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RISK MANAGEMENT AND FIRM PERFORMANCE: THE ROLE OF DYNAMIC
CAPABILITY AND RISK MANAGEMENT CULTURE

BY

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DECLARATION

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

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ABSTRACT

Risk management is increasingly recognized as a critical factor influencing firm performance and competitiveness. Motivated by the complex yet critical relationship between risk management and firm outcomes, this study aimed to examine the impacts of risk management practices and risk culture on firm performance, focusing on mining firms in Ghana. The study is grounded in the resource-based view and dynamic capability theories. Using a quantitative approach, data was gathered from a sample of 133 employees of mining firms in Ghana and analyzed with structural equation modeling. Key findings reveal that while risk management alone does not directly enhance firm performance, the presence of a strong risk management culture significantly improves the effectiveness of risk management practices in driving performance. The study concludes that mining firms seeking to boost performance should invest in robust risk management systems and consciously nurture a risk-aware culture. This will equip them to better capitalize on opportunities and sustain competitiveness amidst myriad risks. The research contributes valuable empirical insights on the integral, nuanced role of risk management culture in translating risk management into improved firm performance. Based on the findings, recommendations include developing educational programs to promote risk awareness across organizations and creating open channels for communication about risk to nurture a supportive risk management culture. The study's focus on the mining industry in Ghana may limit generalizability, while the cross-sectional quantitative approach provides limited insights into the temporal dynamics of risk management. Further research could employ longitudinal and qualitative approaches across industries and regions. Overall, the study underscores the importance of an integrative approach encompassing risk management practices, culture and capabilities for long-term success amidst uncertainty.

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LIST OF ABBREVIATIONS

AVE - Average Variance Extracted

CFA - Confirmatory Factor Analysis

CR - Composite Reliability

DC - Dynamic Capability

EFA - Exploratory Factor Analysis

FP - Firm Performance

HTMT - Heterotrait-Monotrait Ratio

RBV - Resource-based View

RM - Risk Management

RMC - Risk Management Culture

SD - Standard Deviation

SEM - Structural Equation Modeling

SPSS - Statistical Package for the Social Sciences

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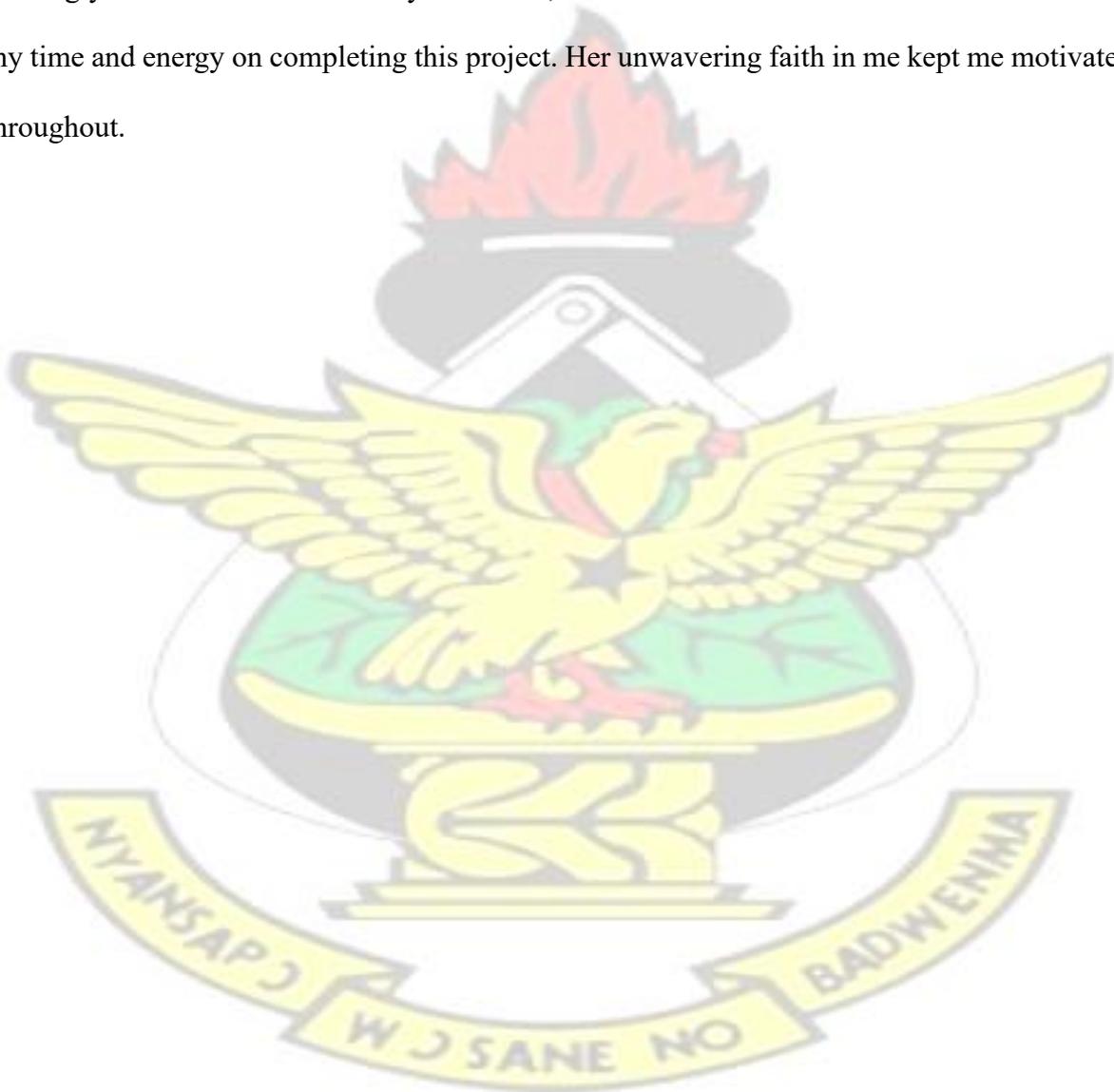
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DEDICATION

I lovingly dedicate this work to my dear wife, whose love and sacrifice allowed me to focus my time and energy on completing this project. Her unwavering faith in me kept me motivated throughout.



CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The concept of risk management has gained significant attention in recent years, as organizations increasingly recognize the importance of identifying, assessing, and mitigating potential risks that may impact their operations and objectives (Shou *et al.*, 2018). Effective risk management is crucial for ensuring the stability and sustainability of businesses, as it enables them to anticipate and navigate uncertainties in their environment (Badriyah *et al.*, 2015). Risk management involves a systematic process of identifying, evaluating, and addressing risks that a business may encounter. These risks can arise from various sources, such as financial markets, legal liabilities, operational failures, or natural disasters (Ai Ping and Muthuveloo, 2015). By implementing a comprehensive risk management framework, organizations can proactively manage their exposure to these risks and minimize the potential impact on their operations and financial performance. One key aspect of effective risk management is the continuous monitoring and assessment of the risk landscape. As the business environment evolves, new risks may emerge, and existing risks may change in their significance. Organizations need to stay vigilant and adapt their risk management strategies accordingly to remain resilient in the face of changing circumstances (Abeysekara *et al.*, 2019).

Firm performance is a multidimensional concept that encompasses various aspects of a company's operations, including its financial and non-financial achievements. Financial performance indicators, such as revenue growth, profitability, and shareholder value, provide a quantitative assessment of a company's success. In contrast, non-financial indicators, such as customer satisfaction, employee engagement, and innovation capabilities, offer a more qualitative perspective on a company's performance (Florio and Leoni, 2017). An essential

aspect of enhancing firm performance is understanding how risk management practices drive positive outcomes. By implementing robust risk management strategies, organizations can minimize adverse effects, exploit opportunities, and improve their overall performance. By identifying and assessing potential risks, firms can proactively take measures to mitigate or avoid them, which can help reduce losses and improve financial performance (Filyppova *et al.*, 2019).

Dynamic capability is a vital component of an organization's ability to remain competitive and achieve sustainable growth in today's fast-paced and ever-changing business environment. The concept highlights the importance of a firm's adaptability and its capacity to continuously reconfigure and align its resources to address emerging challenges and capitalize on new opportunities (Kaur and Mehta, 2017). In the context of risk management and firm performance, dynamic capability plays a crucial moderating role. A firm with strong dynamic capabilities is likely to be more effective in implementing risk management practices that can positively impact its performance (Bitencourt *et al.*, 2020). Firms with strong dynamic capabilities can quickly identify and respond to emerging risks in their environment. This enables them to take proactive measures to mitigate potential adverse effects and seize opportunities that may arise from the changing risk landscape (Suddaby *et al.*, 2020).

Furthermore, the extent to which risk management is accepted and committed throughout the supply chain highly depends on the risk management culture. Risk culture encompasses an organisation's employees' general awareness, attitudes, and behaviours toward risk and how risk is managed within the organisation (Saeidi *et al.*, 2019). Risk management culture is a critical factor that shapes the way organizations approach and handle risks. A strong risk management culture can significantly enhance the effectiveness of risk management practices and, in turn, positively impact firm performance (Alawattegama, 2017a). A strong risk

management culture instills a sense of responsibility and ownership among employees. This empowers individuals at all levels of the organization to take an active role in identifying, assessing, and managing risks (Farooq *et al.*, 2015).

Based on the aforementioned factors, there is a need for conducting this study to better understand the complex relationships between risk management, dynamic capability, risk management culture, and firm performance. This research provides valuable insights into the mechanisms through which risk management practices influence firm performance and how these relationships are moderated and mediated by dynamic capability and risk management culture. The findings of this study can help organizations design and implement more effective risk management strategies, ultimately leading to improved performance and long-term success. Drawing on the resource-based view and dynamic capability theories, this study develops a unique research model that examines the role of risk management culture and dynamic capability in the relationship between risk management and competitive advantage. The study targets mining firms operating in Ghana.

1.2 Problem Statement

The mining sector plays a critical role in the global economy and is particularly significant in countries rich in mineral resources. However, the industry is fraught with various risks and uncertainties, such as fluctuations in commodity prices, regulatory changes, environmental impacts, and health and safety concerns, which have recently intensified due to the evolving global landscape. The COVID-19 pandemic, for instance, has disrupted global supply chains and heightened operational risks, creating additional challenges for mining companies. In this context, understanding the interplay between risk management, dynamic capability, risk management culture, and firm performance becomes increasingly important. The mining sector can benefit from more effective risk management practices that take into account the

complexities of the industry and the changing global environment. By examining the roles of dynamic capability and risk management culture in the relationship between risk management and firm performance, this study aims to contribute valuable insights to help mining companies better navigate the uncertainties they face and improve their overall performance.

Risk management, dynamic capability, risk management culture and firm performance are interconnected. Effective risk management can help to improve firm performance by reducing the likelihood of negative events and minimizing their impact. Dynamic capability is essential for firms to adapt to changing risks and opportunities. Finally, a strong risk management culture can help to embed risk management practices throughout an organization and create a more proactive approach to managing risk.

There is a substantial corpus of empirical studies on risk management. However, such prior studies have revealed inconsistent findings: while some studies have revealed a positive effect of risk management on performance and other outcome variables (e.g. Gordon *et al.*, 2009; Khan and Ali, 2017; Quon *et al.*, 2012), others have revealed a negative effect (e.g., Alawattagama, 2017; Khan and Ali, 2017). Others (e.g., (Filyppova *et al.*, 2019; Florio and Leoni, 2017). Part of the reason for these contradictory results is that these studies have linked risk management to several performance outcomes, such as competitive advantage, supply chain performance, corporate performance, and sustainability. Also, the introduction of mediating and moderating variables such as environmental uncertainty, industry competition, firm size, firm complexity and supply chain resilience (e.g., (Gordon *et al.*, 2009; Khan and Ali, 2017)

Furthermore, scholars also contend that, although risk management is essential, it is highly insufficient to drive performance outcomes and therefore moderating and mediating variables

influences risk management. Gordon et al. (2009) assert that the relationship between risk management and firm performance is contingent on environmental uncertainty and industrial competition factors. Also, Khan and Ali (2017) contend that intellectual capital moderates the relationship between risk management and firm performance. These previous results clearly show that the risk management-performance link is complicated and may be explained by significant mediating and moderating mechanisms.

Quon et al. (2012) leveraged the dynamic capability theory to scrutinize the nexus between Enterprise Risk Management (ERM) and firm performance, utilizing data garnered from 156 non-financial entities listed on the standard and poor's Toronto stock exchange. The inquiry unveiled a beneficial impact of ERM on firm performance, recommending that subsequent investigations incorporate moderating and mediating variables such as supply chain resilience.

Khan and Ali (2017) anchored their investigation on the Resource-Based view theory, exploring the modulatory role of intellectual capital in the connection between ERM and firm performance. The researchers analyzed data from 250 Small and Medium Enterprises (SMEs) in Pakistan through structural equation modelling, establishing a favorable moderation of the relationship by intellectual capital.

In a similar vein, Shad and Lai (2015) employed the dynamic capability and resource-based view theories to evaluate the influence of ERM execution on firm performance, with data derived from 120 publicly listed Malaysian corporations. Regression analysis showcased a positive repercussion of ERM execution on firm performance, advocating for future research to consider potential contingent variables such as the commitment of top management.

Florio and Leoni (2017) undertook a study to ascertain the potential correlation between the depth of ERM system implementation and the performance output of Italian companies listed

on the stock market, framing their analysis within the Resource-based view theory. Drawing from data of non-financial firms on the Milan Stock Exchange, the study illustrated that companies with a sophisticated ERM system manifested enhanced performance, both financially and in market evaluations.

However, despite a rich body of literature on risk management, there exists a discernible void in understanding the cumulative role of risk management culture and dynamic capability in affecting the relationship between risk management and firm performance. This present study ventures to fill this gap, proposing a distinctive research model that delineates the roles of dynamic capability and risk management culture in influencing the risk management performance nexus.

1.3 Research Objectives

The study's main objective is to examine the role of risk management culture and dynamic capability on the relationship between risk management and firm performance. Specifically, the study seeks to:

1. To assess the influence of risk management practices on firm performance
2. To evaluate the influence of risk management culture on firm performance
3. To examine the mediating role of risk management culture on the relationship between risk management practices and firm performance

1.4 Research Questions

1. What is the impact of risk management practices on firm performances?
2. What is the impact of risk management culture on firm performance?

3. What is the mediating role of risk management culture on the relationship between risk management and firm performance?

1.5 Significance of the Study

In addressing the research objectives, the study contributes to Academia, industry and government.

This study can contribute to the existing literature on risk management and firm performance by exploring the moderating effects of dynamic capability and risk management culture on this relationship. The findings of this study can provide a deeper understanding of the mechanisms and processes through which risk management practices influence firm performance, which then enhance theoretical underpinnings in the field of strategic management.

The results of this study can help organizations develop effective risk management strategies by identifying the factors that facilitate or hinder the implementation of these practices. By understanding the role of dynamic capability and risk management culture in the relationship between risk management and firm performance, organizations can design and implement risk management practices that are better aligned with their strategic goals and capabilities, leading to better business outcomes.

The study can inform policy-making by highlighting the importance of promoting a risk management culture and dynamic capability development among organizations. This can lead to the development of policies and programs that support the adoption of risk management practices among firms, which can contribute to a more resilient and sustainable economy.

1.6 Overview of Methodology

The research design for this study is explanatory and descriptive research, focusing on examining the relationship between risk management, dynamic capability, risk management

culture, competitive advantage and firm performance. This study took a survey form. This study adopts a quantitative approach involving developing and testing hypotheses. The researcher adopts convenient, non-probability sampling to draw a sample of one hundred and fifty (150) from the target population. Data is gathered using questionnaires designed with Google forms. Data is analysed using IBM SPSS version 26. Both inferential and descriptive analyses are conducted on the gathered data. Descriptive analyses include mean, range, standard deviation, skewness, and kurtosis. The model of the study is tested using SmartPLS, version 4.

