UNIVERSITY OF CAPE COAST

SUPPLY CHAIN QUALITY MANAGEMENT PRACTICES AND COMPETITIVE ADVANTAGE OF FOOD PROCESSING FIRMS IN GHANA: THE MODERATING ROLE OF INNOVATION

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BY

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A thesis submitted to the Department of Marketing and Supply Chain Management of the School of Business, College of Humanities and Legal Studies, University of Cape Coast, in partial fulfillment of the requirements for the award of a Master of Commerce degree in Procurement and Supply Chain Management.

JUNE 2022

DECLARATION

Candidates' Declaration

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

Candidate's Signature……Date……..…….

Name: Buer Selorm Buertey

Supervisor's Declaration

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

Supervisor's Signature……Date……..

Name: Dr. Gloria K.Q. Agyapong

ABSTRACT

Over the years, firms in the food processing sector have heavily relied on internal quality management approaches as a measure of quality performance, but these approaches were limited to the boundaries of the firms. However, competition among businesses has incrementally shifted from individual organisations to entire supply chains. Therefore, the adoption of supply chain quality management which takes a holistic approach to quality management at the supply chain level of firms. Dwelling on the resource-based theory extended resource-based theory, and resource-advantage theory, this study examined the relationship between supply chain quality management practices and the competitive advantage of food processing firms in Ghana, and how innovation influenced the relationship. The study employed the explanatory research design and the quantitative research approach. The census sampling technique was used to determine the sample size of 206 food processing firms within the Accra Metropolis. Self-administered structured questionnaires were used for data collection and the response rate was 166, constituting 80.5% of the sample size. The SPSS v26 and SmartPLS 3 software were used for data processing to generate statistical test results, and the partial least square structural equation modelling was the data analytical technique employed. Results of the study indicated that all four practices– customer focus, supplier quality, supplier selection, and supplier involvement– had a significantly positive impact on competitive advantage of the food processing firms. However, innovation signified no effect on the relationship. It is recommended that the scope of future research will be broadened to gain a deeper understanding of the phenomenon studied. The firms should also explore avenues for innovation.

KEY WORDS

Customer Focus

Supplier Involvement

Supplier Quality Management

Supplier Selection

Competitive Advantage

Food Processing Firms

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DEDICATION

To my supervisor, Dr. Gloria K.Q. Agyapong

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LIST OF ACRONYMS

SCQM	Supply Chain Quality Management
CF	Customer Focus
SS	Supplier Selection
SPP	Supplier Participation
SQ	Supplier Quality
CA	Competitive Advantage
CIPS	Chartered Institute of Procurement and Supply
AMA	Accra Metropolitan Assembly
INN	Innovation
FDA	Food and Drugs Authority
OCED	Organisation for Economic Co-operation and Development
SCQMP	Supply Chain Quality Management Practices

CHAPTER ONE

INTRODUCTION

Introduction

The competition among businesses has over the years shifted from individual organisations to entire supply chains. Therefore, managing the supply chain effectively has become a lead way to obtaining a competitive advantage and improved performance (Li, Ragu-Nathan, Rag-Nathan, & Rao, 2016). To remain competitive, supply chain managers develop and implement strategies that streamline their operations and key among them the implementation of quality management practices in their supply chains. Phan, Nguyen, Trieu, Nguyen, and Matsui (2019) proved that quality management in the supply chain at both downstream and upstream levels are significant predictors for increased performance concerning on-time delivery, cost reduction, and quality products. This results in a competitive advantage, which is the quality that allows a firm to outperform its competitors (Porter, 1985).

This study dwelt on the resource-based theory, extended resource-based theory, and resource-advantage theories to understand the relationship between supply chain quality management practices and the competitive advantage of food processing firms in Ghana, whereas this relationship was also moderated with innovation. It presents information on how the food processing firms capitalise on their internal resources as well as external relationships and innovations to manage quality in their supply chain and how this affects their sustained competitive advantage and overall business performance. The study provides insights relevant to both practitioners and academics for research.

Background to the Study

The United Nations (UN) during its 2021 World Food Safety Day observation, stated a projected annual figure of 600 million cases emanating from foodborne illness. According to the UN (2021), consumption of poor-quality food negatively affects human health and economies, and those affected most are the marginalised and vulnerable people such as women and children. Annually, an estimate of 420000 individuals in the world loses their lives after consuming poor quality food, whiles children below five years old bear 40% of the burdens related to foodborne diseases, with 125000 lives lost annually (UN, 2021). In Ghana, the Ministry of Food and Agriculture indicated that about 5% of Ghana's population is food insecure nationwide, (Ghana SDG Baseline Report, 2018). This, therefore, makes research into the food processing sector in Ghana relevant.

The increasing growth and enlargement of supply chains as well as globalisation present major challenges to focal firms in managing quality in their supply chain (Huo, Ye, Zhao, & Zhu, 2019). That is, organisations become more vulnerable to quality issues as their supply chain expands. Therefore, to remain competitive and continually capture and maintain a large market share, firms are required to decrease costs and optimize product quality, and efficiency of their supply chains (Sen, Datta, & Mahapatra, 2018). Over the years, supply chain quality management issues have exposed many industries to reputational damage and huge financial loss resulting from product defects and recall, lawsuits, and compensation, and the food processing industry is not an exception.

Globally, the food processing sector has encountered major supply chain quality management issues in the past. This includes the Horsemeat Scandal, where the Irish Food Safety Authority (IFSA) (2013), identified more than 10% horse DNA in beef burgers being sold by trusted European supermarket chains (Madichie & Yamoah, 2017). The incident compelled more than twelve retail organisations to recall the affected products from the market. According to Barnett et al., (2016), further investigations proved that all the affected retailers engaged in sole or single sourcing with a supplier, who also had sub-suppliers that were not well-known.

Another supply chain quality management issue recorded in the food processing sector is the Chinese Milk Scandal which happened in 2008. It was exposed that milk suppliers included melamine which is a colourless crystalline compound–, to fraudulently exaggerate the protein readings of their milk products (Jia et al., 2012). According to Morehouse, Freienstein, and Cardoso (2010), the incident affected about 294,000 consumers worldwide, and it was recorded that more than 51000 children were hospitalized and six babies lost their lives, as cited by Zeng, Zhou, Pan, and Fowler (2018). Sales of milk products then dropped by over 30% as demand weakened and many countries halted the importation of Chinese milk (Center for Food Safety, 2008).

Also, some farmers disposed of their milk, and others also sold their cows (Craig & Jeffery, 2011). In addition, consumer confidence in the milk products in China dropped and that weakened the industry; some consumers in China also converted to patronising international brands even at a higher price; one giant milk producer was declared bankrupt; some milk producers also found it difficult to promote their products. According to Zhang (2012), 80% of

China's milk supply market was captured by international brands after the incident.

Over the years, the food processing industry in Ghana despite dominating about 60% of Ghana's agricultural sector (MoFA, 2018), is one of the sectors that have been subjected to quality management issues and this affected its competitiveness. Supply chain quality management issues suffered within the sector include the closure of Eurofood (Gh) Company Limited which is worth over US$ 10 million after it was discovered that it produced biscuits with expired and maggot-infested flour (AGI, 2008). In the year 2018, Coca-Cola Ghana Limited also revealed a financial loss of about GHS1.7 million as a result of inventory errors. Also, in 2019, Ghana's Food and Drugs Authority (FDA) directed the withdrawal of all batches of certain brands of tomato paste from the market (FDA, 2019) due to quality issues.

Notably, most of the SCQM issues identified globally and in Ghana, were linked to external suppliers including second-tier suppliers, unknown to the focal firms. These crises show the SCQM deficiencies in the food processing firms and emphasize the need to strengthen quality management within the supply chain to gain and maintain a competitive advantage. A review of literature revealed that more of the quality management-related studies conducted in Ghana and around the world primarily focused on the internal aspect of an organisation. However, to remain competitive, Parast (2019) posited the scope of quality management practices must be recognised beyond firm-specific and broadened to cover the entire supply chain. Recognising this assertion, managing quality at the supply chain level is gradually receiving huge attention.

Some studies by authors such as Hong, Zhou, Li, and Lau (2020), and Phan, Nguyen, Trieu, Nguyen, and Matsui (2019), have shown that SCQM results in achieving competitive advantage and increased overall performance. Thus, effective implementation of SCQMP results in cost savings, on-time delivery, high-quality product, enhanced reputation, and improved customer satisfaction leading to competitive advantage. For example, Hong et al. (2020) examined the effect of SCQM on the firm performance of the food industry in China. The study used customer quality management, internal quality management, and supplier quality management as dimensions for measuring SCQM, with social co-regulation serving as moderating variable. Their finding was positive except that the moderating variable did not have any significant effect.

