	Marker variable
Financial performance		.310**	.103	.147*	-.060
Supply chain responsiveness	.313**		.070	.216**	-.032
Customer dynamism	.107	.075		.255**	.044
Price strategy	.151*	.220**	.259**		.000
Marker variable	-.055	-.027	.049	.005	

Notes: Zero-order correlations and marker variable adjusted correlations are reported below and above the principal diagonal, respectively; * $p < .05$; ** $p < .01$.

4.3. Structural Model Analysis and Hypothesis Evaluation

The correlations between the variables in the study are given in Table 4.9. The results for the structural model are given in Table 4.10. The results indicate that the main effects of the control variables and the moderating variables on financial performance are not statistically significant at 5%. Additional results indicate that supply chain responsiveness has a significant positive effect on financial performance ($\beta = .33$, $SE = .06$, $p = .00$), in support of *H1*.

Moreover, the results reveal the interaction between supply chain responsiveness and price strategy has a significant positive effect on financial performance ($\beta = .16$, $SE = .04$, $p = .00$) while the interaction between supply chain responsiveness and customer dynamism has a significant negative effect on financial performance ($\beta = -.11$, $SE = .04$, $p = .01$). To probe the nature of these interaction effects, the study plotted the relationship between supply chain responsiveness and financial performance at plus and minus one standard deviation of the moderating variables. As illustrated in Figure 4.1, supply chain responsiveness has a stronger positive effect on financial performance under low price conditions relative to high price strategy conditions. On the other hand, Figure 4.2 shows that supply chain responsiveness has a stronger positive effect on financial performance under low condition of customer dynamism compared to high condition of customer dynamism. Put together, these results support *H2* and but inconsistent with *H3*, which state that supply chain responsiveness benefits financial performance more when firms emphasize low prices or operate in more dynamic customer markets, respectively.

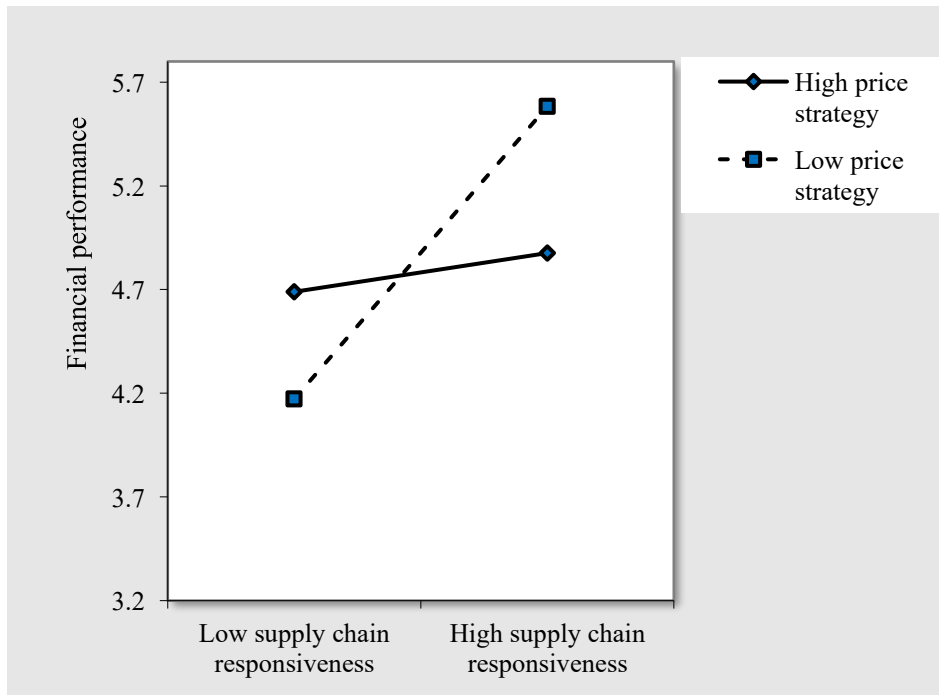
Table 4.9. Correlation and descriptive results.