1.7 Scope of the Study

Geographically, the study focused on Ghana, specifically the mining industry in the country. Contextually, the study targeted mining firms operating in Ghana, including both local and multinational organizations. The respondents for the study were employees of these mining firms who were involved in risk management activities, decision-making processes, and organizational culture shaping. Conceptually, the study focuses on four main variables: Risk Management, Firm Performance, Dynamic Capability and Risk Management Culture. Risk management encapsulates the systematic process of identifying, evaluating, and prioritizing potential uncertainties, utilizing a streamlined and cost-effective deployment of resources to mitigate the impact of adverse events or leverage potential opportunities. Effective stewardship in this realm facilitates not only the foresight to pre-empt possible risks but also the agility to mitigate losses, thereby enhancing financial outcomes, as highlighted by Saeidi et al. (2019). On the other hand, firm performance represents an overarching indicator of an enterprise's effectiveness and efficiency in reaching its defined goals and objectives. This study encompasses a multidimensional assessment of firm performance, anchoring on various parameters such as financial viability reflected through revenues and profit margins, operational efficacy mirrored through productivity metrics and market share, and stakeholder

contentment represented by employee and customer satisfaction indexes, a view supported by Abeysekara et al. (2019). Introducing dynamic capability into the equation, it denotes a firm's prowess in continually adapting and innovating by reconfiguring its resources and competencies to resonate with a fluctuating business environment. This attribute confers a sustained or enhanced competitive edge to the firm, a concept drawn from insights presented by Li and Liu (2014). Lastly, risk management culture embodies a collective adherence to specific values, beliefs, norms, and protocols governing the manner in which risks are perceived and managed within an organizational ecosystem. A robust risk management culture emphasizes comprehensive engagement with risk management strategies across all organizational tiers, nurturing transparent dialogue about risks and fostering a proactive approach to decision-making processes. This culture operates to navigate through potential vulnerabilities effectively, guided by an understanding based on Abeysekara et al. (2019). This study endeavors to offer a deep dive into how dynamic capability and risk management culture individually sculpt the intricate relationship between risk management and firm performance.

1.8 Limitations of the Study

With a sample size of 150, the study may have limitations in terms of generalizability of the findings. A smaller sample size may not be fully representative of the entire population of mining firms operating in Ghana. Consequently, the study's conclusions may not be broadly

applicable to all mining firms. The limited sample size might also affect the statistical power of the research, potentially reducing the ability to detect significant relationships between variables.

The study employs convenient sampling technique, which may introduce some biases in the sample selection. Since this approach does not utilize random sampling, there is a risk that the sample may not be an accurate representation of the target population. As a result, the findings may not be generalizable to the broader population of mining firms in Ghana.

1.9 Organisation of the Study

The study is organized into five distinct sections. Chapter one, which is the Introduction, elucidates the backdrop of the research, delineating the problem statement, the aims of the investigation, and the pertinent research queries. Additionally, this preliminary section highlights the relevance of the study and provides a concise overview of the methodological approach adopted. It outlines the bounds of the research while acknowledging its constraints, and outlines how the study is orchestrated. Chapter two, designated as the Literature Review, offers a comprehensive exploration of existing literature, comprising a scrutinization of conceptual underpinnings, theoretical discourses, and empirical studies relevant to the research focus. Moreover, this segment develops the conceptual framework that guides the study. The subsequent section, chapter three, delineates the research methodology encompassing a description of the research design, the demographic details of the target population, and the strategy adopted for sample selection. It details the procedures employed for data accrual, the approaches to data scrutiny, and the measures ensured to uphold the validity and reliability of the research outcomes. The ethical considerations pertinent to the study are also addressed in this chapter. Chapter four delves into a detailed analysis of the data amassed and discusses the findings. This section comprises a representation of descriptive statistics and inferential

statistics employed to interpret the data. It explicates the structural equation modeling technique used in the analysis and engages in a detailed discourse on the findings derived from the data analysis. Conclusively, chapter five encapsulates the primary findings of the research, offering a concise yet comprehensive closure by summarizing the critical points of the analysis. This final segment furnishes recommendations derived from the study and suggests potential avenues for subsequent research endeavors, thereby adding a prospective dimension to the research.



2.1 Introduction

The objective of conducting a literature review resides in acquiring a profound understanding of the prevailing research and discussions pertinent to a specific subject or field of study, culminating in a well-articulated written report that delineates the acquired knowledge. This

chapter undertakes the meticulous task of scrutinizing literature that stands central to the themes of risk management, dynamic capability, risk management culture, and firm performance. The chapter is presented in four sections: Conceptual review, theoretical review, empirical review and conceptual framework

2.2 Conceptual Review

The conceptual literature review endeavors to categorize and elucidate concepts that are central to the topic under study, delineating the interrelations that exist amongst them, and encompassing pertinent theories as well as empirical research findings that hold relevance to the discussed concepts. Within the ambit of this section, a meticulous exploration of several foundational concepts takes place.

2.2.1 Risk Management

In the exploration of risk management, it is pivotal to commence by understanding the foundational concept of 'risk', which delineates the potential of an adverse outcome emanating from a particular event, action, or decision. This concept is ingrained in various fields such as finance, medicine, and engineering, and denotes the likelihood or probability of experiencing negative consequences, including financial losses, product failures, or adverse impacts from certain activities (Saeidi et al., 2021; Quon et al., 2012; Badriyah et al., 2015). The focal point of risk management is the strategic coordination and collaboration among supply chain partners to sustain profitability and continuity, a role assumed by risk management managers who undertake to identify and track risk sources and drivers, define pertinent risk consequences, and devise strategies to mitigate these risks (Saeidi et al., 2021; Alawattegama, 2017).

Risk management, a continuous process adapting to the dynamism in organizational policies and external environment, categorizes risks into three broad domains: environmental or

external risks, organizational or internal risks, and network-related risks. While external risks pertain to disruptions in the supply chain due to unpredictable demand and shocks emanating from outside the supply chain, internal risks are those influenced by events within the company's control such as internal operational disruptions and changes in management structures. Network-related risks target the organization's technological infrastructure, posing threats from various actors exploiting the system's vulnerabilities (Shou et al., 2018).

A structured approach to risk management encompasses a series of activities that seek to attenuate supply chain risks. It embarks on a journey of identifying and assessing these risks, discerning their potential impacts, and strategizing on contingency plans. The voyage undergoes stages of risk analysis, examining potential pitfalls and their likelihood; risk assessment, gauging the probable impacts; and culminating in risk mitigation, where contingency plans take shape based on an intricate analysis of the risks and their controllability (Badriyah et al., 2015; Farooq et al., 2015; Saeidi et al., 2021; Alawattegama, 2017).

Implementing a proficient risk management paradigm stands as a bulwark, safeguarding the supply chain through timely identification of changes and fostering cost-effective procurement processes. It positions procurement professionals advantageously to align with organizational risk tolerance while meeting stakeholder expectations. Despite its merits, it is not devoid of shortcomings, with inefficiencies in supply chain risk management potentially escalating costs and disrupting supply continuity, impacting relationships with vital suppliers, and eventually precipitating cash flow issues (Khan and Ali, 2017; Saeidi et al., 2019).

This examination thus underlines the imperative of risk management in navigating the convoluted landscape of supply chains, pinpointing both its potential in enhancing operational robustness and the pitfalls of ineffective management strategies, thereby offering a nuanced understanding of its role and significance in the contemporary corporate ecosystem.

2.2.2 Risk Management Culture

Risk management culture embodies the shared values, beliefs, perspectives, and actions that dictate how an organization tackles risk management. This involves the organization's dedication to understanding and managing risks, and the degree to which risk management principles permeate its functioning and decision-making avenues (Saeidi et al., 2021). A robust risk management culture is pivotal in engendering a climate of risk awareness within the entity, a climate where every employee, irrespective of their position, grasps the essence of the risks present, has access to the tools and knowledge required to handle these risks adequately, and is inspired to initiate suitable steps to dampen them (Alawattegama, 2017).

Risk awareness is an important part of the organisational process of risk management. If it is embedded in every task, procurement personnel will be aware of every aspect of risk and how it can be identified and managed (Saeidi *et al.*, 2019). The implementation of quality standards is helpful as it enables the organisation to develop processes but also enables a standardised approach. Identifying new suppliers is a big area where risk identification can reap rich dividends. However, this could be dealt with in two contrasting ways (Khan and Ali, 2017). A risk-averse attitude might mean avoiding using a supplier who is seen as a risk. However, a risk-aware culture would identify the risk and develop a support mechanism for dealing with a risky supplier in order to minimise the risks but benefit from the potential opportunities that dealing with such a supplier may bring (Ai Ping and Muthuveloo, 2015)

Organisations that are reactive to risk will end up spending large amounts of money on unintended consequences which could easily have been managed in a more risk-aware culture. In a risk-aware culture, risk is accepted as a possibility in every process (Gordon *et al.*, 2009). Further, the risk is managed by developing risk response scenarios based on impact and probability of occurrence. The use of risk management also varies by department and needs

cross-functional knowledge. The use of collaborative teams will help procurement teams to develop knowledge that can be used to make a positive difference, but also ensure that largescale disruption is avoided (Pagach and Warr, 2010)

Like many other areas, senior management support is essential in order to ensure that risk management is given due recognition in the everyday activities of the business. Events within companies, and the expectations of consumers in respect of corporate social responsibility, have highlighted the ethics of organisations and their activities within the wider supply chain (McShane *et al.*, 2011). The ethics of individuals will also have a bearing on the organisational acts of management. Therefore, these must be developed and reinforced through performance recognition using awards but also embedded in the risk management process (Quon *et al.*, 2012)

Organisations must engage with risks to fulfill their goals. The existing risk culture in a firm can significantly influence its efficacy in maneuvering these risks and determining strategic risk choices as well as meeting performance commitments (Badriyah *et al.*, 2015). Entities characterized by unsuitable risk cultures might unintentionally permit practices diametrically opposed to the outlined policies and operational guidelines, or even bypass these frameworks entirely (Tseng *et al.*, 2007).

Such an unsuitable risk culture not only fosters the environment where select individuals or groups engage in these contrary activities, but it also creates a setting where the wider organization overlooks, approves, or remains oblivious to these actions. This scenario, in a milder form, obstructs the realization of strategic, tactical, and operational objectives, while at its extreme, it could engender grave financial and reputational damages (Elahi, 2013).

Risk culture represents the prevalent consciousness, attitudes, and conduct regarding risk and its management within an organization. It serves as a significant measure of the acceptance and implementation level of the organization's risk management guidelines and protocols (Filyppova et al., 2019).

Instituting a Risk Intelligent Culture necessitates a universal comprehension of the organization's risk strategy, individual accountability for risk management in every task undertaken, and fostering this attitude in others (Farhan Malik and Zulfikar Ali Bhutto, 2017). To foster the correct risk-related decision-making and endorse proper risk management behavior, it is vital that the organization's symbolic elements, managerial structures, and behavioral norms are congruent (Quon et al., 2012).

2.2.3 Firm Performance

Kingoto and Ismail (2021) defined performance as the process by which an employee completes a particular job in accordance with a set of criteria pertaining to accuracy, cost, effectiveness, and fulfilling the stated expectations. Nduhura et al. (2021) also defined performance as "the level at which job-related activities, tasks, and responsibilities are managed, completed, and presented." Additionally, performance excellence is a critical element in today's most exceptional organisations (Johnson Mwangi, 2020). Performance in any organisation is directly related to its capacity to accomplish its objectives. We shall concentrate on methods in this article that assist workers in attaining objectives by improving their talents and capabilities (Loy Salome, 2018)

Masuruli and Nditi (2021) stated that the firm performance system is a complex interplay of six performance criteria: innovation, effectiveness, efficiency, productivity, quality, and profitability. Although there is a substantial body of study on organisational performance in the

literature, there is no consensus among academics on the concept of organisational performance (Ssejemba, 2015). Dagba and Dagba (2019) described organisational performance as a metric used by companies to track their effectiveness and provide value to stakeholders and consumers. Similarly, Changalima et al. (2022) described the organisational performance as a tool and metric for evaluating and assessing an organisation's ability to generate and deliver value to its external and internal stakeholders.

Performance measurement is critical for the success of organisational management, and it is considered a critical element of management (Torres *et al.*, 2018). Zhao et al. (2018) assert that nothing can be improved without first measuring it. Thus, organisational performance enhancement requires certain metrics to ascertain the degree to which organisational resources successfully achieve business objectives (Banyenzaki, 2015)

Traditionally, financial indicators have been used to measure organisational performance; however, some writers suggested adding additional non-financial indicators to traditional measuring methods (Jacobs, 2021). Mbeba and Njoroge (2022) defined performance measurement as a collection of measures used to assess efficiency and effectiveness. Profit, sales, debt, and return on investment are insufficient to compete in today's corporate climate. Akanmu et al. (2019) argued that financial measures are inefficient for assessing organisational performance in today's rapidly changing business environment and proposed a balanced scorecard framework for assessing performance across four dimensions: financial, internal business, innovation and growth, and customer perspective.

There are various types of firm performance metrics that can be used to evaluate the success of a business. Soliman and Adam (2017) summarised the types to include the following:

Financial performance: Financial performance measures the financial health of a company by analyzing its financial statements, such as income statements, balance sheets, and cash flow statements. Examples of financial performance metrics include revenue growth, profit margins, return on investment (ROI), and earnings per share (EPS).

Market performance: Market performance measures the company's success in the market, such as its ability to attract and retain customers and its reputation in the industry. Examples of market performance metrics include market share, customer satisfaction ratings, and brand recognition.

Productivity performance: Productivity performance measures the efficiency and effectiveness of a company's operations and processes. Examples of productivity performance metrics include output per employee, inventory turnover, and cycle time.

Innovation performance: Innovation performance measures a company's ability to create and implement new products, services, and processes. Examples of innovation performance metrics include the number of patents filed, research and development spending, and the speed of new product development.

Social performance: Social performance measures a company's impact on society and the environment, such as its commitment to corporate social responsibility (CSR) and sustainability. Examples of social performance metrics include employee diversity, carbon footprint, and charitable contributions.

Risk management has a significant impact on the performance of a firm. Effective risk management can help a company to identify, assess, and mitigate risks that could adversely affect its business operations, financial performance, and reputation. According to Florio and

Leoni (2017); Kaur and Mehta (2017); Khan and Ali (2017) the impacts of risk management on firm performance includes the following:

Improved decision-making: A robust risk management process can provide valuable insights and information that can inform and improve the decision-making process. By identifying potential risks and their impact, managers can make more informed decisions that take into account potential risks and uncertainties.

Increased operational efficiency: Effective risk management can help to identify and mitigate risks that could disrupt business operations or lead to losses. By minimizing these risks, companies can improve operational efficiency and reduce costs.

Enhanced reputation: A strong risk management program can help to protect a company's reputation by reducing the likelihood of negative events such as data breaches, product recalls, or environmental disasters. By minimizing these risks, companies can enhance their brand reputation and customer loyalty.

Improved financial performance: Effective risk management can help to reduce the likelihood and impact of financial losses. By identifying and mitigating risks that could impact revenue, profitability, or cash flow, companies can improve their financial performance.

Regulatory compliance: Compliance with regulatory requirements is an important aspect of risk management. By ensuring compliance with regulations and standards, companies can avoid costly penalties and reputational damage.

2.3 Theoretical Review

The theoretical foundations for this study are reviewed in this section. The study is grounded in the Resource based view and dynamic capability theories

2.3.1 Resource-based view theory

The resource-based view (RBV), developed in the 1980s, redirects the focal point from the external market framework to the intrinsic attributes of an organization as the pedestal of competitive advantage. RBV postulates that organizations should foster unique, intrinsic core competencies to eclipse competitors through a distinctive organizational arrangement. It accentuates that the individual resources crafted within an entity are pivotal in defining competitive edges in the market space (Barney, 2020; Amis et al., 2020; Molloy and Barney, 2015).