Phan et al. (2019) also studied how SCQMP exerted influence on the operational performance of Vietnamese manufacturing firms. The hypothetical analysis showing a significant relationship between SCQMP and firm performance was confirmed. The study revealed that upstream and downstream quality management significantly predicts high performance concerning cost reduction, improvement in quality, and delivery. Soares, Soltani, and Liao (2017) examined the association between SCQMP and quality performance outcomes, and the results showed that SCQMP exerts a statistically significant influence on overall quality performance. Even though the outcomes of each of the various SCQMP varied from practice to practice, customer focus had the highest impact (β =0.303; t-value=6.120; p=0.000) on quality performance.

Despite the numerous SCQMP studies that have been conducted in the past, the various researchers had conflicting view as to what constitute practices

of SCQM (Soares, Soltani, & Liao, 2017). For example, Huo, Ye, Zhao, and Zhu (2019) and Phan et al. (2019) classified the SCQMP into two categories, that is, internal quality management practices, and external–upstream and downstream– quality management practices. Some researchers such as Hong, Zhang, and Shi (2018) also considered the SCQMP to be: teamwork, process control, supply chain product or service design, staff autonomy, internal quality training, supply chain quality training, internal product quality design, customer cooperation, and supplier cooperation.

Contrary to the aforementioned practices, Soares, Soltani, and Liao (2017), also employed customer focus, supply chain integration, quality leadership, and supplier focus as the SCQMP. In addition, Kaynak and Hartley (2008) referred to the SCQMP as process management, management leadership, product or service design, training, supplier quality management, employee relations, customer focus, quality data, and reporting. Some authors Hong, Zhang, and Shi (2018) have argued that numerous studies tend to confuse SCQMP with internal Quality Management. Abdallah, Alfar, and Alhyari (2021) clarified that the concept of SCQM is multidimensional and consists of practices that have a supply chain focus rather than an internal focus.

In addition, Flynn, Huo, and Zhao (2010) and Huo, Ye, Zhao, and Zhu (2019) also made a clear distinction with the assertion that supply chain management considers the inclusion and cooperation of both downstream and upstream supply chain partners to minimize cost and enhance efficiency whiles quality management aims at improving quality and increasing customer satisfaction. Clemons, Baddam, and Henry (2020) also emphasized that SCQMP is dyadic, therefore, it should be implemented within supply chains.

Abdallah, Alfar, and Alhyari (2021) defined SCQM with a focus on the supply chain which is an external rather than internal quality management perspective.

This study adopted SCQMP that gives a reflection of the external or quality management focused at the level of the supply chain. The adoption was based on related literature review, and supply chain quality expert opinion from both practitioners and academics with relevant qualifications, with some having over 10 years of working experience and continuous practice in their respective fields of supply chain management. The study aimed to examine how the SCQMP– supplier selection, supplier participation, customer relation, and supplier quality–, affect the competitive advantage of food processing firms in Ghana concerning cost efficiency, product quality, on-time delivery, and customer satisfaction. Porter (1985) referred to competitive advantage to mean the degree to which an organisation could generate a defensive position over its rivals. Porter (1985) proposed that firms are presented with the option to either pursue differentiation or cost-leadership strategy.

According to Yamin et al. (1999), a differentiation strategy focuses on gaining a superior quality and reputation even at a higher cost, while a low-cost strategy focuses on lowering costs wherever possible. Similar studies. such as Hong, Zhou, Li, and Lau (2020), showed a positive relationship between supply chain quality management and competitive advantage and overall performance. This study introduces innovation as a moderating variable to examine how innovations in business processes and products affect the path and strength of the relation between the SCQMP and the competitive advantage of food manufacturing firms in Ghana.

Generally, innovation positively influences competitive advantage. Dinesh (2021) stated that strategic innovation is vital in new ventures because it enables them to achieve product and technological innovation. According to Phung, Tran, Vermeulen, and Knoben (2021), having either an internal or external innovation strategy is important for innovation. There are several categories of innovation. In 2005, the Oslo Manual (OECD, 2005) categorised innovation into four categories– organisational, marketing, product, and process innovation. Subsequently, it regrouped these four categories into two major types which are product and business process innovation (Oslo Manual-OECD, 2018). That confirms Gómez, Salazar, and Vargas (2016)'s assertion that process innovation and product innovation are the two major dimensions for measuring innovation performance.

Some researchers, such as Snihur and Wiklund (2019) and Mishra et al. (2021), classified innovation into three categories–product, process, and business model innovation. However, it was not emphasized that these were the major categories of innovation. Therefore, the two main types of innovation: product and process innovation, as emphasized by Gómez, Salazar, and Vargas (2016) and Oslo Manual-OECD (2018), form the basis of this work relating to innovation as moderating variable. According to Mishra et al. (2021), product and process innovation significantly contributes to firms' productivity. It is against this background that this study was undertaken.

Statement of the Problem

Globally, the food processing sector is one of the profitable industries that generate huge amounts of foreign income for several countries (Ampah et al., 2021). The 2019 Annual Survey of Manufacturers revealed the food processing sector as the leading manufacturer with about 1487229 employees and a fringe benefit estimated at over $20 billion. In Ghana, the food processing sector dominates about 60% of the agri-food supply chain (MoFA, 2018). Amongst the various manufacturing sectors in Ghana, Quartey, and Darkwah (2015) considered food processing as the most relevant subsector since food and beverages are the largest processed supplies in the country. According to Ackah, Adjasi, and Turkson (2016), patterns of labor productivity and wages showed that the most productive manufacturing subsector in Ghana is food processing.

Referencing the background of the study, the food processing sector faces quality management challenges because quality management is internally focused. However, quality management at the supply chain level has been recognised since competition has shifted from focal firms to supply chains. According to Kaynak (2013) and Parast (2015), the traditional or internal quality management approaches, focus on enhancing quality practices within the boundaries of a firm which includes strategic planning and leadership. However, to remain competitive, Parast (2019) posited that the scope of quality management practices must be recognised beyond firm-specific and broadened to cover the entire supply. This is because quality management at the level of the supply chain improves supply chain performance (Parast, 2012).

Despite the competitive nature of the food processing sector, it has received less attention from researchers regarding how its SCQM affects its competitiveness. Majority of the studies conducted so far focused on other areas of the sector. For example, Dzikunoo, Letsyo, Adams, Asante-Donyinah, and Dzah (2021) researched Ghana's indigenous food technology which focused on the packaging techniques and improvement in food science and technology, among others. Tutu and Anfu (2019) assessed the food safety and quality management systems of the cottage food processing sector in Ghana and revealed testing packaging materials before usage, is one of the challenges sectors the sector faces. Ampah et al. (2021) also investigated the state, prospects, and challenges of food processing equipment manufacturers in Ghana.

Mensah, Morrison, and Ekumah (2016) also looked at training intercessions and procedures in some food processing firms in Ghana. Olani (2017) also assessed the effect of marketing practices on the business performance of small-scale food processing firms in Ghana. Alembummah (2015) also explored the entrepreneurial orientation and the growth of SMEs in the food processing industry in Ghana. Andam and Asante (2018) also examined the causes of firm growth and exit in the food processing sector in Ghana. Notwithstanding similar studies undertaken in several parts of the world, studies relating to quality management practices at the supply chain level and their effect on competitive advantage and performance have received little attention in Ghana.

Some researchers such as Fening, Amaria, and Frempong (2016) also included various manufacturing firms in different sectors such as pharmaceuticals, plastics, food, textile, aluminum, and others in their study when examining how quality management affects the performance of those firms. Without narrowing the study to a specific industry, their findings, therefore, make it difficult to generalise since inherent factors affecting one industry may be different from the other. This study specifically focused on the food processing industry. Furthermore, the majority of the quality management-related studies conducted in Ghana focused on the internal aspect of organisations. However, competition is now among supply chains rather than individual firms, therefore, the traditional approach to managing quality is gradually receiving less attention.

According to Chin, Duan, and Tang (2006), the emergent challenges embedded in the traditional approaches to managing quality necessitate firms to depart from the previous reliance on 'my quality' and emphasize on 'our quality.' That is, a wide gap exists between the studies conducted so far concerning quality management within organisations, and external to supply chains. Therefore, the supply chain level of quality management was the focus of this study. It sought to understand the effect of supply chain quality management practices on the competitive advantage of food processing firms, and how innovation in business processes and products affects the relationship of the two major variables– SCQMP and competitive advantage.

Purpose of the Study

The main aim of the study was to assess the causal relationship between supply chain quality management and the competitive advantage of food processing firms in Ghana, and how innovation influences that relationship.