Variables	1	2	3	4	5	6	7	8	9	10	11
1. Financial performance											
2. Supply chain responsiveness (SCR)	.31**										
3. Price strategy (PS)	.15*	.22**									
4. Customer dynamism (CD)	.11	.08									
5. SCR × PS [~]	.10	-.26**	-.11	-.02							
6. SCR × CD [~]	-.07	-.03	-.02	-.12	.38**						
7. Local and foreign markets (=1)	.03	-.02	.14*	.03	-.11	-.06					
8. Local market only (=1)	-.01	.00	.03	.02	.03	.15*	-.58**				
9. Carriers (=1)	-.02	-.06	.01	-.03	.02	-.02	-.22**	.49**			
10. Firm size (log)	.02	.03	.07	-.13	-.04	.17*	.02	.09	.03		
11. Firm age (log)	-.12	-.14*	-.16*	.02	.04	.03	-.01	.12	-.01	.44**	
Minimum	1.00	2.00	1.00	1.33	-6.39	-5.43	.00	.00	.00	1.61	1.10
Maximum	7.00	7.00	7.00	7.00	8.74	7.57	1.00	1.00	1.00	6.17	4.09
Mean	4.80	5.08	4.33	4.75	.42	.14	.39	.35	.40	2.69	2.44
Standard deviation	1.15	1.21	1.58	1.52	2.11	1.87	.49	.48	.49	.75	.57
Variance inflation factor [†]	-	1.16	1.25	1.14	1.32	1.31	1.65	2.13	1.38	1.40	1.41

Notes: [~] Created as a product of the mean-centered scale(s) of the original scale(s); [†] Financial performance is the dependent variable; *p < .05; **p < .01.

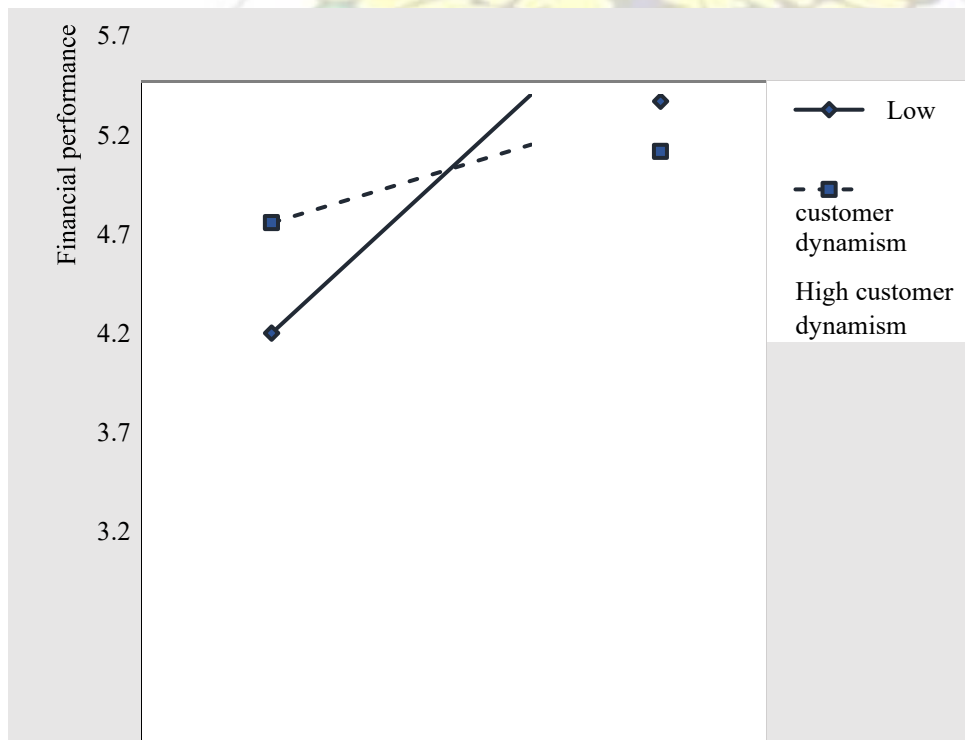
64
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Note: Low and high price strategies are -1 standard deviation and +1 standard deviation of the price strategy scale, respectively.