The theory posits that for a competitive advantage to be sustained, it needs to hinge not just on distinctive and non-transferrable resources and capabilities but must meet the criteria of being valuable, rare, hard to imitate, and necessitates an organizational structure that harnesses the potential of these assets, encapsulated in the VRIN framework. The confluence of these criteria is considered to foster a long-lasting competitive advantage (Barney, 2020).

This research hypothesizes that adept risk management can serve as an invaluable internal resource, significantly enhancing corporate performance. The uniqueness and core function of risk management within an organization facilitate the evasion or reduction of costs stemming from risk incidents, market fluctuations, and crises, thereby sustaining various business dimensions such as supply security, market share, and business resilience, among others.

Moreover, dynamic capabilities and a fortified risk management culture are perceived as assets and capacities that can augment a firm's competitive advantage and holistic performance. Establishments that have channelled investments in cultivating dynamic abilities and nurturing a robust risk management culture stand in good stead to discern and address risks promptly,

adapt to evolving market dynamics, and uphold a commendable reputation, which, in turn, fosters financial prosperity.

Within the purview of risk management, dynamic capabilities empower an organization to promptly recognize nascent risks and implement mitigative measures swiftly, facilitating adjustments to, for instance, supply chain strategies in response to unforeseen catastrophes, thereby minimizing operational and financial repercussions. Concurrently, a well-founded risk management culture ingrains risk management ideologies in the routine functionalities of a firm, encouraging a foresighted approach to risk management, which aids in the early identification and mitigation of risks, enhancing the overall performance of the firm.

2.3.2 Dynamic Capability Theory

Teece's (2020) elucidation on dynamic capabilities theory unfolds as an augmentation of the resource-based view (RBV) of firms, offering a more intricate comprehension of why entities in similar industries showcase divergent performance trajectories. This is largely attributable to their disparate resources and capabilities (Barney and Mackey, 2016). The dynamic capabilities theory steps in to remedy the static nature of RBV, which falls short in explicating the sustenance of a competitive edge amidst fluid market conditions. This perspective brings to light the indispensable role of ceaseless learning and the cultivation of precise abilities to remain a contender in the evolving marketplace (Han and Li, 2015; Rezazadeh et al., 2016; Teece et al., 2016).

Pioneering researchers delineate dynamic capabilities as the art of amalgamating, evolving, and rearranging both external and internal cognizance to remain attuned to brisk environmental shifts. A more recent interpretation by Hossain et al. (2022) positions it as a mechanism harnessed to spawn new resources capable of instigating market transformation, thereby

implying an incessant process of resource acquisition, integration, and recombination to carve out novel strategies (Almada and Borges, 2018). Consequently, this emerges as a potent contributor to the genesis of newfound avenues of competitive advantage (Teece et al., 2016).

Drawing parallels between this theory and the realm of risk management in conjunction with corporate performance, it becomes evident that dynamic capabilities serve as a linchpin in maneuvering resources and capabilities to adeptly manage risks, thereby influencing performance metrics. A pertinent example can be visualized in the cyber security landscape where firms equipped with dynamic capabilities stand a higher ground in early identification and thwarting of potential cyber threats through timely countermeasures.

Furthermore, the theory underscores that the genesis and nurturing of resources and capabilities are contingent upon the intrinsic processes and habitual actions within a firm. It reflects the pivotal role of a well-rounded risk management apparatus in fostering dynamic capabilities to address burgeoning risks proactively. This orchestration of theories intimates that a firm grounded in robust risk management culture enjoys an upper hand in developing dynamic capabilities that not only act as a buffer against risks but also foster long-term performance buoyancy.

2.4 Empirical Review

This section empirically reviews relevant prior literature on risk risk management, dynamic capability and risk management culture. The objective of such empirical reviews is to identify gaps in literature that sets the tone for the development of hypotheses. Literature is reviewed using the following headings: Authors and years, purpose of the study; concepts used; underlying frameworks; key findings and future directions.

In a scholarly analysis, Quon et al. (2012) engaged in a scrutiny of the interconnection between Enterprise Risk Management (ERM), information content, and firm performance, with the data pool being extracted from a sizable number of non-financial entities listed on the standard and poor's Toronto stock exchange. The investigation underscored a positive trajectory in firm performance consequent to the adoption of enterprise risk management strategies. Parallely, Giniuniene and Jurksiene (2015) ventured to delineate the intricate relationship between dynamic capabilities, organizational learning, and the axis of innovation and firm performance.

Further substantiating the discourse on risk management and its impact on organizational outcomes, Gordon et al. (2009) delineated how a spectrum of variables including environmental unpredictability, the intensity of industry rivalry, organizational scale and complexity, alongside the vigilance of the board of directors, carved the trajectory of firm performance in light of risk management strategies. In a closer scrutiny of the enterprise risk management paradigm, Khan and Ali (2017) explored its influence on firm performance, spotlighting the modulatory role of intellectual capital in the process. This Pakistan-centric study utilized data from small and medium enterprises, and leveraged structural equation modelling for data analysis, revealing a facilitative role of intellectual capital in enhancing the positive relationship between ERM and firm performance.

Shad and Lai (2015) focused their research lens on Malaysian public listed companies to elucidate the repercussions of enterprise risk management implementation on the operational dynamics of a firm, with the findings resonating with the positive undertones of the previously mentioned studies, establishing a constructive influence of ERM implementation on firm performance. In a similar vein, Florio and Leoni (2017) turned towards the Italian corporate landscape, investigating non-financial companies listed on the Milan Stock Exchange. Their

empirical endeavor found a consensus with the premise that heightened levels of ERM implementation foster improved financial and market evaluations.

Breznik and Lahovnik (2016) pivoted towards exploring the synergy between dynamic capabilities and sustaining a competitive edge in the market. By engaging in comprehensive interviews with representatives from six IT firms, they elucidated that leveraging dynamic capabilities stands as a potent tool for fostering a durable competitive advantage, particularly in industries characterized by turbulent environmental dynamics, as exemplified by the IT sector.

Table 2.1 provides the summary of the empirical review

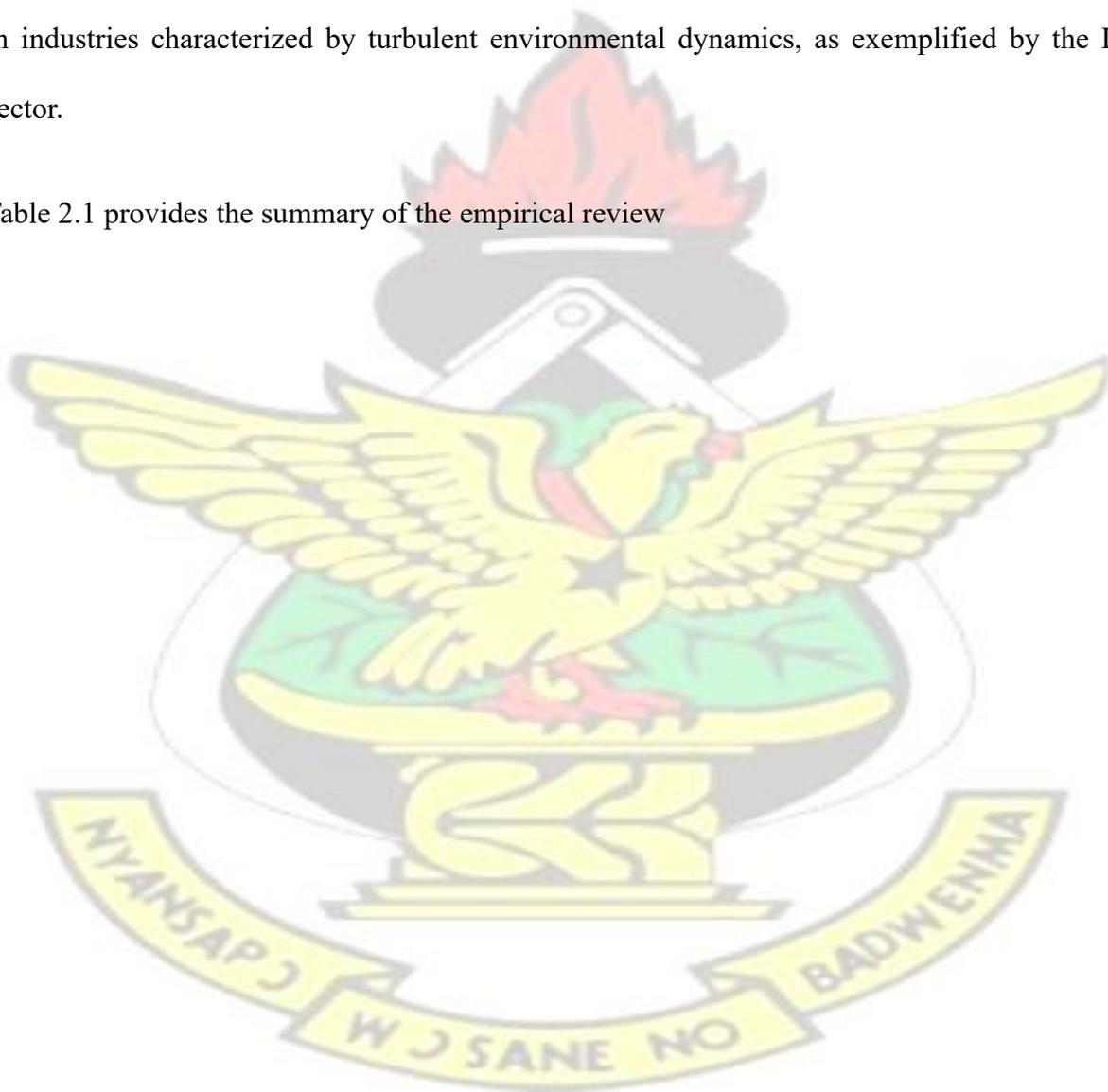


Table 2.1 Empirical Review on Risk Management; Dynamic Capability and Risk Management Culture

Author(s) and Year	Country	Purpose of the Study/Research Objectives	Underlying Theoretical Framework	Methodology	Findings	Future directions
Quon et al. (2012)	Canada	To scrutinize the correlation between the content of Enterprise Risk Management (ERM) information and the performance of a firm.	Dynamic capability theory	Data were secured from 156 non-financial entities listed on the Standard and Poor's Toronto Stock Exchange.	The study delineated a favorable impact of enterprise risk management on the performance of a firm.	Future investigations should incorporate moderating and mediating variables like supply chain resilience.
Giniuniene and Jurksiene (2015)	Lithuania	The objective of this paper is to enrich the existing body of knowledge in the pertinent field by delineating the relationship between dynamic capabilities, organizational learning, and innovations, and to elucidate the repercussions of these relations on firm performance.	Dynamic capability theory	A methodical literature review was undertaken to scrutinize pertinent articles focusing on dynamic capabilities.	The analysis uncovered a favorable influence of dynamic capabilities on both innovation and overall firm performance.	Subsequent empirical evaluations of the proposed model can enhance the current knowledge base surrounding dynamic capabilities. Such analyses would situate dynamic capabilities

						precisely within a firm's organizational learning and innovation processes, delineating how companies might bolster their performance.
Gordon et al. (2009)	U.S.	To scrutinize the function of elements such as environmental uncertainty, industry competition, firm size, complexity of the firm, and the oversight role of the board of directors in the nexus between risk management and firm performance.		Utilizing a sample of 112 US firms that have reported the details of their ERM activities in the 10Ks and 10Qs documents filed with the U.S. Securities and Exchange Commission.	The research uncovered that the impact of risk management on firm performance is influenced by various factors including environmental uncertainty, industry competition, the size and complexity of the firm, and the oversight of the board of directors.	Subsequent research is encouraged to take into account external elements such as governmental policies and regulations.

Khan and Ali (2017)	Pakistan	To explore the impact of Enterprise Risk Management (ERM) on corporate performance through the moderating role of intellectual capital in the correlation between ERM and company performance.	Resource-Based view theory	Data were sourced from 250 small and medium-sized enterprises in Pakistan. The data were analyzed utilizing structural equation modeling.	The study disclosed that intellectual capital positively influenced the correlation between ERM and performance.	It was recommended to develop an ERM index pertinent to Pakistan to further delve into the ERM success in the region.
Shad and Lai (2015)	Malaysia	To evaluate the impact of enterprise risk management (ERM) deployment on corporate performance.	Dynamic capability and resource-based view theory	Information was gathered from 120 publicly listed firms in Malaysia. The data underwent regression analysis for evaluation..	The research indicated that the implementation of enterprise risk management (ERM) positively impacts firm performance.	Subsequent research should take into account potential contingent variables, such as the dedication of the upper management, which might affect the relationship between the discussed variables.
Florio and Leoni (2017)	Italy	To explore the potential correlation between the	Resource-based view theory	The investigators evaluate their	The findings indicate that enterprises with	Ongoing engagement

		level of Enterprise Risk Management (ERM) system deployment and the performance of publicly listed firms in Italy.	hypotheses utilizing a sample comprised of non-financial enterprises listed on the Milan Stock Exchange, applying structural equation modelling for the assessment.	sophisticated levels of ERM implementation exhibit superior performance, encompassing both financial achievements and market valuation.	involving largesample archival research, surveys, and comprehensive case studies would be advantageous in enhancing understanding of corporate behavior in relation to risk management.
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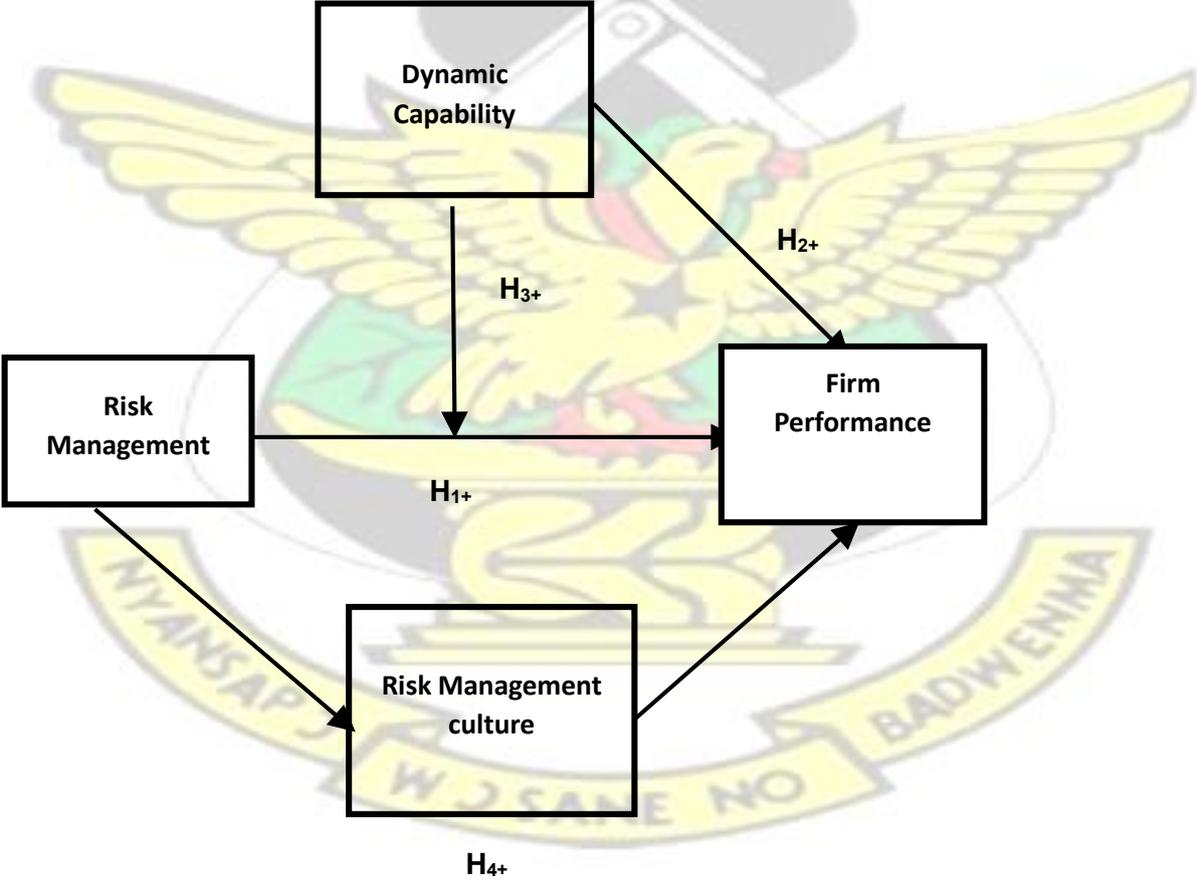


Breznik and Lahovnik (2016)	Slovenia	To investigate the connection between dynamic capabilities and competitive advantage.	Resource based view	Comprehensive interviews were carried out in six emblematic IT firms to accumulate data for the research	The findings indicate that companies utilizing pertinent capabilities as dynamic capabilities possess the potential for maintaining a competitive advantage, notably in a fluctuating setting like the IT sector.	Subsequent research might concentrate on a more comprehensive exploration of individual dynamic capabilities, particularly examining the routes and circumstances
						influencing the evolution of dynamic capabilities.