Research Objectives

The research is guided by the following precise objectives which seek to:

1. examine the effect of customer relations on the competitive advantage of food processing firms within the Accra metropolis.
2. understand the role of supplier participation on the competitive advantage of food processing firms within the Accra metropolis.
3. assess the contribution of supplier selection on the competitive advantage of food processing firms within the Accra metropolis.
4. examine the influence of supplier quality on competitive advantage of food processing firms within the Accra metropolis.
5. assess the moderating role of innovation on the relationship between supply chain quality management practices and the competitive advantage of food processing firms within the Accra metropolis.

Research Hypotheses

The following are the hypotheses that guided the study and they were based on a review of related literature.

H_1: Customer focus has a significant influence on competitive advantage.

H_2: Supplier participation has a significant effect on competitive advantage.

H_3: Supplier selection significantly influences competitive advantage.

H_4: Supplier quality has a significant effect on competitive advantage.

H_5: The effect of supply chain quality management practices on competitive advantage is stronger when innovation is high.

Significance of the Study

Findings from the study offer comprehensive perspectives and insights into the association between SCQMP, innovation, and the competitive advantage of food processing firms in Ghana. The results contribute to strategic decision-making about quality management policy formulation or adjustments by managers and policymakers of firms in the food processing industry. Also, findings from the study will enable food processing firms to strengthen their quality management practices and be innovative toward robust quality management and sustained competitive advantage. The findings will also create awareness for firms with comparatively weaker quality management practices to create or improve their quality management policies and procedures to include the entire supply chain. Lastly, the results will also provide significant empirical support to imminent interrelated literature.

Delimitations

There are 16 regions in Ghana but the scope of the study covered the boundaries of the Greater Accra Region, and specifically, the Accra Metropolis. Therefore, the target population was limited to managers of food processing firms within that region and area. That implies that not all food processing firms across the country participated in the study. Thus, the study excluded food processing firms within the other regions of the country. However, the populous nature of food processing firms within the Accra Metropolis made it possible to generalize the findings across the entire population.

Limitations

The study adopted the quantitative research approach therefore questionnaires were used for data collection. This approach eschewed qualitative responses because using the structured questionnaires restricted the respondents to close-ended questions. The close-ended Likert-type scale statements restricted the quantity and quality of data from the respondents. In addition, there were difficulties in accessing information because some respondents were difficult to be located. Some were also reluctant to participate in data collection exercise owing to various assertions such as privacy, organisational information protocols and concerns about the increasing spread of COVID-19 and this affected the response rate. Some questionnaires were also partly filled by the respondents leading to missing values.

Also, the results of this study cannot be generalized to cover food processing firms that operate on a small scale and the informal sector such as street food vendors and restaurants. This is because the factors that proved to affect the medium-large-sized food processing firms in Ghana are not homogeneous to the small-scale firms. Furthermore, the measurement of competitive advantage focused on the focal firms, thus the food processing firms excluding the examination of their supply chain partners. Understanding the supply chain quality management practices of all key partners along the supply chain would have given a better assessment of the competitive advantage of the focal firms. The study is also area biased as it focused on only food processing firms within Accra Metropolis.

Definition of Terms

Definition of terms gives readers the contextual meanings of the words used in a certain write-up. According to Nnebedum (2021), it is done to avoid any ambiguity that may arise during the writing of the work, and by explaining the terms as used in the work, the author settles the curious minds and clears all confusion. Therefore, the operational definitions of the variables and other key terms employed in this study are given below.

Supply Chain (SC): Ayers (2001) described it as a life cycle process that involves physical goods, information, and financial flows with the primary aim of satisfying customers with goods and services from various and interconnected suppliers. It is the function of an organisation that is required to deliver goods and services to customers (CIPS, 2020).

Supply Chain Management (SCM): According to Handfield (2020), SCM is the active management of the supply chains to optimize customer value and gain a long-term competitive advantage. It entails improving industrial activities to increase speed and efficiency (Ray, Basak, Fatima & Seddige, 2016).

Quality: Crosby (1984) simply defined quality as 'defect avoidance'. Quality is performance to standards and customer satisfaction (Reid & Sanders, 2019). It is conformance to customer requirements, specifications or pre-set standards, fitness for purpose, value for money, and fulfillment of support services.

Supply Chain Quality Management (SCQM): It is a multi-dimensional concept that includes internal and supply chain level quality management activities (Hong, Zhang, & Shi, 2018). That is, the effective integration of the supply chain's internal quality management activities (Su & Liu, 2011)

Supply Chain Quality Management Practices (SCQMP): These are the daily practices adopted by the focal firms to achieve SCQM objectives (Huy et al., 2016). SCQMP are the activities employed by organisations to achieve their SCQM goals (Quang et al., 2016).

Competitive Advantage: Porter (1985) referred to competitive advantage to mean the degree to which an organisation can develop a defensive position over its competitors. It is the extent to which an organisation generates more economic value than its competitors in a given product market (Maritan & Peteraf, 2016).

Supplier Quality Management: It is the process of evaluating a supplier's quality performance and establishing a sustainable firm-supplier relationship using product quality as the criterion for selecting a supplier (Bolatan, Gozhu, Alpkan, & Zaim, 2016). Supplier quality pertains to the supplier's capabilities to supply goods or services that meet the quality and other requirements of the customers.

Supplier Participation (SP): It is a form of upright collaboration where buying firms involve suppliers in their new product development phases and/or in redesigning the existing products (Mikkola & Skjott-Larsen, 2006; Van-Weele, 2010; Carr, Kaynak, Hartley, & Ross, 2008). It necessitates early involvement of suppliers in cross-functional teams during product development (CIPS, 2021)

Supplier Selection: It is designed to establish and maintain a network of qualified suppliers, and also enhance diverse supplier competencies required to enhance the competitiveness of buying firms. (Su & Gargeya, 2016). Supplier selection generally considers evaluation criteria such as cost, quality, delivery requirement, and service, (Sen, Datta & Mahapatra, 2018).

Innovation: It refers to creating value through the use of knowledge and tools to transform ideas into new products, processes, or practices, or to enhance existing products, processes, or practices (Varadarajan, 2018).

Supply Chain Innovation (SCI): It refers to Supply Chain Integration refers to incremental to radical changes in resources, processes, technologies, products, organisations, and marketing, which are related to supply chain partners and functions and value creation for stakeholders (Gao, Xu, Ruan & Lu, 2017).

Food Processing: Food processing refers to the post-harvest activities that add value to agricultural produce before marketing, and it comprises final food production and the preparation and packaging of fresh produce, particularly, fish and horticulture (Wilkinson, 2012).

Organisation of the Study

Per the requirement of the School of Graduate Studies Guidelines for preparing and presenting project work, dissertation and thesis, the study is arranged into five chapters with each chapter addressing specific issues. The first chapter contains the introductory part of the study. It focuses on issues such as the background, problem statement, purpose, and significance of the study, and also presents the objectives of the research and the research hypothesis guiding the study. The second chapter contains a comprehensive review of related works of literature on the major variables of the study, that is, supply chain quality management practices, innovation, and competitive advantage. This includes reviews of accumulated peer-reviewed empirical literature and the theoretical frameworks underpinning the study. Out of those reviews, the conceptual framework for the study was developed.

The third chapter emphasizes the research methods employed for the study. It presents information about the research philosophy, research design, and research approach that was used for the study. It also highlights the population, study area, sample size determination technique, procedures for data collection, data collection instruments, data processing tools, and analysis used for the study. Chapter four concentrates on the presentation and discussion of the results of the research. Finally, chapter five summarizes the study, concludes

it, and gives some recommendations to the managers and policymakers of food processing firms. Also, suggestions for further research were presented in this chapter. This is followed by a list of references acknowledging various sources of information, and lastly, an attachment of appendices including the questionnaire, ethical clearance, and introduction letter.

Chapter Summary

This initial chapter of the study presented the problem under study and also described the context within which it appears. The section also pointed out existing knowledge gaps based on the literature reviewed and how important the study is for supply chain managers, policymakers and researchers. The purpose of the study and the specific research hypotheses and objectives controlling it were also highlighted. The chapter also pointed out the scope and the methodological weakness of the research and finally, showed how the research is organized. The next chapter presents a review of related literature of the study

CHAPTER TWO

LITERATURE REVIEW

Introduction

The study researched how supply chain quality management practices influence the competitive advantage of food processing firms in Ghana, and how innovation affects the relationship between these two variables. This chapter specifically presents a comprehensive review of related literature that has accumulated in the past. It conducted and shows the theoretical, conceptual, and empirical review of the study, and out of these reviews, the conceptual framework was developed. According to Siddaway, Wood, and Hedges (2019), a literature review brings together, synthesizes, and critiques literature(s) to provide overall impressions about the degree, scope, and quality of evidence concerning a particular research question or hypotheses, as well as showing gaps in knowledge. This is, therefore, the focus of this chapter.