Figure 4.1. Moderating effect of price strategy.



Low supply chain responsiveness

High supply chain
responsiveness

Note: Low and high values of supply chain responsiveness (and also customer dynamism) are -1 standard deviation and +1 standard deviation, respectively.

Figure 4.2. Moderating effect of customer dynamism.

4.4 Robustness Analysis

Given its capacity to accommodate measurement errors (Bagozzi and Yi, 2012), covariancebased structural equation modeling (SEM), implemented in Mplus 7.4, was used as an analytical tool to assess the robustness of the results. This analysis involved re-estimating the model reported in Table 10 using full measurement information for the substantive variables in the study (i.e., supply chain responsiveness, financial performance, customer dynamism, and price strategy). The results are shown in Table 4.11.

Table 4.11: SEM results (robustness check).

		Hypothesis	Dependent variable: Financial performance			Conclusion
Independent variables:			β^{\dagger}	SE	p	
Local and foreign markets (=1)			.21	.18	.24	
Local market only (=1)			.21	.21	.32	
Carriers (=1)			-.11	.16	.60	
Firm size (log)			.17	.11	.11	
Firm age (log)			-.29	.14	.04	
Supply chain responsiveness (SCR)		H1: +	.47	0.11	.00	Supported
Price strategy (PS)			.03	.05	.59	
Customer dynamism (CD)			.02	.06	.27	
SCR × PS"		H2: +	.15	.04	.00	Supported
SCR × CD"		H3: +	-.11	.04	.01	Not supported
χ^2			213.53			
df			108			
RMSEA			.07			
CFI			.91			

NNFI	.90
SRMR	.06
R^2	25.6%

Notes: * Created as a product of the mean-centered scale(s) of the original scale(s); the model includes the full indicators of the substantive constructs. †Unstandardized beta values; SE = standard error; p = significance level (2-tailed).

In all case, the SEM results are consistent with the main results generated using moderated regression analysis (Table 10). Specifically, supply chain responsiveness has a significant positive relationship with financial performance ($\beta = .47$, $SE = .11$, $p = .00$). Additionally, the results indicate that price strategy ($\beta = .15$, $SE = .04$, $p = .00$) and customer dynamism ($\beta = -.11$, $SE = .04$, $p = .01$) positively and negatively moderates the relationship supply chain responsiveness and financial performance.

4.5. Discussion

In considering logistics firms and their financial performance, this study uses a contingentdynamic capabilities perspective to advance extant empirical literature on the relationships between supply chain responsiveness and performance outcomes. The study first examines whether the findings from previous studies that focus on manufacturing supply chains and other performance outcomes replicate in the context of logistics firms and financial performance. Following the dynamic capabilities literature (Teece, 2014; Helfat and Winter, 2011), this study conceptualizes supply chain responsiveness as a dynamic capability that enables the firm to achieve *external fit* with the customer market, thereby increasing market and economic performances. Specifically, responsive supply chains rapidly absorb and adapt to changes in customer requirements, enabling firms to enhance customer value, gain first-mover advantage, and revenue generation (Nenavani and Jain, 2021; Fawzi and Abdallah, 2019). In addition, the study argues that, while a dynamic

capability, supply chain responsiveness functions as an ordinary capability in the sense that it can increase firms' time- and cost-efficiency regarding how they service their markets (e.g., on-time delivery products/services to customers) (Williams *et al.*, 2013; Nenavani and Jain, 2021). Consistent with these theoretical characterizations, the study finds that supply chain responsiveness has a positive relationship between supply chain responsiveness and the financial performance of logistics firms. This finding aligns with related past studies' conclusions that supply chain responsiveness relates positively to firm performance (Qrunfleh and Tarafdar, 2013), export performance (Ayoub and Abdallah, 2019), competitive advantage (Thatte *et al.*, 2013), and market performance (Kim and Lee, 2010). Meanwhile, it appears to contradict evidence from Dobrzykowski *et al.* (2015) that supply chain responsiveness does not directly affect firm performance, and also the alternative theoretical contention that supply chain responsiveness may undermine financial performance as it is costly to build and sustain (Wagner *et al.*, 2012), limits economies of scale of operation, and may disrupt firms' routines (cf. Schilke, 2014).