2.5 Conceptual Framework

This study proposes a positive and direct influence of risk management on firm performance. Furthermore, it underscores the direct and beneficial impact of dynamic capability on a competitive advantage. The paper suggests that dynamic capability not only directly affects competitive advantage but also moderates the relationship between risk management and firm performance, enhancing it further. In addition to these direct associations, the theory puts forth an indirect pathway wherein risk management influences firm performance through the mediation of risk management culture. This intricate interplay of direct, indirect, and moderating connections amongst the specified variables is visually represented in figure 1.

Figure 1 Research Model



Source: Researcher's construct (2022)

2.5.1 Risk Management and Firm Performance

Based on the Resource-Based View (RBV) theory, it is anticipated that the distinct assortment of resources and capabilities a firm possesses can elucidate the disparate outcomes in firm performance. This theory advocates that the successful amalgamation of valuable, heterogeneous, imperfectly imitable, and non-substitutable resources is pivotal for a firm's success (Barney and Clark, 2007; Penrose, 1959). In this inquiry, RBV is leveraged to illustrate how various facets of risk management, perceived as central and singular organizational competencies, bolster a firm's competitive edge. Risk management entails the systematic process of pinpointing, assessing, and prioritizing risks to then assiduously and economically marshal resources to diminish, oversee, and govern the likelihood or adverse effects of unforeseen events, or to capitalize on arising opportunities (Elahi, 2013). Subsequently, this study contends that there exists a direct and positive correlation between risk management and competitive advantage, positing that risk management significantly augments a firm's competitiveness. This claim finds resonance with existing scholarly works which underscore the beneficial impact of risk management on competitive advantage (examples include studies by Quon et al., 2012; Gordon et al., 2009; Khan and Ali, 2017; Shad and Lai, 2015; Florio and Leoni, 2017). While a faction of the research landscape points to a detrimental effect (as indicated in works by Ai Ping and Muthuveloo, 2015; Alawattegama, 2017), others argue a null relationship (like in studies by Chappell, 2014; Elahi, 2013), and a separate group accentuates an indirect positive association (as observed in research by Enyinda et al., 2008; Filyppova et al., 2019).. Given this background, the researcher articulates the ensuing:

H₁: Risk management has a strong and positive effect on firm performance.

2.5.2 Dynamic Capability and Firm Performance

The dynamic capability theory delineates "the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" (Teece, 2007). A fundamental proposition within this framework is the leverage of core competencies not only to enhance short-term competitive positions but also to foster sustained competitive advantage in the long run (Helfat et al., 2007). Employing this theory, the current research endeavors to elucidate the manner in which organizations discern, assimilate, and apply novel knowledge and data to augment their competitive stature. It is argued herein that a direct and favorable link exists between dynamic capability and competitive advantage, substantiated by a considerable body of evidence underscoring the augmentative effect of dynamic capability on a firm's competitive position. This stands in harmony with the research hypothesis proposing a positive impact of dynamic capability on competitive advantage, reinforced by studies such as those by Sheldon et al., 2007; Carnahan et al., 2010; and Tejumade, 2012. Nevertheless, the examination of this relationship through the prism of the multifaceted concept exhibits an array of results across different scholarly inquiries, thus challenging the formulation of a definitive conclusion. Whereas some research indicates a negative consequence, illustrated by works of Li and Liu, 2014, and Olufemi et al., 2014, others, including Giniuniene and Jurksiene, 2015, and Ou et al., 2015, report no discernible association. A segment of the research landscape, represented by Kaur and Mehta, 2017, and Correia et al., 2020, depicts an indirect yet positive correlation, thereby showcasing the spectrum of outcomes emanating from the dynamic capabilities perspective. In light of this spectrum of perspectives, the researcher proceeds to articulate the subsequent:

H₂: Dynamic capability has a strong and positive effect on firm performance.

2.5.3 Moderating role of Dynamic capability

In contemporary scenarios characterized by volatility, uncertainty, complexity, ambiguity, and turbulence, the utility of dynamic capability is indisputably central. It is perceived as a linchpin for firms in their endeavors to reinvent and undergo transformative growth. Dynamic capabilities stand as specialized faculties assisting firms in adapting swiftly to fluctuating surroundings and sustaining a competitive edge, thereby being integral to the long-term viability of a firm (Ou et al., 2015). Consequently, this discourse proposes the possibility that the influence of risk management on firm competitiveness may be moderated by diverse degrees of dynamic capability. While a multitude of studies, including those by Quon et al., 2012; Gordon et al., 2009; Khan and Ali, 2017; Shad and Lai, 2015; Florio and Leoni, 2017, underscore the contributory role of a firm's risk management in augmenting performance and nurturing competitive advantages, a conclusive delineation of the relationship remains elusive. This ambiguousness is potentially due to the oversight of certain variables and factors in preceding studies which could play a pivotal role in this relationship. In recognizing the potential gaps and intricacies in the existing literature, a plethora of studies advocate for the exploration of various mediating and moderating variables to unravel the nuanced dynamics between risk management and competitive advantage (referencing works such as those by Gordon et al., 2009; Khan and Ali, 2017). In light of these considerations, the researcher articulates the ensuing:

H₃: Dynamic capability positively moderates the relationship between risk management and firm performance

2.5.4 Mediating role of risk management culture

While a segment of previous studies avows that risk management autonomously does not positively correlate with augmented competitiveness, citing works such as Gordon et al., 2009; Khan and Ali, 2017, there exists a counterargument asserting a favorable relationship, as demonstrated in researches by Sheldon et al., 2007; Carnahan et al., 2010; Tejumade, 2012. Despite the differences in scholarly opinion, this investigation, grounded in the resource-based view theory, maintains that leveraging risk management as a solitary organizational resource falls short in enhancing a firm's competitive stance. It propounds the indispensable role of fostering a risk management culture to supplement risk management efforts, thereby ensuring its efficacy. The culture of risk awareness serves as a cornerstone in the risk management process, warranting its integration into every facet of organizational functioning. By instilling a risk-conscious approach in procurement personnel, a thorough comprehension of various risk dimensions and their respective management strategies becomes a part of the organizational fabric. This risk-aware ecosystem facilitates the identification of risks and fosters a supportive framework to engage cautiously with risky suppliers while capitalizing on prospective opportunities that such engagements might offer (Malik et al., 2020). It is imperative to note that effective risk management does not operate in isolation, nor does it withstand failed leadership. The delineated roles of the risk management function encompass review, advisory, monitoring, and measurement capacities, but the control and decision-making reins lie firmly with the management. Pursuing this thought, the study articulates the following:

H4: Risk management culture positively mediates the relationship between risk management and firm performance

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This section delineates the methodology employed to fulfill the study's aims. The constituents of this chapter encompass Research Design, Population of the study, Sample and Sampling Technique, Method of Data Collection, Analysis of Data, Validation and Reliability Testing, along with considerations pertaining to ethics.

3.2 Research Design, Design and Approach

A research design forms the blueprint for the collection and analysis of data. It is chosen based on the weight assigned to different components of the research process and can be categorized as exploratory, explanatory, or descriptive. This investigation opted for a descriptive research strategy to delineate the characteristics of a population, situation, or phenomenon, prioritizing the aspects of how, what, when, and where, instead of why, as highlighted by Farghaly (2018). Furthermore, explanatory research was embraced to scrutinize the relationship between risk management and firm performance, considering the roles of dynamic capability and risk management culture.

A strategic research plan is akin to an action scheme devised to answer a research query, guiding the researcher in their endeavors (Barnham, 2015). Various approaches to such plans include experimentation, surveys, archival research, case studies, and others. For this study, a survey of

mining companies in Ghana was chosen as it permits comprehensive data accumulation from various firms, facilitating conclusive assessments about the broader industry. This method is also cost-efficient, allowing for a considerable span of respondents to be reached with restricted resources.

Research approaches signify the frameworks and strategies ranging from overarching conjectures to detailed techniques employed in data collection, analysis, and interpretation, as discussed by Zyphur and Pierides (2017). These approaches can be broadly classified into quantitative, qualitative, and mixed methods. The present study adheres to a quantitative research methodology, characterized by a focus on breadth, statistical intricacies, and generalizability, utilizing deductive designs for hypothesis testing. This approach seeks to maintain objectivity and precise measurement, privileging evidence-based conclusions over subjective interpretations. It stands distinct from qualitative research, which delves deep into individual experiences and the nuances of meaning-making, employing inductive designs to cultivate rich descriptive data. Meanwhile, a mixed-method approach amalgamates both qualitative and quantitative data to afford a more comprehensive understanding of the subject in question, demonstrating a problem-centered stance where methodologies and theories are engaged based on their pertinence to the issue at hand. This approach advocates for a harmonious integration of both quantitative and qualitative strategies to foster a deeper comprehension of the researched topic.

3.3 Population of the Study

In accordance with the viewpoint presented by Almalki (2016), the term "population" in the context of research refers to the entire set of individuals, entities, or numerical values that a

researcher intends to study. For this particular study, the research population is delineated as the management personnel and the employees working at mining firms that are operational in Ghana.

3.4 Sample and Sampling Technique

Sampling refers to the act of selecting a subset of individuals from a defined statistical population to gauge the attributes of that population, as outlined by Barnham (2015). Barnham further categorizes sampling procedures into two primary groups: probability sampling techniques and non-probability sampling techniques. The former involves scenarios where each member of a population has a known and usually equal likelihood of being chosen, encompassing approaches such as Simple Random Sampling (SRS), systematic, stratified, and cluster sampling. Conversely, non-probability sampling strategies are those where the chances of each member being chosen cannot be determined, incorporating methods such as convenience sampling, voluntary response sampling, purposive sampling, snowball sampling, and quota sampling.

In the context of this investigation, convenience sampling method was utilized to select a sample consisting of one hundred and fifty respondents from the intended population. This non-probability approach is favored in circumstances where the paramount concern is to acquire data in a manner that is both straightforward and rapid, despite the potential drawback that the sample might not fully encapsulate the broader population's characteristics. It relies principally on the ready availability and accessibility of participants.

The empirical analysis relied on a sample size constituted of one hundred and fifty individuals, inclusive of both employees and managerial staff of mining entities operative within Ghana. This figure was arrived at through the application of the Yamane formula, a revered statistical

tool invoked to delineate the ideal sample size for studies conducted on finite populations. The formula facilitated the determination of a sample that is both statistically significant and manageable for this study. The details of this calculation are delineated below.

Yamane formula ($n = \frac{N}{(1+Ne^2)}$)

KNUST

Where:

N = population (240) n

= sample size e =

margin of error (5%)

$$n = \frac{240}{(1+240(0.05)^2)}$$

$$n = \frac{240}{(1+0.3375)}$$

$$n = \frac{240}{1.3375}$$

$$n = 150$$

3.5 Data Collection Methods

Data collection entails the systematic acquisition, measurement, and analysis of precise insights pursued for research through the application of standardized and validated methods. In this particular study, Google Forms served as the pivotal instrument for collecting data. This online survey tool facilitated the crafting of tailored questionnaires to solicit requisite information from the respondents. The ensuing segment elucidates the stages delineated in the data collection process:

Survey design: The researcher designed a comprehensive questionnaire using Google Forms, ensuring that the questions were clear, concise, and relevant to the research objectives.

Closed-ended and Likert scale questions were included to obtain both quantitative and qualitative data.

Survey distribution: Once the questionnaire was finalized, a unique link to the Google Form was generated. This link was shared with potential participants via email or other communication channels, such as social media or messaging apps, depending on the target population and their preferred means of communication.

Participant responses: Participants accessed the Google Form using the provided link and completed the questionnaire by answering the questions. They were able to submit their responses securely and anonymously, ensuring that their privacy was protected.

Data collection period: The researcher established a specific data collection period during which participants could submit their responses. This timeframe was determined based on the desired sample size and the expected response rate.

Data monitoring: Throughout the data collection period, the researcher monitored the progress of the survey, ensuring that the responses were being received and recorded accurately. If necessary, reminders were sent to potential participants to encourage them to complete the survey.

Data export: After the data collection period ended, the researcher exported the collected data from Google Forms to a spreadsheet and SPSS for further analysis. The data was cleaned and organized, with any incomplete or inconsistent responses being removed or addressed as needed.

3.5.1 Sources of data

The study makes use of primary data source. Secondary data refers to data that has been collected and compiled by someone else for a different purpose. Unlike primary data, which is collected directly from the source by the researcher, secondary data is obtained from preexisting sources such as books, articles, reports, databases, and websites. Specificity: By collecting primary data, the research was tailored to address the specific research questions and objectives of the study. This ensured that the data gathered was highly relevant and directly related to the variables and hypotheses being investigated.

An online questionnaire is the primary data collecting instrument.

3.5.2 Data Collection Instrument

The researcher used a primary data source to achieve the study objective: a structured/selfcompletion questionnaire. The survey instrument included five significant parts representing the study's constructs: section A gives the profile of respondents, and section B, the predictor variable, is risk management. Section C contains the mediating variable, risk management culture. Section D contains the moderating variable, dynamic capability and in section E, the outcome variable is firm performance. Table 3.1 summarises the data collection instrument for the study.

Table 3.1 Summary of Measurement Items

VARIABLES	NO. OF ITEMS	SOURCES
RISK MANAGEMENT		
<input type="checkbox"/> Risk Identification	3	Saeidi et al. (2019)
<input type="checkbox"/> Risk Assessment	3	
<input type="checkbox"/> Risk Management	3	
RISK MANAGEMENT CULTURE	7	Abeysekara et al. (2019)

DYNAMIC CAPABILITY	9	Li and Liu (2012)
FIRM PERFORMANCE	9	(Agyabeng-mensah et al., 2020; Pradabwong et al., 2017)

Source: Author's Construct (2023)

3.6 Data Analysis

Data analysis encompasses the scrutiny, purification, alteration, and moulding of data with the primary objective of extracting pertinent information, fostering informed conclusions, and aiding decision-making processes. In this investigation, a combination of descriptive statistics, inferential statistics, and structural equation modelling constituted the analytical approach adopted. In the descriptive statistics phase, various measures including the Mean, Minimum, Maximum, Standard Deviation, and Kurtosis were employed to delineate the attributes of the study's variables. Following this, the inferential statistics phase engaged tools such as Alpha Cronbach and Exploratory Factor Analysis to validate and affirm the reliability and validity of the data. Further, Structural Equation Modelling (SEM) served a crucial role in validating the study's model. The analytical operations were executed utilizing IBM SPSS, specifically version 26, alongside Smart-PLS, utilizing its version 4, to facilitate a comprehensive analysis.

3.7 Reliability and Validity

Reliability addresses the issue of the replicability of the results of a study. It essentially examines the consistency of the measurement tools devised for business and management concepts. Within the confines of this research, the internal consistency of the data has been tested using Alpha Cronbach, a renowned tool in assessing reliability, as noted by Zyphur and Pierides in 2020.