Theoretical Review

The study adopted and reviewed the Resource-Based Theory (RBT), the Extended Resource-Base Theory (ERBT), and Resource Advantage (R-A) as theories underpinning the study. The RBV was the primary theory that guided the study whiles the ERBV and the R-A played a complementary role. The ERBT and R-A deepened understanding and assisted in explaining the study.

Resource-Based View (RBT) Theory

The resource-based theory is a managerial framework employed to determine the strategic resources firms can exploit to achieve long-term competitive advantage (Barney, 1991). Since the introduction of the RBT, it has become one of the most extensively accepted theoretical perspectives for explaining the circumstances under which an organisation may gain a sustained competitive advantage (Armstrong & Shimizu, 2007). The RBT dwells on the unique resources and competencies within firms that enable them to achieve sustained competitive advantage (Madhani, 2010). According to Wade and Hulland (2004), the advantage can be sustained for a longer timeframe, even to a level where firms can protect it against resource imitation, transfer, or substitution.

According to the resource-based theory (RBT), organisations have resources, some of which enable them to gain a competitive edge and others that contribute to superior sustainable performance (Barney, 1991; Grant, 1991; Penrose, 1959; Wernerfelt, 1984). Resources of firms enable them to develop strategies to improve overall performance, and Barney (1991) categorizes these resources into three– physical, human, and organisational capital resources. Subsequently, Barney (1991) explained the physical capital resources to include plants and equipment, technologies, location, and raw materials; whiles the human capital resources consist of training, experience, and insight from managers, among others; and lastly, the organisation capital resources include formal organisational structure, reporting, and planning systems, as well as controlling and coordinating systems.

Assumptions of the Resource Base Theory

Just like other theories, certain assumptions underpin the RBT. The RBT holds the assumption that, to achieve sustained competitive advantage, the internal resources– whether tangible or intangible– controlled by firms must also be *immobile* and *heterogeneous* (Barney, 1991). The *immobility assumption* of the RBT implies that resources are not movable. In furtherance, it emphasizes that, if nothing at all, at least, the resources do not move from one organisation to the other. That implies that intangible resources, including intellectual property, processes, brand equity, and knowledge are typically immobile. Owing to this immobility, the RBT assumes that businesses cannot duplicate or imitate their rivals' resources and implement the same strategies to gain a competitive advantage (Barney, 1991).

Firms that operate within the same industry are to some extent subject to similar external forces and could achieve diverse organisational performance owing to the uniqueness or differences in their resources (Barney, 1991). Resources being *heterogenous* implies that the technologies, raw materials, skills, competencies, and other resources the firm possesses differ from one organisation to the other (Barney, 1991). Otherwise, it will be difficult for firms with the same resources to employ different strategies to gain a competitive advantage (Barney, 1991). Therefore, RBT assumes that organisations achieve sustained competitive advantage by utilizing their diverse or unique mix of resources. The theoretical framework of the resource-based theory (RBT) is presented in Figure 1.

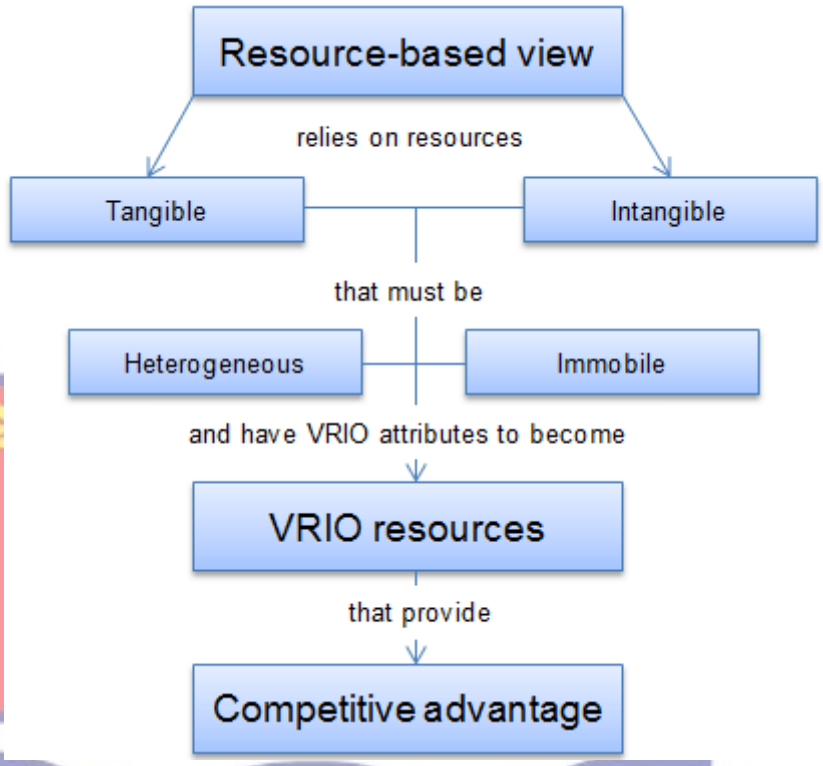


Figure 1: Resource-Based Theoretical Framework

Source: The Strategic Management Insight Online Portal (2021)

The RBV recognizes and relies on resources as major drivers of organisational performance and sustained competitive advantage (Barney, 1991). Figure 1 explains that these resources can be tangible, including machinery, buildings, equipment, and lands; or intangible, including intellectual property, trademarks, and brand reputation. Unlike tangible resources that could easily be acquired by competitors, intangible resources such as brand reputation which is built overtime, cannot be acquired or replicated by competitors, therefore, crediting intangible resources as major sources of sustained competitive advantage (Grant 1991; Barney, 1991)

As stated by Barney (1991), apart from the resources being intangible and tangible, they must also be heterogeneous: – indicating that the resources

must differ from one organisation to the other; and immobile– emphasizing that the resources do not move from one firm to another, at least, in the short run. Furthermore, apart from the resources being heterogeneous and immobile, they must also possess the VRIO attributes that provide a competitive advantage. The VRIO attributes which are Valuable (V), rare (R), imperfect imitable (I), and organisation (O), are explained below.

The VRIN/VRIO Resource Attributes

As noted earlier, the RBT takes an inside-out view of why firms thrive or fail in the marketplace (Dicksen, 1996). Thus, the success or failure of a firm depends on its ability to capitalise on its internal resources. Firms rely on the resources possessed to gain a sustained competitive edge in the industry within which it operates. According to Barney (1991), the resources must satisfy the VRIN conditions to achieve a competitive edge and long-term performance. The VRIN is an acronym indicating the resources must be Valuable (V), Rare (R), Imperfectly Imitable (I), and Non-Substitutable resources (N). According to Joyce and Winch (2004), resources that meet the VRIN criteria can provide bases of constant competitive advantage to organisations. The VRIN criteria, which were later improved to VRIO with the O representing *organisation*, are explained below.

Valuable (V): Valuable resources possess the capacity to lower production costs or raise the price of products or services (Joyce & Winch, 2004). Resources are valuable if they offer strategic value to the firm and allow it to capitalize on market opportunities or mitigate market risks.

Rare (R): Resources must be rare or unique to offer a competitive advantage. That is, resources must be tough to come by among the firm's current and potential competitors. According to Joyce and Winch (2004), resources that are common to several organisations cannot create a competitive advantage since they are unable to design and implement unique business strategies comparable to rivals.

Imperfect Imitability(I): Resources must be difficult to replicate or imitate. Resources can only provide a sustained competitive advantage if those resources are not feasible for competitors to acquire them. Joyce and Winch (2004) posit that an unclear connection between capabilities and competitive advantage, complexity, and difficulty in acquiring resources improves imperfect imitability.

Non-Substitutability (N): Non-substitutability implies that it is impossible for competitors to attain the same or better results by substituting alternative resources. The resources cannot be substituted with another resource. To achieve a sustained competitive advantage, Joyce and Winch (2004) stated that the resources must also be costly for competitors seeking to substitute.

The VRIO Resource Framework

The VRIN criteria, as noted, have been improved from VRIN to VRIO by Barney (1991) with the evaluation criterion– Organisation (O), seeking to answer the question: "*Is the firm organized to exploit these resources?"* Figure 2 presents the VRIO framework.