Taking notice of the limitations of the logic dynamic capabilities theory (Wilden *et al.*, 2013) and the cost-benefit trade-offs associated with supply chain responsiveness (Wagner *et al.*, 2012), the study followed examples in past studies (Lam *et al.*, 2019; Piening and Salge, 2015) to apply a contingent-dynamic capabilities view to examine how price strategy and customer dynamism moderate the relationship between supply chain responsiveness and financial performance. The study finds that price strategy positively moderates the supply chain responsiveness-financial performance relationship. As displayed in Figure 4.1, compared to a condition of high price, the degree of financial performance benefit associated with a unit increment in supply chain responsiveness is higher for a condition of low price. In particular, compared to the other three configurations of supply chain responsiveness and

price strategy, financial performance is highest when supply chain responsiveness is high and prices are low. Overall, the result supports the study's theorization that combining supply chain responsiveness with low prices helps firms attain 'fit' with the customer market, thereby resulting in superior financial performance. The result further arguments from the competitive priorities literature (Quesada *et al.*, 2008) and customer value theory (Leroi-Werelds, 2019) that low prices combined with supply chain responsiveness maximize customer value, increasing firms' competitiveness in the market. Bundling high prices with supply chain responsiveness absorbs the costs of increasing supply chain responsiveness and accordingly raises margins on costs of operations/sales. However, in today's competitive environment, such a configuration is unsustainable and reduces firms' order-winning and revenue-generation streams.

Additional results reject the study's hypothesis that the supply chain responsiveness financial performance link is positive and greater for businesses operating in highly dynamic consumer markets compared to those operating in less dynamic customer markets. As Figure 4.2 illustrates, the slope for the link between supply chain responsiveness and financial performance is positive for both low and high conditions of customer dynamism, but then it is steeper for low conditions of customer dynamism. Moreover, Figure 4.2 indicates that financial performance is highest when supply chain responsiveness is high and customer dynamism is low. Though these results are consistent with the study's expectations, they also highlight the debates and conflicting findings in the dynamic capabilities literature underpinning this study. Traditionally, the dynamic capabilities theory suggests that dynamic capabilities are needed in dynamic environments (Teece, 2007; Teece *et al.*, 1997), but whether its economic and market utilities are always greater in high dynamic environments is in question (Helfat and Winter, 2011; Schilke, 2014). In particular, the results from this

study contradict conclusions from Karna *et al.*'s (2016) meta-analysis study that shows that higher firm performance outcomes accrue from the deployment of dynamic capabilities in high dynamic environments, and in particular, the arguments that supply chain responsiveness is a customer-focused dynamic capability that enables firms to attain external fit with a changing customer market (Fawzi and Abdallah, 2019; Nenavani and Jain, 2021). Whereas high supply chain responsiveness helps firms to external fit with high customer dynamic markets, it may not always be profitable in that it can be costly to sustain such structural fit, limiting financial gains (Lee and Griffith, 2019).

The study's results have implications for supply chain responsiveness research. First, the results demonstrate that the financial performance outcome of supply chain responsiveness is context-dependent and future studies should progress accordingly. The challenge, however, is that while a contingent-dynamic capability perspective attributes superior performance outcomes to a 'fit' between supply chain responsiveness and organizational circumstances (Sirmon and Hitt, 2009; Donaldson, 2006), what constitutes 'fit' is quite ambiguous (Donaldson, 2006). As arguments leading to the specification of the study's hypotheses indicate, multiple states of 'fit' can be achieved within a system. By implication, the theorization of the moderating influences of contextual factors on the performance effects of supply chain responsiveness ought to highlight potential complexities and contradictory effects. In addition, empirical analyses need to be combined with theoretical specifications to reach conclusions about which theoretical 'fit' states involving supply chain responsiveness and organizational contingencies benefit specific performance outcomes the most.