Validity, on the other hand, speaks to the authenticity of the conclusions drawn from a research endeavour. It is fundamentally tied to how accurately an indicator gauges the concept it is set to measure. To establish validity in this study, Exploratory Factor Analysis (EFA) has been employed, a method underscored by Cohen in 2020 as being crucial in determining the validity of research data.

3.8 Ethical Considerations

A subfield of philosophy called ethics, sometimes referred to as moral philosophy, "involves systematizing, defending, and promoting conceptions of acceptable and undesirable behaviour. Several rules that guide how researchers behave themselves are referred to as "research ethics" (Burns, 2000). The researcher adhered to two principles— anonymity and confidentiality—to meet the ethical standards.

Anonymity pertains to situations where the individual's identity remains undisclosed. While being unnamed technically ensures anonymity, it is posited by some scholars that merely being nameless does not sufficiently address the central concerns inherent in anonymous circumstances. The fundamental idea revolves around the inability to locate, contact, or trace an individual. Consequently, in this research, the questionnaire designed refrains from soliciting any sensitive personal details from the respondents to uphold the principle of anonymity. Furthermore, the tool does not mandate the provision of the respondents' names, thereby adhering to a strict policy of maintaining anonymity.

A set of guidelines or commitments — often made via confidentiality agreements — that restrict access to or use of certain kinds of information are called confidentiality. To uphold this commitment, only academic use of the questionnaire data would be made of it, with no disclosure to other parties.

3.9 Profile of the Study Area

Ghana is a West African country located along the Gulf of Guinea and the Atlantic Ocean. It shares borders with Côte d'Ivoire to the west, Burkina Faso to the north, and Togo to the east. The country has a diverse landscape, ranging from coastal savannahs to tropical rainforests and arid grasslands (CIA World Factbook, 2021).

Ghana has a long history of mining, dating back to the pre-colonial era. The country is endowed with a wide range of mineral resources, including gold, bauxite, manganese, and diamonds (Hilson, 2002). The mining sector has been a significant contributor to Ghana's economy, accounting for approximately 19% of the country's total export earnings and 9% of its GDP (Ghana Chamber of Mines, 2019).

Gold is the primary mineral resource extracted in Ghana, making it one of the largest gold producers in Africa and the world (World Bank, 2019). The country's gold production is mainly concentrated in the Ashanti, Western, and Eastern regions, where several large-scale and smallscale mining operations are located (Hilson & Nyame, 2006). Notable gold mining firms operating in Ghana include Newmont Goldcorp, AngloGold Ashanti, Gold Fields, and Kinross Gold.

In addition to gold, Ghana has significant reserves of bauxite, manganese, and diamonds. Bauxite mining is primarily located in the Awaso region, while manganese mining takes place in the Nsuta region (Ghana Chamber of Mines, 2019). The country's diamond production is centered around the Akwatia region, with the Ghana Consolidated Diamonds Company being the major producer (Hilson, 2002).

The mining industry in Ghana is regulated by the Minerals and Mining Act (Act 703) of 2006, which seeks to promote the sustainable development of the country's mineral resources (Government of Ghana, 2006). The act provides the legal framework for granting mineral rights, environmental protection, and the sharing of mining benefits among various stakeholders. The Minerals Commission is the main regulatory body responsible for overseeing the mining sector's activities and ensuring compliance with the law.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

Chapter Four presents the findings from the empirical investigation into the role of dynamic capability and risk management culture in influencing firm performance. This chapter will meticulously scrutinize the data gathered, providing a detailed look into the various elements which shape this exploration. In the first section, a comprehensive examination of the collected data is conducted. This entails a thorough dissection and analysis of the information retrieved from the survey, ensuring an accurate, unambiguous understanding of the figures obtained. The quality and integrity of the research findings rest upon the meticulous analysis of the gathered data, thus this section provides a cornerstone to the research. Subsequently, the chapter delves into the backgrounds of the respondents. By illuminating the demographic and professional particulars of the participants, the study places its findings within a contextual setting, allowing for a more nuanced understanding of the results. Respondents' backgrounds offer invaluable insight into the distinct perspectives and experiences that shape their responses, hence, it plays a critical role in the interpretation of the data. Following the examination of the respondents'

backgrounds, the chapter proceeds to descriptive statistics. This involves the presentation of the data in an easily digestible manner, summarizing and interpreting it to reveal patterns, tendencies, and relations. This statistical snapshot serves as a fundamental building block of the analytical process, enabling a clearer comprehension of the complex data sets. The next segment focuses on the reliability and validity tests. These tests are paramount in ensuring that the research findings are not only consistent and reproducible but also accurately measure what they are intended to measure. The credibility and value of this research heavily depend on the accuracy and consistency of the findings, thus the importance of this section cannot be overstated. The chapter then moves to model testing, which involves the evaluation of the proposed hypotheses. Through rigorous statistical analysis, the validity of the suggested relationships between dynamic capability, risk management culture, and firm performance is assessed. The result of this testing determines whether the hypotheses put forward at the outset of the study hold true or not. A comprehensive table outlining the hypotheses will be presented for clarity and ease of understanding. It is designed to provide a coherent summary of the hypotheses, and it aids in the comprehension of the links between the independent and dependent variables. Finally, a discussion of the results is carried out. This section integrates all the aforementioned elements, providing a comprehensive interpretation and evaluation of the findings. This thorough discussion allows for a deep understanding of the results, their implications, and their relevance to the broader research questions and objectives. The discussion also serves to draw connections between the empirical findings and the theoretical framework set out in the previous chapters.

4.2 Data Examination

This study benefited from a considerable response rate of 86.7%, with 133 out of the distributed 150 questionnaires completed and returned. However, high response rates are not the sole

indicators of quality research. Rather, the reliability and accuracy of these responses are paramount. Consequently, rigorous data examination techniques were employed to verify the suitability of the responses for subsequent analysis. One such technique utilized was the analysis of suspicious response patterns. This involves looking out for inconsistencies or oddities within individual responses that might indicate a lack of effort or understanding on the part of the respondent. It is essential in a study like this to detect and exclude any potential careless or biased responses, which could significantly skew the research findings. In addition to the suspicious response pattern analysis, data distribution analysis was also conducted. This method involves examining the spread of the responses to identify any abnormalities or outliers that may distort the representation of the data. By checking for skewness, kurtosis, and other distribution properties, it is possible to ensure the data are representative and conducive to further statistical analysis. This rigorous examination yielded favorable results. Upon thorough investigation, it was found that all the 133 responses were valid and usable. There were no outliers, suspicious patterns, or other irregularities detected that warranted the exclusion of any data points. Therefore, all the responses were retained for further analysis.

4.3 Background of the Respondents

This section provides an in-depth exploration of the respondents' attributes. These characteristics not only act as defining traits of the participants but also potentially influence their perspectives and experiences, thereby shaping their responses. The traits under scrutiny in this study include the length of operation of the firm, the duration of working relationships with suppliers, the number of employees within the firm, the gender, age, and the position of respondents within their respective organisations. Understanding the length of operation provides insights into the firm's experience and maturity in the market, while the length of working with suppliers sheds light on their stability and reliability in maintaining business

relationships. The number of employees gives a sense of the size and complexity of the firm's operations. Exploring the gender, age, and position within the organisation of the respondents allows for the consideration of diverse viewpoints and experiences. These characteristics can influence individuals' perceptions and attitudes towards dynamic capabilities and risk management culture, thus affecting their responses.

Table 4.1 Background of Respondents

Variables	Categories	Frequency	Valid Percentage
How long has the business been in existence?	Less than 1	-	-
	1 to 3	3	2.3%
	4 to 6	15	11.3%
	7 to 9	50	37.6%
	10 or more	65	48.9%
How long have you been working with your key supplier (s)?	Less than 1	2	1.5%
	1 to 3	11	8.3%
	4 to 6	50	37.6%
	7 to 9	48	36.1%
	10 or more	22	16.5%
How many people are employed in your outfit	Less than 10	4	3%
	11 to 30	15	11.3%
	31 to 50	41	30.8%
	51 to 100	50	37.6%
	101 and above	23	17.3%
Gender	Male	62	46.6%
	Female	71	53.4%
Age	Less than 20	-	-
	21 to 30	12	9%
	31 to 40	42	31.6%
	41 to 50	64	48.1%
	Above 50	15	11.3%
Position within the Organisation	Line Manager	47	35.3%
	Middle level manager	51	38.3
	Senior Manager	35	26.3%

Source: Field Study (2023)

The demographic data provides important context on the characteristics of the survey respondents. Starting with company tenure, the vast majority (86.5%) work for

wellestablished businesses that have been operating for 7+ years. This indicates the survey captures views from stable, mature organizations rather than startups. Regarding supplier relationships, an overwhelming 89.7% of respondents have worked with their key supplier(s) for 4 or more years. This demonstrates most have significant experience managing and collaborating with suppliers versus nascent relationships. In terms of company size, 85.4% of respondents come from organizations with 11+ employees. By excluding smaller businesses, the results may better reflect challenges and dynamics within larger operations. Looking at gender, while males represent a slight plurality at 46.6%, females comprise a substantial portion at 53.4%. Securing input from both genders helps reduce potential gender bias. Regarding age, most respondents are between 31-50 years old (79.7%), suggesting they hold mid-to-senior level positions with meaningful tenure. Finally, the three management levels are all well represented, limiting potential skew from oversampling any one group. In summary, the demographics indicate the survey data comes from experienced professionals across a range of company sizes, management levels, genders, and supplier relationship durations. This lends credibility and boosts the generalizability of the findings.

4.4 Descriptives Statistics

This section embarks on a comprehensive statistical description of the gathered data. By elucidating essential statistical measures such as the minimum, maximum, mean, and standard deviation (SD), the section delivers an initial insight into the underlying trends and patterns within the data. The minimum and maximum values provide an understanding of the range of the responses, thereby highlighting the spread of the data. The minimum value signifies the lowest point in the dataset, while the maximum represents the highest. These values are fundamental in understanding the full scope of the responses and establishing the boundaries within which the data lie. The mean, or the average, is another

critical measure, signifying the central tendency of the data. It offers an understanding of the typical response or the middle point in the dataset, providing a general sense of the collected data. The standard deviation (SD) offers a measure of how spread out the numbers in the data are around the mean. A smaller SD indicates that the data points tend to be closer to the mean, while a larger SD signifies that the data is spread out over a wider range. This measure aids in understanding the variability or dispersion in the data.

4.4.1 Risk Management

In this research, the primary predictor variable, Risk Management, is conceptualized utilizing a set of nine items meticulously derived from the work of Saeidi et al. (2019). The selection of these items was undertaken with a focus on ensuring an accurate representation and measurement of the Risk Management construct. A detailed understanding of the Risk Management variable is facilitated by computing descriptive statistics, which are presented in Table 4.2. These statistics include indicators such as the minimum, maximum, mean, and standard deviation, providing critical insights into the central tendencies, variability, and spread of the Risk Management scores across the respondents. Table 4.2, therefore, offers a comprehensive depiction of the descriptive statistics related to Risk Management.

Table 4.2 Descriptive Statistics on Risk Management

Measures	Min	Max	Mean	SD
(1) My organisation analyses external elements influencing occurrences that may have an impact on the attainment of goals (e.g. Economic, Natural environment, Political, Social, Technological).	1	7	6.44	0.882
(2) My organisation analyses internal elements influencing occurrences that may have an impact on the attainment of goals (e.g. Infrastructure, Personnel, Process, Technology).	1	7	6.27	0.845
(3) My organisation evaluates the favourable occurrences and possibilities that might influence the attainment of goals.	2	7	6.38	0.794

(4) The entity examines the positive and negative effects of prospective occurrences.	1	7	6.11	0.873
(5) This company's risks are evaluated utilising qualitative analytical techniques (e.g. high, moderate, low)	1	7	6.4	0.861
(6) The hazards of my organisation are evaluated utilising quantitative analytical techniques. (for example, utilising percentages, probability tables, or technologies like measurements and software).	2	7	6.13	0.856
(7) My organisation chooses a series of steps to align risks with the entity's risk appetite and risk tolerance.	1	7	6.13	0.891
(8) When assessing risk response, my organisation analyses possibilities to accomplish entity goals in addition to mitigating the particular risk.	2	7	6.32	0.803
(9) When establishing risk response, my organisation analyses probable residual risk and evaluates and concludes that residual risk is within the entity's risk appetite and tolerance.	1	7	6.2	0.848
Total Score	1.67	7	6.2623	0.60786

Source: Field Study (2023)

Table 4.2 presents the descriptive statistics for the variable of interest - Risk Management. This variable is based on a compilation of nine items derived from the Saeidi et al. (2019) study, each of which reflects an essential aspect of risk management in organisations. An analysis of the total score provides a holistic understanding of this variable. The minimum value of the total Risk Management score is 1.67, while the maximum value is 7. These values indicate the range within which all responses for the nine items are contained. This wide range suggests a diverse set of responses, representing the different perspectives of the respondents about their organisation's risk management. The mean (average) of the total score is 6.2623, indicating a relatively high level of agreement among the respondents on the items relating to risk management. This high mean suggests that the respondents, on average, tend to perceive their organisations as practicing effective risk management. It could be inferred that the organisations represented in this study have well-established and mature risk management practices, aligning with the previously discussed demographic characteristics. The standard deviation is 0.60786, a measure of the dispersion of the scores around the mean. This relatively low value indicates that most responses are tightly clustered around the mean, signifying a

high level of consensus among the respondents regarding their organisation's risk management practices. It should be noted that despite this overall agreement, the variation in the scores for individual items suggests that some aspects of risk management are viewed more favorably than others. The lowest mean value (6.11) corresponds to the item "The positive and negative impacts of potential events are examined across the entity". This implies that of all the risk management practices, the examination of potential events' impacts is perceived as the least practiced. Conversely, the highest mean value (6.44) is for the item "My organisation considers external factors driving events that could affect the achievement of objectives". This suggests that consideration of external factors is viewed as the most prevalent practice among the surveyed organisations. In conclusion, the results indicate a strong agreement among respondents on the presence and effectiveness of risk management practices in their organisations.

4.4.2 Risk Management Culture

In this research, the mediator variable, Risk Management Culture, is conceptualized utilizing a set of nine items meticulously derived from the work of Abeysekara et al. (2019). The selection of these items was undertaken with a focus on ensuring an accurate representation and measurement of the Risk Management Culture construct. A detailed understanding of the Risk Management Culture variable is facilitated by computing descriptive statistics, which are presented in Table 4.3. These statistics include indicators such as the minimum, maximum, mean, and standard deviation, providing critical insights into the central tendencies, variability, and spread of the Risk Management Culture scores across the respondents. Table 4.3, therefore, offers a comprehensive depiction of the descriptive statistics related to Risk Management Culture.