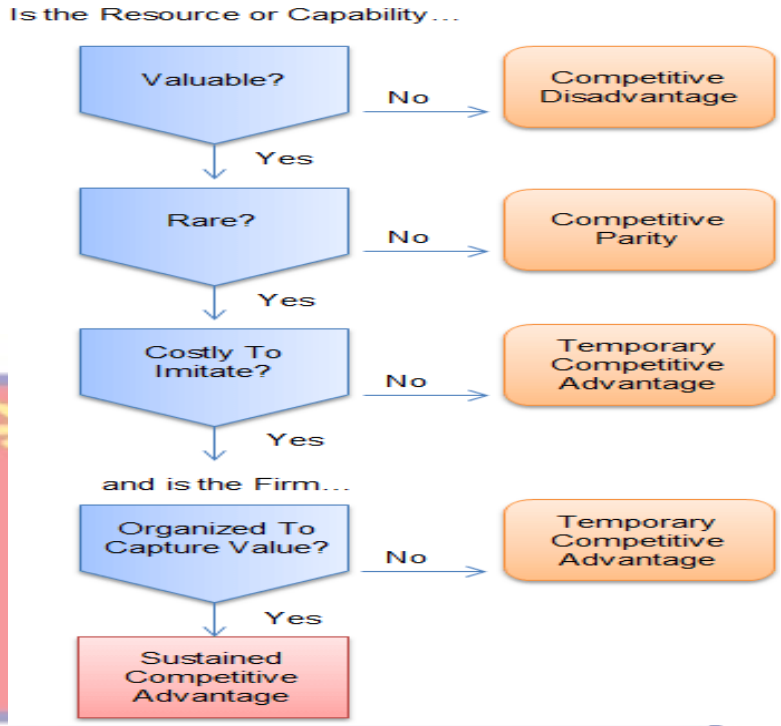


Figure 2: The VRIO Framework

Source: Rothaermel (2013)

Since the VRIN criteria have already been explained, only the evaluation criteria– Organisation (O) in the VRIO framework would be explained because Non-Substitutability (N) is the only element in the VRIN criterion that was changed or improved upon and replaced with the element, Organisation (O). Organisation (O) in the VRIO criteria emphasizes that only firms that are capable of exploiting the valuable, rare, and imperfect imitable resources can achieve improved performance and sustained competitive advantage. It implies that resources themselves are not beneficial to firms if they are not organized to exploit value from them. That is, the mere ownership of resources does not confer any competitive advantage until they are put into good use.

Extended Resource-Based Theory (ERBT)

One critique of RBT theory is that it fails to recognize firms' external resources as a tool for creating competitive advantage while in essence, both internal and external resources are used to gain a competitive edge. That is, the RBT only looked at resources at the corporate level, ignoring the societal context in which businesses operate (Shibin et al., 2017), hence the development of the Extended Resource Base Theory (ERBT) (Lavie, 2006). Firms can access a wide range of external resources, according to the ERBT approach, through both market-mediated transactions and other types of resource exchange and resource leverage linkages that connect firms in value-chains across the economy. (Hodgson, 1998; Ettlie & Sethuraman, 2002).

The RBT may provide a sustained competitive advantage but the performance potential may not be optimized since the resources lack the mobility beyond a firm to form strategic alliances and collaborative outcomes to realize its full potential (Newbert, 2007; Lavie, 2006; Arya & Lin, 2007). ERBT denotes an extension of the classic RBT because the nature and function of relationships relate to the specific resources to be transferred (Lewis, Brandon-Jones, Slack & Howard, 2010). ERBT assumes that strategic resources across the limits of the firms can be exploited, especially, where there are certain types of inter-firm relationships (Rungtusanatham, Salvador, Forza, & Choi, 2003; Napier & Nilsson, 2006).

The ERBT emphasizes that interior resources can develop exterior resources or competencies and enhance competitiveness and organisational performance (Lai, Zhang, Lee, & Zhao, 2012). The ERBT is more integrative and emphasizes the networking characteristic of interrelated organisations by

conceptualizing how firms can improve their competitive edge in an inter-organisational setting (Lavie, 2006; Son, Lee, Lee, & Chang, 2014). The unit of analysis, therefore, moves from the RBT perspective to the dyadic or networks levels perspective of the ERB (Squire, Cousins, Lawson, & Brown, 2009).

Arya and Lin (2007) applied the ERB and found that firms can improve their competencies and collaborate with others to reap more monetary and non-monetary benefits. Squire, Cousins, Lawson, and Brown (2009), also applied the ERB theory and provided empirical support with the findings demonstrating a strong linkage between supplier skills, supply chain collaboration, and buyer performance. A primary issue for the ERB theory is whether or not the knowledge that flows across the firm's boundaries is considered proprietary. (Lewis, Brandon-Jones, Slack, & Howard, 2010).

Resource Advantage (R-A) Theory

The R-A theory is a universal theory of competition within which innovation is regarded as endogenous and influences organisations' competitive advantage and superior performance (Hunt & Morgan, 1996; Hunt & Davis, 2008). Thus, for firms to achieve sustained competitive advantage, they must be innovative. Firms that want to gain a long-term competitive advantage and surpass their competitors indulge in innovative actions such as acquiring, replicating, or substituting resources or substantial innovations, which are referred to as reactive innovations (Kabadurmus, 2020; Hunt, 1999).

Reactive innovators could focus on green production by limiting the usage of scarce and nonrenewable resources like coal, capturing value from waste materials, practicing reverse logistics, reducing emissions, using

biodegradable packaging, and therefore boosting environmental consumers' perceptions of product value (Kabadurmus, 2020). Secondly, Hunt (1991) described innovation as proactive if firms build dynamic competencies to develop new processes and products. This may include spotting new market opportunities and market segments and developing new market offerings to adapt to the changing market conditions (Kabadurmus, 2020) and also for the proactive innovators to differentiate themselves from competitors (Hunt, 2017).

Conceptual Review

This session presents a review of the concepts under study. It focuses on the key constructs which include the specific supply chain quality management practices, innovation, and competitive advantage. Out of this review, the conceptual framework for the study was developed.

Supply Chain Quality Management (SCQM)

Supply Chain Quality Management (SCQM) is a systems-based mechanism for improving performance that exploits opportunities resulting from the integration of downstream and upstream supply chain partners upstream and downstream supply chain partners that measure, examine and constantly enhance processes, services, and products for value creation and intermediate and final customer satisfaction (Foster, 2008; Robinson & Malhotra, 2005). SCQM as defined by Su and Liu (2011), is the effective integration of internal quality management efforts in the supply chain. SCQM is a multi-dimensional concept that includes internal and supply chain level quality management activities (Hong, Zhang, & Shi, 2018).

Supply Chain Quality Management Practices (SCQMP)

Quality management practices are a management philosophy to improve the competitiveness of the firm (Srinivas, Swamy, & Nanjundeswaraswamy, 2020). SCQMPs are daily practices employed by businesses to achieve supply chain quality management goals (Huy et al., 2016). Below is a review of the four SCQMPs in this study.

Supplier Selection

The process of identifying, evaluating, and contracting suppliers is known as supplier selection (Taherdoost & Brard, 2019). It is intended to establish and maintain a network of qualified suppliers, and also to enhance diverse supplier competencies that are required by the purchasing organisation to meet its various competitive encounters (Su & Gargeya, 2016). It generally considers evaluation criteria such as quality, cost, delivery requirement, and service, and these can criteria be objective (quantitative) or subjective which is qualitative (Sen, Datta & Mahapatra, 2018). If suitable suppliers are selected, organisations could achieve shortened lead-time, lower cost, supply security, improved relationships, and increased flexibility. Therefore, with the rising reliance on suppliers and the increasing complexity of goods and services, an effective and efficient supplier selection process is essential to supply chain performance and sustained competitive advantage (Tay & Aw, 2021).

Tusnial, Sharma, Dhingra, and Routroy (2020) stated that manufacturing supply chains such as food processing organisations, look for different criteria or competencies in suppliers including cost reduction, quality, reliability, proximity, certification, and financial stability before optimal

decision-making since supplier selection in the manufacturing industry have a direct influence on reducing cost, uncertainty, and risk, and optimizing customer satisfaction. Amin and Razmi (2009) emphasized that to increase performance, strategic collaboration with high-performing suppliers should be introduced into the supply chain and reduce cost by eliminating wastages, continuous improvement in quality management to accomplish zero defects, improving flexibility to fulfill customer satisfaction, and a significant reduction in lead time across the supply chain.

According to Kumar, Kumar, and Barman (2018), the selection of good suppliers could enable firms to deal with the traditional and permanent problems— cost and time— since at least 60% of total sales is dedicated to buying raw materials, components and parts. Gupta, Chatterjee, Yazdani, and Gonzalez (2021) are of the view that to engage the most suitable supplier, the environmental and conservative factors need to be considered during the selection process and not only conventional approaches to supplier selection which mainly rely on the efficiency, cost minimization and the delivery time as predominant criteria. The primary goal of the supplier selection process is to lower purchasing risk, increase the total value to the buyer, and foster close and long-term relationships between customer and supplier (Taherdoost & Brard, 2019).