4.5. Chapter Summary

This chapter discusses how the study's data was analyzed. It further presents the results and then discusses the results in relation to previous literature while highlighting the theoretical implications. The subsequent chapter summarizes the results, presents the study's conclusion, and outlines the managerial implications of the results alongside the limitations and direction for future research.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

A summary of the study's findings and the associated conclusions are reported in this chapter. In addition, the chapter highlights some lines of action for supply chain managers based on the study's findings. Finally, the chapter discusses the limitations of the results and the direction for future research.

5.2. Summary of the Study's Findings

This study addresses three specific objectives: (1) to examine the relationship between supply chain responsiveness and the financial performance of logistics firms; (2) to examine how price strategy moderates the link between supply chain responsiveness and the financial

performance of logistics firms; (3) to examine how customer dynamism moderates the relationship between supply chain responsiveness and the financial performance of logistics firms. The study developed a conceptual model grounded in a contingent-dynamic capability approach to address these objectives. The model and its associated hypotheses were tested on survey data from 226 logistics firms operating in Ghana. The results reveal the following:

- Supply chain responsiveness has a significant positive relationship with financial performance.
- Price strategy positively moderates the relationship between supply chain responsiveness and financial performance such that logistics firms who charge lower prices for services obtain superior financial performance from supply chain responsiveness than those who charge higher prices for services.
- Customer dynamism negatively moderates the relationship between supply chain responsiveness and financial performance such that the financial performance benefit of supply chain responsiveness is stronger for logistics firms that experience less customer dynamism compared to those that experience greater customer dynamism.

5.3. Conclusion

This research sought to contribute to the literature on the performance consequences of the supply chain responsiveness construct. It extends this literature to the logistics sector, one of the many essential service contexts which have been mainly ignored in previous empirical works. Data from logistics firms in Ghana suggests that although service firms are distinct from manufacturing firms, supply chain responsiveness has the potency to enhance their financial performance, *ceteris paribus*. As presented, this conclusion aligns with previous

empirical studies that focused on manufacturing supply chains. Moreover, the study's theorization generally supports the above conclusion.

Importantly, this study offers an improved theoretical and empirical understanding of the extant literature on the performance consequences of supply chain responsiveness by demonstrating that differences in organizational circumstances under which supply chain responsiveness is deployed determine whether supply chain responsiveness more or less benefits financial performance. Overall, previous works say little about the boundary conditions of the supply chain responsiveness-performance relationships. This research has identified price strategy and customer dynamism as significant moderators of the relationship between supply chain responsiveness-financial performance in the research setting.

In summary, this research's application of the contingent-dynamic capability perspective offers a nuanced characterization of the supply chain responsiveness-financial performance relationship in that it details how the relationship changes in magnitude under varying conditions of price strategy or customer dynamism. Such insights offer theoretical clarity and encourage decision-makers to approach supply chain responsiveness investment with circumspection. Therefore, it seems imperative for future studies on the relationship between supply chain responsiveness-performance to progress from a contingency perspective while attempting to overcome the methodological challenges in this study.

5.4. Recommendations

This study provides recommendations for supply chain managers, policy-makers, and future research. A complicated supply chain structure has emerged from the combined consequences of heightened rivalry, shifting consumer needs, competitive sourcing tactics, and shortened product life cycles. As a result, businesses have devised techniques to deal with abrupt market fluctuations and unanticipated shocks. However, enterprises must continually align their whole supply chain procedures with the environment's dynamics to sustain competitive advantage and increase financial performance.

Generally, the study's results suggest that prioritizing investment in supply chain responsiveness enhances financial performance, especially when firms combine such investment with a low-price strategy and in markets where customer requirements change less rapidly and are predictable. Supply chain managers should note that considering price levels and the rate of change in customer requirements to determine the level of investment in supply chain responsiveness is strategically essential. Customers of today's markets seek quality, timeliness, and value for money; therefore, managers must offer superior supply chain responsiveness at low prices to increase financial performance. Charging prices lower than competitors while improving supply chain responsiveness creates more value for customers, which enables the firm to retain and expand its customer base. Furthermore, offering supply chain responsiveness, especially under unstable and unpredictable customer market conditions, can undermine firms' financial performance as the associated costs may offset the benefits. In a more stable market, sometimes, supply chain responsiveness becomes routine, and the characteristics of the customers are more predictable, allowing the firm to plan effectively.