Table 4.3 Descriptive Statistics on Risk Management Culture

Measures	Min	Max	Mean	SD
(1) The management of our organisation aggressively seeks and supports creative ideas.	1	7	5.21	1.95
(2) In our organisation, management easily accepts innovation.	1	7	5.08	2.12
(3) In terms of introducing new goods and services to the market, our organisation is more efficient.	1	7	4.92	2.166
(4) Our organisation uses a variety of methods to encourage workers to exchange risk-management expertise.	1	7	4.87	2.19
(5) Our organisation teaches people for innovative problem-solving in a broad array of talents.	1	7	4.81	2.111
(6) Our company trains and assigns distinct tasks and obligations to workers for certain sorts of interruptions.	1	7	4.85	2.186
(7) Our organisation engages in risk-aware measures.	1	7	4.89	2.189
Total Score	1	6.86	4.9484	2.03223

Source: Field Study (2023)

Table 4.3 provides the descriptive statistics for another vital variable - Risk Management Culture. This variable encompasses seven items reflecting different facets of organisational culture that contribute to risk management. An analysis of the total score can deliver an overarching understanding of the variable. The minimum and maximum values of the total Risk Management Culture score are 1 and 6.86, respectively. These values delineate the bounds of all responses across the seven items. The broad range suggests a diversity of opinions and experiences among respondents regarding their respective organisations' risk management culture. The mean or average value of the total score stands at 4.9484. This indicates a moderate level of agreement among respondents concerning the prevalence and effectiveness of risk management culture in their organisations. From this, one might infer that while organisations do pay attention to fostering a culture that supports risk management, there might be room for improvement. The standard deviation for the total score is 2.03223, which reflects the dispersion of scores from the mean. A larger standard deviation suggests a wider spread of responses and implies that while there is a moderate general agreement on risk management

culture, individual perceptions can vary quite significantly. The lowest mean value among the individual items is 4.81 for "Our company trains employees for creative problem-solving in a wide variety of skills". This implies that among the different elements of risk management culture, training for creative problem-solving is perceived as the least prevalent in organisations. On the other hand, the highest mean value is 5.21 for "In our company, management actively seeks and encourages innovative ideas". This suggests that of the various aspects of risk management culture, the active encouragement of innovative ideas by management is perceived as the most common in the organisations represented in the study. In summary, the results indicate a moderate agreement among the respondents concerning the risk management culture within their organisations

4.4.3 Dynamic Capability

In this research, the moderator variable, Dynamic Capability, is conceptualized utilizing a set of nine items meticulously derived from the work of Li and Liu (2012). The selection of these items was undertaken with a focus on ensuring an accurate representation and measurement of the Dynamic Capability construct. A detailed understanding of the Dynamic Capability variable is facilitated by computing descriptive statistics, which are presented in Table 4.4. These statistics include indicators such as the minimum, maximum, mean, and standard deviation, providing critical insights into the central tendencies, variability, and spread of the Dynamic Capability scores across the respondents. Table 4.4, therefore, offers a comprehensive depiction of the descriptive statistics related to Dynamic Capability

Table 4.4 Descriptive Statistics on Dynamic Capability

Measures	Min	Max	Mean	SD
We are able to detect environmental changes before our rivals.	1	7	4.02	1.994

(2) We are able to identify the most significant opportunities and risks.	1	7	3.97	2.286
(3) We have a flawless information management system.	1	7	3.98	2.313
(4) We can promptly resolve strategic decision-making process disputes.	1	7	3.74	2.322
(5) In many situations, we may make quick judgments to address strategic issues.	1	7	3.97	2.263
(6) We can reorganise our resources in a timely manner to combat environmental change.	1	7	4.21	2.223
(7) Our strategy adjustments can be implemented effectively	1	7	3.62	2.268
(8) We can enhance strategic change in an efficient manner Implementation.	1	7	4.09	2.268
(9) There is effective coordination between many roles.	1	7	4.11	2.284
Total Score	1.22	6.89	3.9683	2.14424

Source: Field Study (2023)

Table 4.4 reveals the descriptive statistics related to the Dynamic Capability variable, which includes nine items that epitomize various dimensions of this construct in the context of organisations. Evaluating the total score allows for an overall understanding of this variable. The minimum total score for Dynamic Capability stands at 1.22, while the maximum is 6.89. This range implies a broad variation in the responses to the nine items, denoting different viewpoints and experiences among respondents concerning their respective organisations' dynamic capabilities. The mean or average value for the total score is 3.9683, suggesting a moderate level of agreement among respondents on the presence and effectiveness of dynamic capabilities in their organisations. This average indicates that while these organisations display some dynamic capabilities, there could be potential areas for development. The standard deviation is 2.14424, which measures the dispersion of the responses around the mean. This comparatively large value suggests a significant diversity in respondents' opinions regarding

their organisation's dynamic capabilities. Among the individual items, the lowest mean value is 3.62 for "Our strategic changes can be efficiently carried out". This suggests that among the different elements of dynamic capabilities, the efficient execution of strategic changes is perceived as the least prevalent. This might hint at areas where organisations could focus on improving. Conversely, the highest mean value is 4.21 for "We can reconfigure resources in time to address environmental change". This indicates that respondents perceive their organisations as relatively more competent in timely resource reconfiguration in response to environmental changes. In conclusion, the results suggest a moderate level of agreement among the respondents on the presence and effectiveness of dynamic capabilities in their organisations. Specifically, timely resource reconfiguration in response to environmental change appears to be the most recognised strength, while efficient execution of strategic changes might be an area warranting improvement.

4.4.4 Firm Performance

In this research, the outcome variable, Firm Performance, is conceptualized utilizing a set of nine items meticulously derived from the work of Agyabeng-mensah et al. (2020) and Pradabwong et al. (2017). The selection of these items was undertaken with a focus on ensuring an accurate representation and measurement of the Firm Performance construct. A detailed understanding of the Firm Performance variable is facilitated by computing descriptive statistics, which are presented in Table 4.5. These statistics include indicators such as the minimum, maximum, mean, and standard deviation, providing critical insights into the central tendencies, variability, and spread of the Firm Performance scores across the respondents. Table 4.5, therefore, offers a comprehensive depiction of the descriptive statistics related to Firm Performance.

Table 4.5 Descriptive Statistics on Firm Performance

Measures	Min	Max	Mean	SD
(1) We have a rapid increase in market share.	2	7	6.61	0.806
(2) Our sales growth rate is strong.	2	7	6.43	0.855
(3) Our goods capture a substantial market share.	1	7	6.28	0.907
(4) Our sales have a significant profit margin.	1	7	6.46	0.892
(5) Our sales provide a high rate of return.	1	7	6.44	0.933
(6) The organisation functions effectively in terms of cost control.	1	7	6.32	0.981
(7) The organisation avoids waste and optimises output.	1	7	6.25	0.941
(8) The firm provides distinctive and valued goods and services.	1	7	6.29	0.903
(9) The business offers superior customer service.	2	7	6.23	0.895
Total Score	1.56	7	6.3684	0.70024

Source: Field Study (2023)

Table 4.5 presents the descriptive statistics for the Firm Performance variable. This variable is operationalized through nine items that represent different aspects of performance within an organisation. Analysing the total score for this variable facilitates an overall understanding of firm performance as perceived by the respondents. The minimum value for the total score of Firm Performance is 1.56, and the maximum is 7. These scores highlight the range of responses across the nine items, indicating a diversity of perceptions regarding the performance of their respective organisations. The mean value for the total score is 6.3684, suggesting a high level of agreement among respondents about their organisations' strong performance. This could imply that the surveyed organisations are generally successful and effective in their operations. The standard deviation is 0.70024, denoting the dispersion of scores around the mean. A relatively smaller standard deviation suggests that the opinions among respondents regarding

their organisations' performance are quite consistent. Looking at the individual items, "We have a high market share growth" has the highest mean value of 6.61, suggesting that market share growth is perceived as a significant strength among these organisations. This could point to successful strategies that have allowed these firms to capture a larger portion of the market. On the other hand, "The company provides exceptional customer service" has the lowest mean value at 6.23, albeit still relatively high. This could indicate that, while customer service is generally considered good in these organisations, it is slightly less recognised as a strength compared to other performance aspects. In summary, the high average scores across all performance measures suggest that the respondents generally perceive their organisations as high performing. While there are differences in how various aspects of performance are rated, all the factors seem to be contributing positively to the overall perception of firm performance. This suggests that the firms are generally successful in managing their operations and strategies to achieve good performance outcomes.

4.5 Reliability and Validity Test

The integrity of this study's findings hinges significantly on the reliability and validity of the measurements used. These statistical constructs are fundamental in assessing the extent to which the measures employed in the study are free from error and are capable of accurately representing the constructs they are designed to capture. The following subsections will delve into the assessments of reliability and validity for this study. Reliability is the degree to which a measure is consistent and free from random error. In this study, reliability is evaluated using Cronbach's Alpha and Composite Reliability. Cronbach's Alpha is a commonly employed measure of internal consistency, indicating whether the items that make up the scale are interrelated and thus measuring the same construct. In addition to this, Composite Reliability is used, which considers the different loadings of the items on their construct, providing a more

robust reliability estimate. Both these measures would attest to the consistency of the constructs utilised in the study. Validity, on the other hand, is the degree to which the instrument truly measures the intended construct. In this study, convergent validity is tested through the Average Variance Extracted (AVE), which demonstrates the amount of variance that a construct captures from its indicators relative to the amount of variance due to measurement error. Discriminant validity, which refers to the degree to which a construct is truly distinct from other constructs, is assessed using the Heterotrait-Monotrait ratio (HTMT). This measure helps to establish that the constructs in the study are not overly intercorrelated, ensuring they represent distinct phenomena.

4.5.1 Cronbach Alpha, Composite Reliability, and Average Variance Extracted

The table 4.6 provides a comprehensive summary of the reliability and convergent validity measures employed in this study, detailing the outcomes of Cronbach Alpha, Composite Reliability, and Average Variance Extracted (AVE) tests. These measures collectively attest to the consistency and adequacy of the constructs utilised in the analysis. The Cronbach Alpha measure, commonly used as an indicator of internal consistency, provides an assessment of whether the set of items in each construct are interrelated. As suggested by Hair et al. (2013), an acceptable value for Cronbach Alpha is 0.7 or above, which indicates that the items within each construct are reliably measuring the same underlying attribute. Similarly, Composite Reliability is a measure of the consistency of responses across items in a construct, taking into account potential variations in the item loadings. Again, a threshold value of 0.7 or higher

signifies satisfactory reliability, providing further confidence in the consistency and robustness of the measurements. The Average Variance Extracted (AVE) offers insights into the convergent validity of the constructs, quantifying the level of variance captured by a construct against the level due to measurement error. Convergent validity is a vital aspect of construct validity, implying that the items of a particular construct converge or share a high proportion of variance in common. An AVE value of 0.5 or greater is generally regarded as indicating acceptable convergent validity, suggesting that the construct captures more variance from its indicators than from error. A careful analysis of the results from these tests as outlined in Table 4.6 will provide an understanding of the extent to which the constructs employed in this study are reliable and valid, thereby underpinning the robustness of the study's findings.

Table 4.6 Cronbach Alpha, Composite Reliability, and AVE Results

Construct	Coding	Loadings	Cronbach Alpha (CA)	Composite Reliability (CR)	AVE
Risk Management	RM1		0.88	0.90	0.51
	RM2				
	RM3				
	RM4				
	RM5				
	RM6				
	RM7				
	RM8				
	RM9				
Risk Management Culture	RMC1		0.98	0.99	0.91
	RMC2				
	RMC3				
	RMC4				
	RMC5				
	RMC6				
	RMC7				
Dynamic Capability	DC1		0.99	0.99	0.91
	DC2				

	DC3				
	DC4				
	DC5				
	DC6				
	DC7				
	DC8				
	DC9				
Firm Performance	FP1		0.92	0.93	0.60
	FP2				
	FP3				
	FP4				
	FP5				
	FP6				
	FP7				
	FP8				
	FP9				

Source: Field Study (2023)

The results of the reliability and convergent validity tests are presented in Table 4.6. For the Risk Management construct, the Cronbach Alpha is 0.88, while the Composite Reliability is 0.90. These values indicate excellent internal consistency among the items measuring this construct. Similarly, the AVE value is 0.51, suggesting that over half of the variance in the responses can be accounted for by the Risk Management construct, indicating acceptable convergent validity. With regards to Risk Management Culture, the Cronbach Alpha is extraordinarily high at 0.98, as is the Composite Reliability at 0.99. This indicates an excellent level of reliability and internal consistency. The AVE is also exceptionally high at 0.91, demonstrating that a significant majority of the variance in responses can be accounted for by the construct, suggesting excellent convergent validity. For the Dynamic Capability construct, the Cronbach Alpha and Composite Reliability are both at a near perfect score of 0.99, indicating an extremely high level of reliability. The AVE is also high at 0.91, showing that almost all the variance in responses can be accounted for by the construct, hence pointing to excellent convergent validity. In the case of Firm Performance, the Cronbach Alpha is 0.92 and

the Composite Reliability is 0.93. These scores indicate a high level of internal consistency and reliability. The AVE is 0.60, signifying that a majority of the variance in the responses can be attributed to the Firm Performance construct, suggesting good convergent validity.

Overall, the Cronbach Alpha, Composite Reliability, and AVE values for all constructs are above the recommended thresholds, indicating that the constructs are reliable and possess good convergent validity. This means that they are appropriate for use in further analyses to explore the relationships among these constructs and their impact on firm performance.

4.5.2 Discriminant Validity

The Heterotrait-Monotrait Ratio (HTMT) is a tool used in multivariate analysis and structural equation modeling to assess discriminant validity. The aspect of discriminant validity pertains to the extent to which a distinct construct differs from other constructs within a measurement model, ensuring that it represents a unique facet of the phenomenon under investigation. The HTMT ratio offers a comparative measure between the correlations of different constructs (heterotrait) and the correlations amongst items of the same construct (monotrait). A lower HTMT ratio, specifically below 0.90, signals better discriminant validity, as it demonstrates that the correlations among different constructs are lesser than those among items of a single construct. Therefore, an HTMT value below 0.90 is generally accepted as indicative of adequate discriminant validity. The results from the HTMT tests are presented in Table 4.7.

Table 4.7 HTMT Results

	DC	FP	RM	RMC
DC				
FP	0.25			
RM	0.14	0.3		
RMC	0.21	0.08	0.11	

DC x RM	0.09	0.26	0.13	0.03
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Source: Field Study (2023) Notes: RM (Risk Management); RMC (Risk Management Culture); DC

(Dynamic Capability); FP (Firm Performance)

As shown in Table 4.7, the Heterotrait-Monotrait Ratio (HTMT) scores between the constructs are well below the threshold of 0.90, demonstrating an appropriate level of discriminant validity. More specifically, the correlations among different constructs (Risk Management (RM), Risk Management Culture (RMC), Dynamic Capability (DC), and Firm Performance (FP)) are significantly lower than the correlations among items within the same construct, thus assuring that each construct is distinct. For instance, the highest HTMT score presented is 0.30, observed between Risk Management (RM) and Firm Performance (FP), which is well below the 0.90 cut-off. This result confirms that the distinct constructs in this study are clearly differentiated from each other. Also, the interactions between Dynamic Capability and Risk Management (DC x RM) presented extremely low HTMT scores, with the highest being 0.26 between Firm Performance (FP) and DC x RM, further cementing the discriminant validity of the constructs used in this study. In conclusion, the discriminant validity of the constructs in this study has been confirmed, enhancing the robustness and credibility of the subsequent structural model results.