Supplier selection is critical for any business looking to obtain a competitive advantage in the marketplace (Sachdeva, Shrivastava, & Chauhan, 2019). The selection of qualified suppliers enables firms to reduce operating costs and increase profitability, product quality, responsiveness, and market competitiveness (Abdollahi, Arvan, & Razmi, 2015). Selecting the right

suppliers as affirmed by Pazhani, Ventura, and Mendoza (2016), can have an impact on the overall purchasing cost, which accounts for a major portion of the ultimate product cost. Selecting appropriate suppliers is significant in increasing the value added to a supply chain (Khalilzadeh, Karami, & Hajikhani, 2020).

Supplier Quality

Supplier quality refers to the competence of the supplier to deliver required goods or services that result in optimum customer satisfaction. To cope with the increased changing market demand, organisations are committing resources and putting in great efforts to determine and ensure the quality of suppliers and related activities (Gnanasekaran & Velappan, 2006). Therefore, such organisations are no longer automatically locked into unwanted relationships with underperforming suppliers. As supported by Sombultawee and Pasunon (2021), organisations are no longer necessarily locked into long supply contracts which results from the difficulty in switching suppliers.

As posited by Nwankwo, Obidigbo, and Ekwulugo (2002), quality managers regard supplier quality as a major resource for firms because it has a great and direct effect on the quality status of the firms. Gonzalez, Quesada, and Monge (2004) considered supplier, quality, and manufacturing as the broad range under which several variables that are critical to the success of manufacturing firms can be categorized. This confirms the relevance of supplier quality in the food processing supply chains. Lo, Sculli and Yeung (2006) analyzed the impact of supplier quality management on manufacturing firms' quality performance and found that supplier quality management practices have

a substantial impact on quality performance and also demonstrate that supply quality has a positive impact on the firms' overall quality performance.

Supplier quality is a strategic constituent of quality management along the supply chain. Quality management practices were previously executed at the firm level. However, Clemons, Baddam, and Henry (2020) opined that extending these efforts to the supply chain level including supplier quality management can have a positive significant effect on both the quality and performance of the supply chain. Supplier quality management is a critical requirement for obtaining high-quality products and overall quality performance. An organisation cannot manufacture quality products if the materials from which the products are produced are defective (Sousa, Cunha, Morais, & Gomes, 2017) or substandard, therefore, supplier quality management is a major component in securing quality supplies for production.

Supplier Participation/Involvement

Supplier participation, which is also recognized as supplier involvement, requires that suppliers should be involved or made to participate during the product development stage of the purchasing organisations' new products or in restructuring the existing products or processes (Carr, Kaynak, Hartley, & Ross, 2008). Supplier involvement is a vertical kind of collaboration amongst supply chain participants where the producer engages the supplier early at the beginning of the process for product development (Mikkola & Skjott-Larsen, 2006; Van-Weele 2010). It pursues the involvement of suppliers in cross-functional crews at the primary phases of developing a product (CIPS, 2021).

Supplier involvement is potentially an effective strategy for organisations to exploit their upstream supply networks for corresponding resources and competencies (Xiao, Petkova, Molleman, & van der Vaart, 2019). Notwithstanding the potential benefits of supplier involvement, organisations implementing the strategy are required to possess market knowledge-processing competencies to overcome information overload resulting from involving the suppliers (Ritter & Walter, 2012). That will equip the organisations with insightful information to effectively absorb suppliers' ideas into new products or process development (Cheng & Krumwiede, 2018).

The primary object of supplier involvement is to create a competitive advantage by being supportive of the win-win situation of attaining a sustained competitive advantage (Lee & Kim, 2011). For an effective and efficient creation of optimum shared solutions, all members including suppliers should be recognized as equal and joint problem solvers (Bettiga & Ciccullo, 2019). A comparative study of quality management practices by Nguyen, Anh, and Matsui (2021) resulted that, the involvement of suppliers has a positive impact on quality improvement and process control. According to Parker, Zsidisin, and Ragatz (2008), the involvement of suppliers early in the product development process and constant communication improve product development performance concerning product quality, productivity, and time to market.

Customer Focus

Value creation and extraction for an organisation is inherent within the interactions amongst its networked, vibrant and active customers (Prahalad & Ramaswamy, 2004). Organisations can therefore capitalize on these interactions

to create new offerings or change an existing product based on customer inputs (Bettiga & Ciccullo, 2019). Customer involvement requires resources, time, and opportunities for a well-balanced collaboration as well as the customers' technical knowledge which may have a significant impact on their ability to participate in the business process (Bettiga, & Ciccullo, 2019; Etgar, 2008; Shin, 2007). Organisation encounter challenges through the inappropriate forecast of customers' needs because customer focus is a major antecedent of sustained competitive advantage (Nwokah 2009; Nwokah, & Maclayton, 2006).

The needs of customers are heterogeneous therefore continuous learning and innovation are major factors in creating new products and increasing market share (Priem, Li, & Carr (2012). Customer focus is the difference between successful organisations and failed ones (Udofia, Adejare, Olaore, & Udofia, 2021). Therefore, customers are regarded as the most important partners in most supply chains (Vanichchinchai, 2021). According to Astuty, Zufrizal, Pasaribu, & Rahayu (2021), customer focus is one of the elements that influence the efficiency of supply chain management. A study by Rajab, Ngugi, and Kiarie (2021) found that managing customer focus has a positive effect on manufacturing firms' performance. Customer focus or fulfillment is a crucial aspect of quality management system inputs (Othman, Ghani, & Choon, 2020).

Innovation

Innovation is an integrated change in product, process, market, technology, resource, and/or organisation that is associated with all related parties, covers all related roles in the supply chain, and also generates value for all stakeholders (Gao, Xu, Ruan & Lu, 2017). Practitioners and scholars regard

innovation as a vital capability that makes or breaks firms due to modern volatile, undefined, multifaceted, and unclear business environments (Solaimani & van der Veen, 2021). Therefore, organisations need to be innovative with their supply chain as it moderates projects' success and business performance (Kissi, Agyekum, Musah, Owusu-Manu, & Debrah, 2020).

According to Zhou and Li (2012), an organisation's innovativeness is essential to its competitive advantage and overall business performance. If an organisation is thoroughly linked with its upstream and downstream supply chain partners and also maintains quality collaborative relationships with them, its innovativeness will improve, have access to external information and develop new technologies (Pan, Guo, & Chu, 2021). Innovation is critical in developing supply chain resiliency (Rampersad, Hordacre, & Spoehr, 2019). An investigation of the connection between supply chain analytics, innovation, and robustness competence by Shamout (2020), proved that innovation fully mediates the association between the two variables– supply chain analytics and robustness capabilities.

Kabadurmus (2020) found that the enablers of innovation differ from the categories of innovation activity and suggested that, create competitive advantages, supply chain managers ought to prioritize strategic resources. Hutahayan and Yufra (2019) asserted that the stride of innovation growth improves food products' competitiveness, therefore, innovation should quickly be realized since faster-to-market products have a better possibility of increasing competitiveness through profit and productivity. As stated in the background of the study, the Oslo Manual (OECD, 2005) grouped innovation into four major categories: marketing, process, products, and organisational

innovation. Subsequently, it regrouped these four categories into two major types which are product and business process innovation (Oslo Manual-OECD, 2018). The two categories are there the focus of this research.

Product Innovation

Product innovation is the development of new technology that enables customers to access new products or services (Gao, Ding, & Wu, 2020). Product innovation is significant for the growth and sustainability of small-medium-sized enterprises (SMEs) as these lack adequate resources to compete with large firms' investment in marketing and distribution channels (Rasheed, Shahzad, & Nadeem, 2021). Dinesh (2021) found that internationally, product innovation is realized owing to an advanced level of technological superiority and usage of technologies in innovation activities. The concept of innovation is linked with the development of new products (Dinesh, 2021), and product innovation is highly related to an organisation's strategic performance (Cooper, 1984).

Ali, Wu, and Ali (2021) confirmed that marketing competencies contribute to both incremental to radical innovation in products. Aydin (2020) also found customer orientation and cross-functional collaboration as two distinct elements of market orientation that have a positive effect on product innovation. Chen, Tang, Wu, and Wang, (2020) also discovered that cross-functional cooperation improves product innovation. Product innovation necessitates a higher level of technological understanding and commitment of resources to research and development (R&D) (Chen, Tang, Wu, & Wang, 2020), hence it dominates by R&D departments and professionals (Zhang, Wang, & Zhao, 2015). Product innovation results in new, reformed, or better-

quality products which are new to a firm or new to customers (Bouncken, Clauß, & Fredrich, 2016; De Clercq, Thongpapanl, & Dimov, 2011).