The study's results have policy implications. Changes in the macroeconomic environment (e.g., interest rate, exchange rate, inflation) only influence customer behaviors, preferences, and desired value but also firms' cost of doing business, pricing strategy, and degree of emphasis on supply chain responsiveness. Based on the study's results, policymakers should create a business environment that supports firms' ability to respond to market changes rapidly and ensure low operations costs and, accordingly, low pricing. In developing markets, where firms struggle to access financial resources to support their operations and growth, policymakers should implement measures to facilitate firms' access to external financial support.

This study has limitations and directions for future research. The data collected for this research was limited to logistics firms operating in a developing economy, Ghana. Since the business environment in Ghana is different in many respects, future research should test the study's hypotheses in other countries. Again, this study examined the linear relationship between supply chain responsiveness and financial performance, which assumes that changes in supply chain responsiveness have proportional effects on financial performance. Given the cost-benefit trade-off associated with supply chain responsiveness (Wagner *et al.*, 2012), more research is needed to determine the level of supply chain responsiveness that optimizes financial performance. Specifically, such studies should explore the potential curvilinear effect of supply chain responsiveness on financial performance.

This study has shown that contingent-based models provide a better understanding of the relationship between supply chain responsiveness and financial performance. It explicitly identifies price strategy (internal contingency) and customer dynamism (external contingency) as important boundary condition factors of the supply chain

responsivenessfinancial performance relationship. Other contingencies, such as competitive intensity and financial slack, which may affect investment in supply chain responsiveness, can be explored in future studies.

This study tests a theoretically grounded contingency model on cross-sectional survey data, alleviating concerns associated with using cross-sectional survey data (Podsakoff *et al.*, 2012). In addition, several procedural and statistical remedies were followed to mitigate issues of common method bias (Podsakoff *et al.*, 2012). Nonetheless, the cross-sectional nature of the data restricts causal inferences from being drawn from the reported findings and conclusions. Future studies can address such methodologies issues by employing longitudinal survey design and data from multiple sources. Additionally, firms desiring superior financial performance, or earning high profits, may likely be motivated to invest more in supply chain responsiveness. Although this issue raises an endogeneity dilemma, the study could not statistically address it as no appropriate instrumental variables exist in the dataset. Future research should be designed to address endogeneity problems that may characterize the link between supply chain responsiveness and financial performance.

Furthermore, given the limited knowledge of supply chain responsiveness in service supply chains and logistics firms, more research is encouraged in this area. Lastly,

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APPENDIX: SURVEY INSTRUMENTS

Cover Letter



KNUST School of Business



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SUPPLY CHAIN SERVICE INNOVATION SURVEY – 2020

Dear Survey Participant,

Thank you for considering participating in this study that seeks to understand service innovation among logistics service firms companies (e.g., carriers/trucking firms, logistics brokers and agents, freight forwarders and consolidators) that engage in either local or global supply chain operations. The study aims to obtain empirical evidence to support managerial decision-making and public policy-making on how innovation can be supported in these companies. Thus, your active participation would be very much appreciated.

The study is undertaken by a team of researchers from Kwame Nkrumah University of Science and Technology (KNUST). We can assure you that your responses will be treated in the strictest confidence, with the results collected being anonymized and used for statistical and academic purposes only. Kindly note that you are responding to this survey as a member of the senior management team in your company (preferably, you are a CEO, managing director, general manager, head of logistics/supply chain operations, or marketing/sales manager). We kindly request that you focus on your company's **internal & external operations** and **business environment** when completing this questionnaire.