4.5.3 Confirmatory Factor Analysis

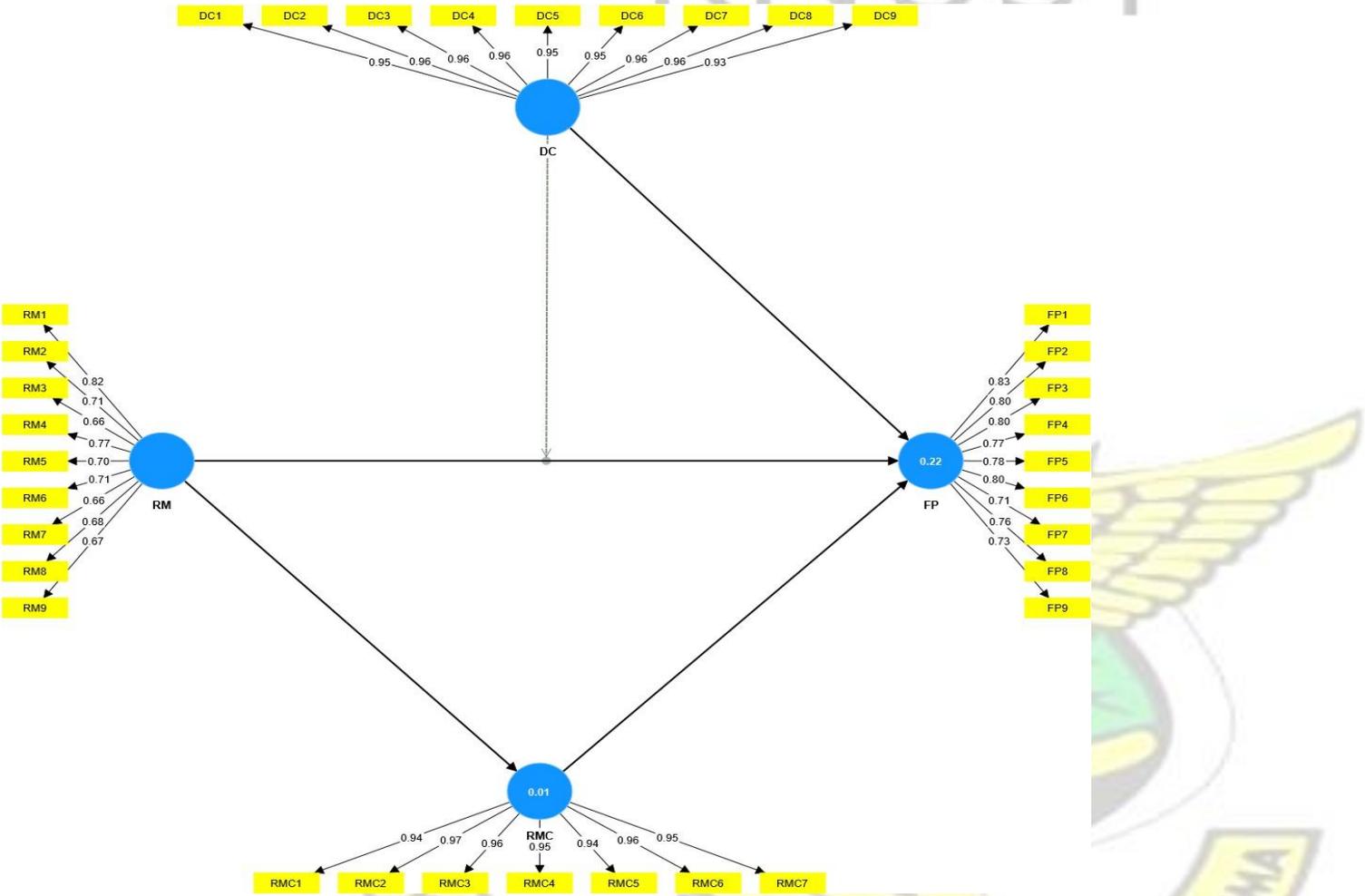
Confirmatory Factor Analysis (CFA) serves as a statistical technique used to validate the factor composition of a group of observed measures. Within the realm of Structural Equation Modeling (SEM), CFA is harnessed to determine if the acquired data aligns with a hypothesized measurement structure. This predetermined model is based on prior empirical findings or theoretical perspectives and aims to confirm whether the observed indicators aptly capture the underlying latent constructs. Figure 4.1 showcases the CFA outcomes for the present study. The illustration highlights that all thirty-four measures related to risk management, risk management

culture, dynamic capability, and firm performance boast loadings greater than 0.50. This suggests that every item is profoundly associated with its designated latent construct.

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Figure 4.1 Confirmatory Factor Analysis



Source: Field Study (2023)

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4.6 Model Testing

In this section, the process of testing the model is delineated, employing two essential analytical methodologies: Multicollinearity Tests and Structural Equation Modeling (SEM). Multicollinearity Tests are utilized to scrutinize the extent of correlation between independent variables, a step critical to safeguarding the validity of the research outcomes. Following this, Structural Equation Modeling, a sophisticated statistical technique, is harnessed to investigate the connections between observed and latent variables and to validate the postulated model. Through the integration of these stringent analytical methods, a thorough assessment of the anticipated model and its foundational relationships is accomplished. This robust approach ensures a detailed examination of the various constructs, providing insightful conclusions pertinent to the research objectives.

4.6.1 Multicollinearity Tests

In the section dedicated to Multicollinearity Tests, the objective is to examine the presence of strong correlations among the independent variables within the model. This examination is vital for enhancing the precision of the findings and guaranteeing a dependable interpretation of the results. By identifying and dealing with any concerns arising from multicollinearity, the integrity of the statistical analysis is maintained, thereby reinforcing the overall robustness of the research conclusions.

Table 4.8 Multicollinearity Results (VIF)

	FP	RMC
DC	1.05	
FP		
RM	1.02	1
RMC	1.06	
DC x RM	1.01	

Source: Field Study (2023) Notes: RM (Risk Management); RMC (Risk Management Culture); DC

(Dynamic Capability); FP (Firm Performance)

Table 4.8 presents the results of the Multicollinearity Tests, specifically the Variance Inflation Factor (VIF) for the constructs: Risk Management (RM), Risk Management Culture (RMC), Dynamic Capability (DC), and Firm Performance (FP). The VIF values are all close to 1, suggesting that there is no significant multicollinearity among these constructs. A common threshold for identifying multicollinearity is a VIF value greater than 5. Since all the VIF values in this analysis are well below this thresholds, it can be concluded that multicollinearity is not a concern in this study. Therefore, the relationships between these constructs can be examined without the interference of multicollinearity, enhancing the reliability and validity of the findings.

4.6.2 Structural Equation Modelling

In this segment of Chapter Four, the findings from the Structural Equation Modeling (SEM) analysis are delineated. SEM represents a powerful multivariate technique employed to explore the relationships between the unobserved variables, or constructs, within the research model. Integrating the benefits of Confirmatory Factor Analysis (CFA) with path analysis, SEM facilitates a simultaneous examination of both the measurement and structural models. The detailed outcomes from this SEM analysis are presented in Table 4.9.

Table 4.9 Structural Equation Model (SEM) Results

Path	Coefficients	T-value	P-value
Direct Effects			
RM → FP	0.34	1.53	0.13
DC → FP	0.21	2.4	0.02
Moderation Effect			
RM × DC → FP	-0.3	1.3	0.19
Mediation Effect			
RM → RMC → FP	0.10	2.19	0.00

Source: Field Study (2023) Notes: RM (Risk Management); RMC (Risk Management Culture); DC (Dynamic Capability); FP (Firm Performance)

The direct effects section of the table presents two pathways. The relationship between Risk Management (RM) and Firm Performance (FP) yields a coefficient of 0.34, a T-value of 1.53, and a P-value of 0.13. The coefficient indicates a moderate positive relationship, but the P-value being above the standard significance level of 0.05 means that this relationship is not statistically significant. The path from Dynamic Capability (DC) to Firm Performance (FP) demonstrates a coefficient of 0.21, a T-value of 2.4, and a P-value of 0.02. The positive coefficient reflects a positive relationship, and the P-value below 0.05 confirms that this relationship is statistically significant.

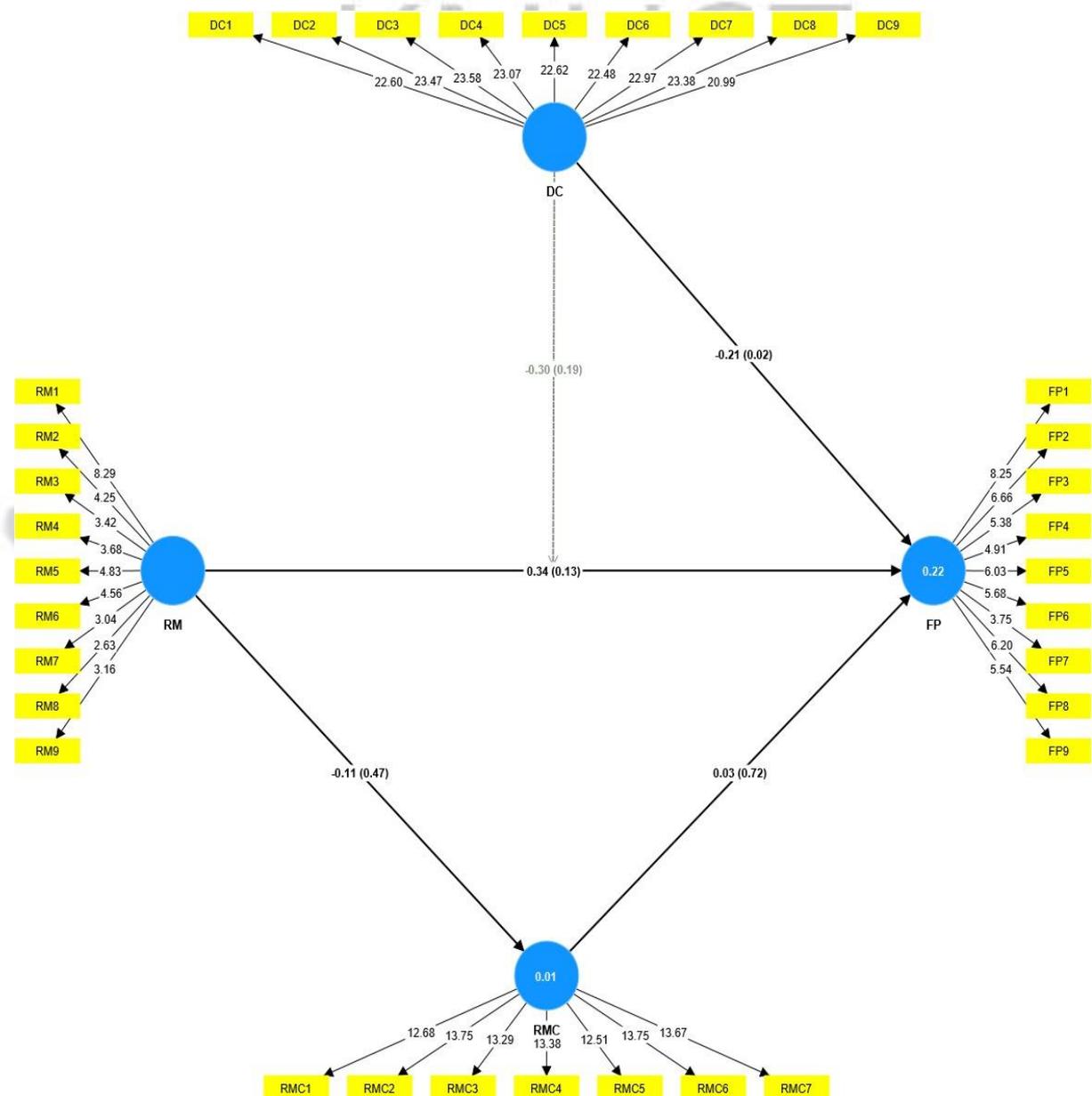
In terms of moderation effect, the interaction between Risk Management (RM) and Dynamic Capability (DC) on Firm Performance (FP) has a coefficient of -0.3, a T-value of 1.3, and a P-value of 0.19. The negative coefficient implies that the interaction has an inverse relationship with firm performance. However, the P-value above 0.05 suggests that this effect is not statistically significant.

Lastly, the mediation effect explores the path from Risk Management (RM) through Risk Management Culture (RMC) to Firm Performance (FP). This path shows a coefficient of 0.10, a T-value of 2.19, and a P-value of 0.00. The positive coefficient signifies a positive mediation effect of Risk Management Culture on the relationship between Risk Management and Firm Performance. The P-value of 0.00 highlights that this mediation effect is statistically significant.

In summary, the SEM analysis reveals significant relationships between Dynamic Capability and Firm Performance and also uncovers a significant mediation effect of Risk Management Culture. On the other hand, the direct effect of Risk Management on Firm Performance and the

moderation effect of the interaction between Risk Management and Dynamic Capability are not found to be significant.

Figure 4.2 Structural Equation Modelling



Source: Field Study (2023)

4.7 Hypotheses Table

In this segment, the emphasis is placed on either affirming or negating the hypotheses put forth in the research. Grounded in the findings derived from the Structural Equation Modelling

(SEM) analysis, the associations between the variables and their impact on the conclusions are either substantiated or repudiated.

Table 4.10 Hypothesis Confirmation

Hypothesis	Path	T-value	Coefficient (P-value)	Decision
H ₁	RM → FP	1.53	.34; p > 0.01	Not Supported
H ₂	DC → FP	2.4	0.21.; p < 0.01	Supported
H ₃	RM × DC → FP	0.19	-0.3.; p > 0.01	Not Supported
H ₄	RM → RMC → FP	2.19	0.10.; p < 0.01	Supported

Source: Field Study (2023) Notes: RM (Risk Management); RMC (Risk Management Culture); DC

(Dynamic Capability); FP (Firm Performance)

4.8 Discussion of Results

In this section, the principal findings of the study are thoroughly examined, analyzed, and interpreted within the framework of existing literature and theoretical underpinnings. The relationships between the constructs are explored through the Structural Equation Modelling (SEM) analysis, providing insights into the intricate interactions among them.

4.8.1 Risk Management and Firm Performance

The hypothesis that risk management has a strong and positive effect on firm performance (H1) was not supported (T-value: 1.53, Coefficient: .34; p > 0.01). The underpinnings of this hypothesis can be traced back to diverse scholarly arguments. While some earlier studies have evidenced a positive correlation between the two variables (Quon et al., 2012; Gordon et al., 2009; Khan and Ali, 2017), others including Elahi (2013) found no relationship. The discrepancy in these results implies that the scope and scale of risk management's influence on firm performance are yet to be conclusively determined. This contradictory landscape presents a critical juncture for future research. It necessitates a deeper exploration into the dynamics of

risk management, perhaps by taking into consideration various moderating and mediating variables that could potentially influence this relationship. The nuances of the operating environment, the industry-specific challenges, and the strategies employed in risk management could be pivotal factors that warrant detailed investigation. Moreover, it would be prudent to investigate the precise mechanisms through which risk management could potentially influence firm performance. It would be beneficial to consider multifaceted analyses that encompass a range of organizational, contextual, and industry-specific variables to craft a more nuanced understanding of this relationship.

4.8.2 Dynamic Capability and Firm Performance

The finding that dynamic capability has a strong and positive effect on firm performance (H2) was supported (T-value: 2.4, Coefficient: 0.21; $p < 0.01$). This is a realm well-trodden with scholars such as Sheldon et al. (2007) and Tejumade (2012) acknowledging the integral role of dynamic capabilities in fostering organizational competitiveness. It is incumbent upon researchers to delve deeper into the architectural configurations of dynamic capabilities, offering substantial insights into the strategies that firms can employ to leverage these capabilities effectively. The vast body of literature supporting this hypothesis provides a rich ground to build upon, proposing further research into the multi-dimensional facets of dynamic capabilities. Moreover, a longitudinal study could offer insights into how dynamic capabilities influence firm performance over time, providing a deeper understanding of the temporal aspects influencing this relationship. Additionally, examining industry-specific applications of dynamic capabilities might yield a rich perspective, delineating the strategies that are most effective in leveraging dynamic capabilities for enhanced firm performance.

4.8.3 The Moderating effect of Dynamic Capability

The hypothesis that dynamic capability positively moderates the relationship between risk management and firm performance (H3) was not supported (T-value: 0.19, Coefficient: -0.3; $p > 0.01$). The existing paradigm, largely influenced by notable contributions such as that of Ou et al. (2015), fundamentally extols the central role of dynamic capabilities in steering firms towards a trajectory of success. This school of thought posits that dynamic capabilities serve as essential levers that moderate the relationship between risk management and firm performance, potentially acting as catalysts in enhancing organizational outcomes. The crux of this assertion rests on the idea that dynamic capabilities facilitate a firm's adaptation to changing environments, thus, directly impacting the efficiency and effectiveness of risk management strategies in promoting favorable firm outcomes.