The findings of Sun and Zhong (2020) specified that product modularity had a substantial consequence on product innovation. A study by Wahyono (2019) discovered that the effect of knowledge management on competitive advantage was mediated by product innovation. This implies that if mediated by product innovation, an increase in knowledge management will increase competitive advantage. Mishra, Sinha, Khasnis, and Vadlamani, (2021), posited that the percentage of net sales gained as a result of the introduction of new products is commonly used to measure product innovation. Peters (2008) stated that process innovation is estimated to reduce costs due to new or improved processes. The design of innovative products matters more to sophisticated consumers who are experts or technologically inclined (Lee, 2019).

Business Process Innovation

Process innovation is the enhancement of the current manufacturing or business process required to produce a product (Gao, Ding, & Wu, 2020). It refers to the innovative habits and activities implemented in the production and distribution of goods and services (Jimenez-Jimenez & Sanz-Valle, 2008). It involves, for instance, new marketing concepts, new administration practices, new business tactics, and new business models (Torres & Augusto, 2019). Process innovation includes all activities and initiatives implemented by the organisation for the continuous improvement of internal processes in the pursuit of effectiveness and efficiency (Guerola-Navarro, Oltra-Badenes, Gil-Gomez, & Fernández, 2021). A configurational analysis by Torres and Augusto (2019)

indicated that product innovation can be enhanced by combining manufacturing flexibility with either business process or organisational innovation.

Process innovation requires a set of activities that contribute to implementing new forms of production (Nieto, 2004). New uses of the workforce, information flow, inputs of materials used in production, job specification, and other factors distinguish process innovations (Oliva et al., 2019). A business process innovation implies a new or improved business process for one or more business functions– such as the firm's core business of producing and delivering products for sale and supportive operations– that varies substantially from the firms' preceding business processes and that has been put to good use by the company (Oslo Manual-OECD, 2018). For firms to enhance their business process innovation competencies and innovation performance, having a strategic digitalization vision or information technology integration is very important (Tajudeen, Nadarajah, Jaafar, & Sulaiman, 2021).

Process innovation alters the way businesses make products or provide excellent service (Phung, Tran, Vermeulen, & Knoben, 2021). Product innovation cannot be a standalone activity therefore an improvement in a product requires an improvement in the business process to achieve the expected outcome. Mishra, Sinha, Khasnis, and Vadlamani, (2021) empirically support this with the assertion that an innovative new product may demand an innovative manufacturing process. Customers' input is also vital to efficient business process innovation. Customer involvement creates vital knowledge for enhancing new business process innovation performance in manufacturing firms (Chang, Chiu, Wang, & Teng, 2021).

Understanding the efficiency of manufacturing companies requires an understanding of both technological and non-technological innovation, as well as their interconnections in the business process (Gallegos & Miralles, 2021). This assertion is supported by Ndzana, Cyrille, Mvogo, and Bedzeme (2021) who stressed that when these two types of innovation are combined, they produce better results than if only one of them is emphasized. Technological innovation or competencies plays an interceding role in the link between customer orientation and cross-functional management of product innovation (Aydin, 2020). In most high-tech industries, research and development (R&D) expenses have a significant positive impact on organisations' technical innovation performance (Zhu, Wang, & Wang, 2019).

Sharma (2016) highlighted that technological innovation has a positive impact on customer experience. In small and medium businesses, technology innovation has a positive impact on export intensity; however, non-technological innovations have no impact on export intensity regardless of firm size (Radicic & Djalilov, 2019). However, non-technical innovation has a positive impact on the performance of SMEs, but technological innovation has a negative impact (Ndzana, Cyrille, Mvogo, & Bedzeme, 2021). In assessing the association between management innovation, technological innovation, and marketing innovation, Henao-García and Montoya (2021) found that in companies that adopt management and/or marketing innovation, the likelihood of pursuing technology innovation decreases.

Competitive Advantage

The success or failure of a firm is centered on competition and that determines the activities it pursues to achieve or improve performance. Porter (1985) describes those purposive activities as competitive strategy and it seeks to create a profitable and sustainable position against the forces that determine industry competition. A good strategy can fail if it is not implemented well. Effective implementation of competitive strategy enables firms to create a competitive advantage. According to Porter (1985), competitive advantage refers to a relatively superior position within a market that enables an organisation to outperform its rivals. Holi, Gani. Hhamzah, Rahman, and Sjahruddin (2017) referred to it as the ability of the firm to achieve at least a monetary value or advantage over its competitors.

Kaur, Sharma, and Goyal (2019) also defined competitive advantage as an organisation's ability to use existing resources to create new ones. Barney (1991) revealed that a firm has a long-term competitive advantage if it can implement unique value-creating strategies that are impossible for both existing and potential competitors to imitate. For Porter (1985), competitive advantage basically results from the value an organisation can generate for its customers which exceeds the cost of generating it, and the two types of competitive advantage are differentiation and cost-leadership.

The differentiation strategy considers developing innovative products that have extra advantages to the customer and are perceived as unique and distinct from that of competitors (Santos-Vijande, López-Sánchez, & Trespalacios, 2012). Differentiation constitutes the non-price characteristics of a firm that makes it appear unique and superior to its rivals. The differentiation

strategy is linked to the firm's innovative capabilities that enable it to offer new products that competitors are unable to offer (Correia, Dias, & Teixeira, 2020; Cavusgil, & Knight, 2015). Cost leadership could be achieved by optimizing efficiency to lower costs or reduce prices for buyers, and by operating at a lower cost than rivals for comparable products without compromising quality levels, service, and or other essential elements in cost-leadership strategy (Santos-Vijande, López-Sánchez, & Trespalacios, 2012; Porter, 1985).

Researchers have suggested several dimensions for measuring competitive advantage (Tukamuhabwa, Mutebi, & Kyomuhendo, 2021). According to Li, Ragu-Nathan, Ragu-Nathan, and Rao (2006), the dimensions that are usually used include quality, price/cost, time to market, delivery dependability, and product innovation. Other dimensions include customer relationship management (Alqershi, Ismail, Abualrejal, & Salahudin, 2020), and service quality management (Rashid, Ismael, Othman, & Ali,2019), and innovations (Mahasneh, Alnahdi, & Bani-Hani, 2020). Lakhal (2009) and Ferdousi, Baird, Munir, and Su (2019), revealed that quality plays a major role in generating a competitive advantage for firms by ensuring high productivity, and minimal waste of resources, leading to overall firm performance.

A study by Al-Khatib and Al-ghanem (2021) revealed that innovation explains about 60.2% of the variance in competitive advantage, and it also has a statistically significant impact on competitive advantage. Ali (2021) empirically supported this with the assertion that organisations can obtain a competitive advantage by depending on innovation strategies. Competitive advantage is also linked with the Resource-based theory (RBT). The RBT highlights that the resources and capabilities of organisations create a

competitive advantage for them (Lestari, Leon, Widyastuti, Brabo, & Putra, 2020). This study relied on product quality, price/cost reduction, customer satisfaction, lead-time, and the dimensions of competitive advantage. Therefore, the study assessed the relationship between supply chain quality management practices and competitive advantage, and how the relationship is affected by innovation.

Conceptual Framework

The conceptual framework demonstrates the connection between a study's primary concepts and it is organized in a logical structure to facilitate and provide a pictorial or visual depiction of how concepts or variables in a study related to each other from a statistical standpoint (Grant & Osanloo, 2014). The framework enables researchers to easily specify and define the concepts and themes within the problem under investigation (Luse, Mennecke & Townsend, 2012). Based on the reviews and analysis of related literature and theories, Figure 3 depicts the conceptual framework for this research.