The survey has specific instructions to follow and scales to use to indicate your responses. Please reflect on your personal experience in your company and its operating environment to respond to the statements in the survey. Although some statements appear quite similar, they are also unique in many ways, so **kindly do well to respond to each statement**. The questionnaire will take about 15 to 20 minutes to complete. All questions and concerns about the study can be directed to **Dr. Dominic Essuman** (Tel.: +233 560 271 219) and **Mr. Cosmos Osei** (Tel.: +233 243 179 997), members of the research team.

As a token of appreciation for participating in the study, you will receive a summary report of the key findings and recommendations from the study. We are confident that the report would be of great use to your company. You will also have a chance to win GH¢500 for your favourite charity (such as your school association, community association, or orphanage). **Please provide your email address and/or mobile number here (in case you are interested in these packages):**

Once again, we are most grateful that you have decided to take the time to participate in this survey.
Yours sincerely,



Prof. Nathaniel Boso

Project Leader and Dean of KNUST School of Business, Kumasi

Email: nboso@knust.edu.gh or natboso@gmail.com

Tel.: 0260684465

Please, indicate your consent for participation here

☐ I agree ☐ I disagree

Questionnaire (Extract)

SCALE: 1= “not at all” to 7= “to the greatest extent” To what extent has each of the following characterized your company’s supply chain operations in the last 3 years?	Not at all							To the greatest extent
on-time delivery of services to customers	1	2	3	4	5	6	7	
consistency in delivering services to customers on time	1	2	3	4	5	6	7	
timely introduction of new services to the market	1	2	3	4	5	6	7	
speed in adjusting to changes in the customer requirements	1	2	3	4	5	6	7	

SCALE: 1= “strongly disagree” to 7= “strongly agree” To what extent do you agree with the following statements?	Strongly disagree				Strongly agree		
Customer needs in our industry are constantly changing	1	3	4	5	6	7	
What customers want from us changes very rapidly		3	4	5	6	7	

	1	2					
Our customers often request us to do things drastically different from the way we have done them in the past	1	2	3	4	5	6	7

SCALE: 1= “no improvement” to 7= “significant improvement” To what extent has your company’s performance improved in the last 2 years in terms...	Not improvement	Significant improvement
sales margin	1 2 3 4	5 6 7
overall profit	1 2 3 4	5 6 7
return on investment	1 2 3 4	5 6 7

SCALE: 1= “strongly disagree” to 7= “strongly agree” Compared to an average competitor in our immediate market,	Strongly disagree	Strongly agree
we have lower selling prices	1 2 3 4	5 6 7
we are more consistent in offering lower prices	1 2 3 4	5 6 7

>> How long (in years) has your firm been in business? _____

>> Our company... ☐ serves domestic customers only ☐ facilitates import operations only
☐ facilitates import operations in exports only ☐ facilitates both imports and exports operations

Considering your primary business activities, which of the following does your company belong to?
☐ Carrier ☐ Warehouse operator ☐ Freight broker/agent ☐ Freight forwarder/consolidator
☐ Others

>> How many full-time staff are currently employed by your company? (Only consider those on your Ghana payroll) _____

>> Please, what is your education level? ☐ Up to SHS/A’level/O’level ☐ Up to Diploma/HND
☐ Up to 1st Degree ☐ Up to 2nd Degree ☐ Up to PhD

>> How long have you worked in this industry? About _____ years

>> What is your position in your organisation? ☐ CEO ☐ General manager ☐ Marketing/Sales Manager
☐ Operations Manager ☐ Logistics/Supply Chain Manager
☐ Other top management position (kindly indicate _____)

>> How long (in years) have you held this current position?
_____ years

<i>To what extent do you agree or disagree with the following statements?</i>	<i>Strongly disagree</i>				<i>Strongly agree</i>		
The questionnaire deals with issues I am very knowledgeable about	1	2	3	4	5	6	7
I am completely confident about my answers to the questions	1	2	3	4	5	6	7
I am confident that my answers reflect the organization's situation	1	2	3	4	5	6	7
Often, I get irritated at little annoyances	1				5	6	7
			3	4			
Minor setbacks tend to irritate me too much	1	2	3	4	5	6	7