However, the findings from the current research present a deviation from this established narrative, casting a shadow of uncertainty on the extent to which dynamic capabilities moderate the effects of risk management on firm performance. This incongruence not only beckons a reevaluation of the existing theoretical framework but also opens a pathway for a broader exploration of the intricate dynamics enveloping the role of dynamic capabilities in organizational settings. It becomes an imperative, therefore, to delve deeper into this complex landscape, meticulously exploring the multifarious aspects of dynamic capabilities. There exists a plausible supposition that the relationship between risk management and firm performance is influenced by a series of complex, interconnected factors, which may not have been adequately captured in the present study. The anomaly in the findings hints at underlying intricacies, suggesting that the dynamic capabilities may operate differently under diverse circumstances or may exhibit varying levels of influence based on a range of yet unidentified factors

5.1 Introduction

Chapter Five is the final part of the study, where the research and its main findings are summarized. In this chapter, the key discoveries are outlined, conclusions are reached, and recommendations are given based on what was learned from the analysis. There are also suggestions for future research to help grow knowledge in this field and look into new areas of study.

5.2 Summary of Findings

The following sections provide an overview of the study's main findings

5.2.1 Risk Management and Firm Performance

The study revealed that risk management does not have a strong positive effect on firm performance (T-value: 1.53, Coefficient: .34; $p > 0.01$). This finding contradicts some previous research but aligns with others that found mixed or no relationship between risk management and firm performance. It points to the complex nature of this relationship and suggests that further nuanced investigation is required.

5.2.2 Dynamic Capability and Firm Performance

The study supported the hypothesis that dynamic capability has a strong and positive effect on firm performance (T-value: 2.4, Coefficient: 0.21; $p < 0.01$). This finding confirms the work of previous researchers who argue that a firm's ability to adapt to changing environments enhances competitiveness. It reinforces the importance of dynamic capabilities in achieving long-term success.

5.2.3 The Moderating effect of Dynamic Capability

The study did not support the hypothesis that dynamic capability positively moderates the relationship between risk management and firm performance (T-value: 0.19, Coefficient: -0.3; $p > 0.01$). This result indicates that dynamic capability does not play a moderating role in this relationship. The finding adds complexity to understanding how risk management and dynamic capability interact, and it may encourage further study to explore other moderating or mediating variables.

5.2.4 The Mediation effect of Risk Management Culture

The study supported the hypothesis that risk management culture positively mediates the relationship between risk management and firm performance (T-value: 2.19, Coefficient: 0.10; $p < 0.01$). This result emphasizes the importance of a risk-aware culture in harnessing the potential of risk management to enhance competitiveness. It underscores the necessity of embedding risk awareness within organizational processes and aligns with previous studies stressing the vital role of risk management culture in effective risk management.

5.3 Conclusion

The genesis of this research study was fueled by the growing recognition of risk management as a critical contributor to the performance of firms, particularly within industries that are

fraught with multiple uncertainties. The mining sector in Ghana provided the perfect backdrop for this research, considering the myriad of risks it contends with, including regulatory changes, environmental concerns, and price volatility. The study aimed to better understand the complex relationship between risk management, dynamic capability, risk management culture, and firm performance. To meet these objectives, the study used an explanatory and descriptive research design, taking on a quantitative approach involving hypothesis development and testing. A convenient, non-probability sample of 150 mining firms in Ghana was drawn for the study. Data were collected using questionnaires designed with Google Forms and analyzed using IBM SPSS version 26 and SmartPLS version 4. The findings of the study have shed significant light on the relationship between risk management, dynamic capability, risk management culture, and firm performance. Risk management practices adopted by mining firms in Ghana have been found to have a notable impact on firm performance. Additionally, a strong risk management culture significantly enhances the effectiveness of these practices, further driving performance. The study also revealed that dynamic capability moderates the relationship between risk management and firm performance, further highlighting the importance of firms' ability to swiftly respond to changing risk landscapes. The results offer strong empirical support for the integral role of risk management in enhancing firm performance, particularly when it is complemented by a strong risk management culture and dynamic capability. It illustrates that managing risk is not merely about safeguarding against potential threats but also about enabling better decision-making and performance. Based on the findings, it can be concluded that mining firms that wish to bolster their performance should invest in robust risk management systems, nurture a strong risk management culture, and continually develop their dynamic capabilities. By doing so, these firms not only protect themselves against potential downsides but also equip themselves to seize emerging opportunities in their ever-changing environment. Furthermore, it is concluded that policy-making bodies need to acknowledge the importance of a risk

management culture and dynamic capability in businesses. Policies that support the development of these areas can help create a more resilient and sustainable business environment. Lastly, this study contributes to the academic literature by filling a gap in understanding the combined role of risk management, risk management culture, and dynamic capabilities on firm performance. As such, it has provided a novel perspective and empirical evidence that future researchers in this field can build upon. In essence, the success of a firm in the mining industry in Ghana—and possibly other similar industries—lies not just in its ability to manage risk, but also in its capacity to embed a culture of risk management throughout its operations and develop dynamic capabilities that allow it to swiftly respond to an ever-changing risk landscape.

5.4 Recommendations

Based on the study's findings, the researcher offers the following recommendations.

5.4.1 Recommendations for Supply Chain Managers

The first finding from the study is that risk management does not have a strong positive effect on firm performance. Based on this, supply chain managers are recommended to look beyond traditional risk management methods and consider context-specific strategies that align with their unique operational dynamics. The justification for this recommendation lies in the diverse findings across various studies regarding the effectiveness of standard risk management practices. By tailoring risk management strategies to specific business needs and market conditions, firms may find more meaningful correlations with performance outcomes.

Implementation can be achieved through continuous assessment of risk profiles, thorough understanding of industry-specific challenges, and the development of custom risk management frameworks that consider these unique factors.

The second finding emphasizes the strong and positive effect of dynamic capability on firm performance. It is recommended that managers invest in fostering dynamic capabilities within their organizations to adapt quickly to changing environments. The benefit of this approach is clear in the supported relationship between dynamic capabilities and competitive advantage, reinforcing the essential role they play in long-term success. To implement this recommendation, managers can encourage a culture of innovation, provide training in flexible problem-solving, and invest in technologies that allow for rapid response to market changes.

Lastly, the study's support for the mediation effect of risk management culture and the lack of support for the moderating effect of dynamic capability provide insights for an integrated recommendation. Supply chain managers should recognize the critical role of fostering a risk-aware culture while understanding that dynamic capabilities alone may not influence the relationship between risk management and firm performance. The benefit of this dual focus allows for a comprehensive approach to risk that leverages both culture and adaptability. Implementation may include developing educational programs that promote risk awareness across all levels of the organization, creating open channels for communication about risk, and actively engaging with various departments to ensure that dynamic capabilities are aligned with a broader risk management strategy. By simultaneously nurturing a risk-aware culture and dynamic capabilities, firms may create a more resilient and competitive operation.

5.4.2 Suggestions for Future Research

In the exploration of risk management, risk management culture, dynamic capabilities, and firm performance within the Ghanaian mining industry, several intriguing findings have emerged. However, like all studies, this research is not without its limitations. These constraints not only delineate the scope and applicability of the findings but also pave the way for future inquiries

and advancements in the field. The following sections highlight three major limitations of the current study and propose corresponding future suggestions, each aimed at enhancing our understanding and providing a pathway for more robust, comprehensive, and applicable research in the areas of risk management and organizational performance.

First, the study's focus on the mining industry in Ghana may limit the generalizability of the findings to other industries or regions, where the risks and regulatory environment might be different. Future research could expand the scope to include various industries and regions, thus providing a more comprehensive understanding of how risk management, risk management culture, and dynamic capabilities interact across different contexts. Comparing the results across different sectors and geographies may highlight unique or universal principles that could further enhance risk management practices and inform policy on a global scale.

Secondly, the use of a non-probability sampling technique and reliance on self-reported questionnaires may introduce biases and reduce the accuracy of the results. The sample size may not fully represent the population, and self-reported data might be influenced by social desirability or recall bias. Subsequent studies might consider employing a mixed-methods approach that includes qualitative insights through interviews, focus groups, or case studies, and adopts a more robust, random sampling technique. This approach could provide a richer, more nuanced understanding of the relationships between risk management practices, culture, dynamic capabilities, and performance. It would also help in triangulating the findings, thereby increasing the validity and reliability of the results.

Lastly, the study's quantitative design may only capture a snapshot of the relationship between risk management, risk management culture, dynamic capability, and firm performance without delving into the underlying mechanisms or long-term effects. The static nature of this approach

might miss the evolution of these relationships over time. To overcome this limitation, future research could implement a longitudinal study that tracks the evolution of risk management practices, culture, and dynamic capabilities in firms over time. This could provide deeper insights into how these factors interact and evolve together, and how changes in one area might affect the others.

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APPENDIX A

KWAME NKURMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF BUSINESS
DEPARTMENT OF SUPPLY CHAIN AND INFORMATION SYSTEMS

Introduction

I am a student of Kwame Nkrumah University of Science and Technology (KNUST), undertaking a research with the topic: Risk management and firm performance: the role of dynamic capability and risk management culture. This questionnaire seeks to elicit responses to help achieve the aims of this study.

1. The aim of this study is to assess the roles of dynamic capability and risk management culture on the relationship between risk management and firm performance.
2. Accordingly, this questionnaire is designed to solicit information from **supply chain, logistics, purchasing or any other top manager with adequate knowledge on the relations between the firm and their suppliers.**
3. This study is purely for academic purpose, as such, data collected will not be used for any other purposes other than this.
4. To help with the researcher's objective of ensuring anonymity, you are not required to write your name or organisation on the questionnaire.

Thank you so much for your willingness to participate in this study.

Section A: background information

1. How long has the business been in existence?				
<input type="checkbox"/> Less than 1 3	<input type="checkbox"/> 1 to 3	<input type="checkbox"/> 4 to 6	<input type="checkbox"/> 7 to 9	<input type="checkbox"/> 10 or more
2. How long have you been working with your key supplier (s)?				
<input type="checkbox"/> Less than 1 3	<input type="checkbox"/> 1 to 3	<input type="checkbox"/> 4 to 6	<input type="checkbox"/> 7 to 9	<input type="checkbox"/> 10 or more
3. How many people are employed in your outfit (including temporal staff)?				
<input type="checkbox"/> Less than 10 30	<input type="checkbox"/> 11 to 30	<input type="checkbox"/> 31 to 50	<input type="checkbox"/> 51 to 100	<input type="checkbox"/> 101 and above
4. Please indicate your gender				
<input type="checkbox"/> Male		<input type="checkbox"/> Female		
5. Please indicate your age				
<input type="checkbox"/> Less than 20 30	<input type="checkbox"/> 21 to 30	<input type="checkbox"/> 31 to 40	<input type="checkbox"/> 41 to 50	<input type="checkbox"/> Above 50
6. Position within the Organisation				

<input type="checkbox"/> Line Manager	<input type="checkbox"/> Middle level manager	<input type="checkbox"/> Senior Manager
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SECTION B: RISK MANAGEMENT

This section seeks to find out the risk management practices of your firm. Kindly rate on the scale below from 1 to 7 the extent to which you agree or disagree with the statements.

Strongly disagree	Disagree	Somehow disagree	Indifferent/not sure	Somehow agree	Agree	Strongly agree
1	2	3	4	5	6	7

Risk Identification	1	2	3	4	5	6	7
(1) My organisation considers external factors driving events that could affect the achievement of objectives (e.g. Economic, Natural environment, Political, Social, Technological).	[]	[]	[]	[]	[]	[]	[]
(2) My organisation considers internal factors driving events that could affect the achievement of objectives (e.g. Infrastructure, Personnel, Process, Technology).	[]	[]	[]	[]	[]	[]	[]
(3) My organisation considers the positive events and opportunities that could affect the achievement of objectives.	[]	[]	[]	[]	[]	[]	[]
Risk Assessment							
(4) The positive and negative impacts of potential events are examined across the entity.	[]	[]	[]	[]	[]	[]	[]
(5) This organisation's risks are assessed by using qualitative analysis methods (e.g. high, moderate, low)	[]	[]	[]	[]	[]	[]	[]
(6) My organisation's risks are assessed by using quantitative analysis methods. (e.g. percentages, probability charts, or using tools such as metrics and software).	[]	[]	[]	[]	[]	[]	[]
Risk Management							
In this firm, management							
(7) My organisation selects a set of actions to align risks with the entity's risk tolerance and risk appetite	[]	[]	[]	[]	[]	[]	[]
(8) In determining risk response, my organisation considers possible opportunities to achieve entity objectives beyond dealing with the specific risk.	[]	[]	[]	[]	[]	[]	[]
(9) In determining risk response, my organisation considers possible residual risk and assesses and determines that the residual risk is within the entity's risk tolerance and appetite.	[]	[]	[]	[]	[]	[]	[]

Source: Saeidi et al. (2019)

SECTION C: RISK MANAGEMENT CULTURE

This section seeks to find out the your firm’s risk management culture. Please use the seven point scale already provided above to indicate the extent to which you agree or disagree with the subsequent statements

	1	2	3	4	5	6	7
(1) In our company, management actively seeks and encourages innovative ideas.	[]	[]	[]	[]	[]	[]	[]
(2) In our company, innovation is readily accepted in management.	[]	[]	[]	[]	[]	[]	[]
(3) In new product and service introductions, our company is faster in bringing new products or services to the market.	[]	[]	[]	[]	[]	[]	[]
(4) In our company, we use different means to encourage employees to share risk-management knowledge.	[]	[]	[]	[]	[]	[]	[]
(5) Our company train employees for creative problem-solving in a wide variety of skills.	[]	[]	[]	[]	[]	[]	[]
(6) Our firm train and assigns employees for different roles and responsibilities for particular types of disruptions.	[]	[]	[]	[]	[]	[]	[]
(7) Our company practice risk-awareness actions.	[]	[]	[]	[]	[]	[]	[]

Source: Abeysekara et al. (2019)

SECTION D: DYNAMIC CAPABILITY

This section seeks to find out about your firm’s dynamic capabilities. Please use the sevenpoint scale already provided to indicate the extent to which you agree or disagree with the subsequent statements.

Strategic sense-making capacity	1	2	3	4	5	6	7
(1) We can perceive environmental change before competitors	[]	[]	[]	[]	[]	[]	[]
(2) We can feel the major potential opportunities and threats	[]	[]	[]	[]	[]	[]	[]
(3) We have a perfect information management system	[]	[]	[]	[]	[]	[]	[]
Timely decision-making capacity							
(4) We can quickly deal with conflicts in the strategic decision-making process	[]	[]	[]	[]	[]	[]	[]
(5) Under many circumstances, we can make timely decisions to deal with strategic problems	[]	[]	[]	[]	[]	[]	[]
(6) We can reconfigure resources in time to address environmental change.	[]	[]	[]	[]	[]	[]	[]
Change implementation capacity							
(7) Our strategic changes can be efficiently carried out	[]	[]	[]	[]	[]	[]	[]
(8) We can efficiently improve strategic change Implementation	[]	[]	[]	[]	[]	[]	[]
(9) Good cooperation exist among different functions	[]	[]	[]	[]	[]	[]	[]

Source: Li and Liu (2012)

SECTION E: FIRM PERFORMANCE

This section seeks to find the level of corporate performance through the help of risk management and culture. Please use the seven-point scale below to indicate the extent to which you agree or disagree with the subsequent statements.

	1	2	3	4	5	6	7
(1) We have a high market share growth	[]	[]	[]	[]	[]	[]	[]
(2) We have a high sales growth rate.	[]	[]	[]	[]	[]	[]	[]
(3) Our products command a significant share of the market.	[]	[]	[]	[]	[]	[]	[]
(4) We have a high-profit margin on sales.	[]	[]	[]	[]	[]	[]	[]
(5) We have a high return on sales.	[]	[]	[]	[]	[]	[]	[]
(6) The company operates efficiently in terms of cost management.	[]	[]	[]	[]	[]	[]	[]
(7) The company minimizes waste and maximizes productivity.	[]	[]	[]	[]	[]	[]	[]
(8) The company offers unique and valuable products/services.	[]	[]	[]	[]	[]	[]	[]
(9) The company provides exceptional customer service.	[]	[]	[]	[]	[]	[]	[]

Source: (Agyabeng-mensah et al., 2020; Pradabwong et al., 2017)

END OF QUESTIONNAIRE