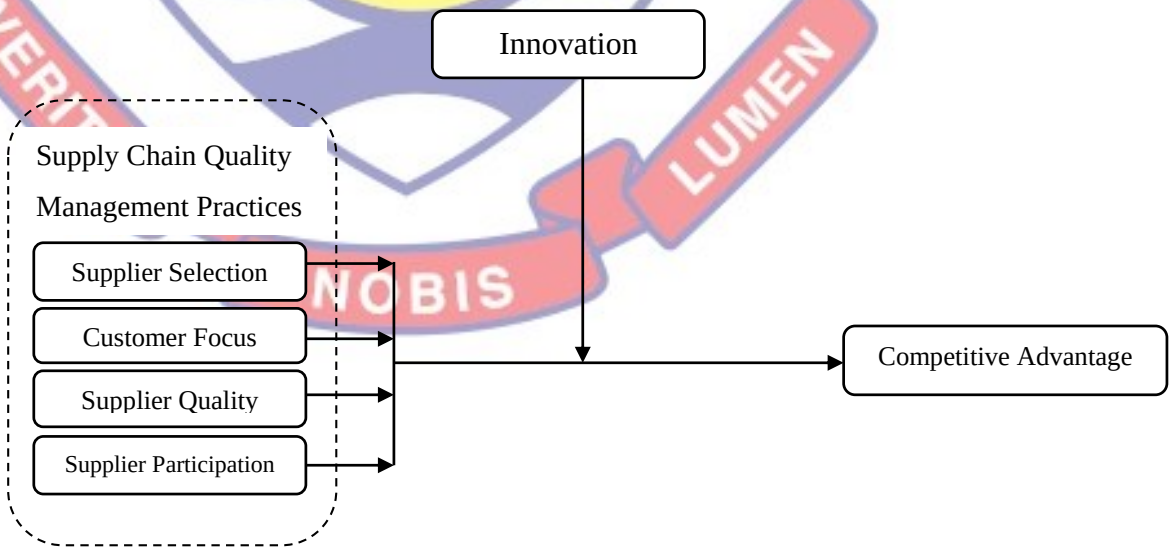


Figure 3: Conceptual Framework

Source: Author's Construct, Buer (2021)

Empirical Review

This section presents a literature review and critiques of previous studies in relation to the specific supply chain quality management practices under study, and their influence on competitive advantage and firm performance. It begins with supplier participation/Involvement and competitive advantage and is subsequently followed by the remaining practices– customer focus, supplier selection, supplier quality–, and the moderating variable– innovation, and their effect on competitive advantage.

Supplier Participation and Competitive Advantage

Feng, Sun, and Zhang (2010) examined the impact of supplier and customer involvement on the competitive advantage of manufacturing firms in China. Underpinning the studies were the RBT and knowledge-based view theories. Hierarchical multiple regressions were employed by the authors to hypothesize the relationships between customer involvement, supplier involvement, and competitive advantage. Data were solicited from 139 Chinese manufacturing companies in different industries, and reliability and validity– in terms of content, convergent and discriminant validity were demonstrated.

The regression analysis proved that product quality, delivery reliability, process flexibility, and customer service all improved as a result of customer involvement. In addition, the authors found that supplier involvement reduces cost. Even though the study sought to provide insight into the roles of customers and suppliers in China's manufacturing firms, depending on data collected across different industries decreases the confidence and reliability as well as generalization of the findings. This is because, even though the firms operated

within the same business environment- China, the factors affecting individual industries such as the food processing industry, may be different from the circumstances or factors affecting others such as the pharmaceuticals industry.

Wagner (2016) used the resource-based view and the relational view as theoretical explanatory views to investigate the association amid supplier development, improvements, and support of the buying firm's competitive strategy. The findings revealed that suitable supplier development such as supplier participation/involvement and concentrating on supplier relationship enhancement are powerful to substantially support the buying firms' generic competitive strategies– differentiation and cost leadership strategies.

McGinnis and Vallopra (2006) researched procuring and supplier participation in manufacturing process enhancement and how this affected competitive advantage. Data were collected from 271 respondents using mail questionnaires from manufacturers, service providers, and nonprofit and government organisations. To study the influence of process as a critical success factor, purchasing involvement, and supplier involvement on process development or improvement practice and strategy, the authors employed t-tests to analyze the factor scores of the study variables.

The effect of the industry category was further assessed using contingency table analysis and the chi-square statistic. Processes contribute to competitive advantage, purchasing plays a significant role in process development or improvement, and purchasing and supplier engagement add to process development/improvement in all industrial categories, according to the findings. These contributions were, however, greater in manufacturing firms. Even though the results show a positive relationship among the variables

studied, the sourcing of data from organisations in different sectors– service, nonprofit, manufacturing, and government organisations— will affect the generalization and application of the findings since the factors affecting a sector may not be the same for all.

Wang, Modi, and Schoenherr (2021) posited that while firms may capitalize on internal sustainable design practices to develop profitable and environmentally sustainable new products, the modern trend is to rely on the knowledge of suppliers in such attempts. The authors proposed a new framework theorizing how internal resources enable a firm to enhance the environmental and financial performance associated with new product development initiatives, based on the resource-based view and its extensions echoed in the natural resource-based view of the firm. External supplier involvement in new product development, according to the study, supplements a firm's internal efforts to gain the benefits of sustainable design methods, although this effect is depending on the suppliers' environmental management capabilities.

Drawing on complementarity theory, Cheng and Krumwiede (2018) hypothesized that using social media improves the result of supplier involvement in the performance of new product development. Their findings backed up the theory that social media use and two firm capabilities– market and technological knowledge-processing capabilities– improve the impact of supplier involvement on new product development performance in terms of product innovation, market performance, and financial performance. Supplier engagement has an inverted U-shaped association with product innovativeness, according to posthoc analysis. Furthermore, the data revealed that using social

media boosts the beneficial effects of supplier involvement in product innovation while also reducing the negative effects of supplier involvement in product innovation.

Wang and Yang (2021) wanted to know how effective project leaders may allow effective supplier involvement and improve focal enterprises' ability to achieve long-term product development success. The study conducted six interviews with people from various industries to learn more about the link between supplier involvement, long-term innovative product development, and the personality and leadership style of the leader.

The following are some of the concerns or conclusions that emerged from the interview: difficulty in managing suppliers; the timing and scope of supplier involvement; communication technique and frequency; and supplier contribution and challenge in long-term new product development. The interview also revealed that effective leaders with certain personality traits facilitate appropriate supplier involvement, promote prosperous sustainable new product development, and improve the relationship between supplier involvement and sustainable new product development performance by allowing individuals, teams, and organisations to function effectively.

Ayala, Gaiardelli, Pezzotta, Le Dain, and Frank (2021) investigated the impact of various types of service provider involvement on the service business characteristics required for servitisation and the subsequent servitisation performance. The study looked at three potential service supplier configurations: black box—service design and execution driven by the service provider, grey box– joint service, and white box– service design driven by the product firm. The researchers used multivariate analysis of variance to examine

their contributions in a cross-sectional quantitative survey of 104 Brazilian and Italian companies. Firms that used the grey box arrangement had the best servitisation results, according to the findings. Depending on the service business dimension that the corporation chooses, the white and black boxes may provide distinct benefits.

Supplier Selection and Competitive Advantage

Nair, Jayaram, and Das (2015) conducted research on supplier selection and ongoing supplier performance appraisal related to operational and strategic requirements to ensure that the buying firm's strategic planning results in improved cost, quality, delivery, flexibility, and innovation purchasing performance. The authors used a path model to test the hypothesis using survey data from industrial enterprises in the United States. The findings backed up the theory that consumers' engagement in strategic planning has an impact on purchasing performance both directly and through the mediating effects of supplier selection criteria and supplier performance evaluation.

Famiyeh and Kwarteng (2018) investigated the impact of several supplier selection constructs on a firm's operational competitive competence as well as overall performance in a developing nation context. Using a survey of informants, the authors used structural equation modeling to investigate the relationship between supplier selection criteria, competitive operational capabilities, and overall organisational performance. The study revealed that good supplier selection improves the buying firm's competitiveness. As a result, using a structured decision-making process is critical, especially when dealing

with complicated situations including both qualitative and quantitative criteria (Taherdoost & Brard, 2019).

In furtherance, according to Famiyeh and Kwarteng (2018), selecting suppliers based on quality improves the buying firm's quality, service improves delivery time, and supplier strategic fit reduces cost, improves delivery time, and improves the buying firm's flexibility. Furthermore, the purchasing firm's competitive operational capabilities in terms of faster delivery time will contribute to the Ghanaian business environment's overall success. However, there was no discernible difference between the manufacturing and service sectors in the results.

Ullah and Narain (2020) investigated the impact of supplier selection and management techniques on manufacturing enterprises' mass customization capabilities in India. The study found that, with a focus on response and reconfiguration capability, all five measures of supplier selection and the four measures of supplier management had a substantial impact on the firms' mass customization capability, using multiple regression analysis. With an emphasis on relational capability, only two of the supplier selection strategies and supplier management strategies proved to have a significant impact on the mass customization capability of the firms. Even though the study sought to assist manufacturing firms in terms of selecting and managing suppliers to improve their mass customization capabilities, it did not show in clear terms the kind of manufacturing firms it referred to. Therefore, it becomes difficult for manufacturing firms in different sectors to relate to the findings.

Supplier Quality and Competitive Advantage

With supply chain-oriented culture as a moderating variable, Salimian, Rashidirad, and Soltani (2021) researched the impact of supplier quality management efforts on a manufacturing firm's internal quality performance in the United Kingdom. The findings showed that organisations with a strong supply chain-oriented culture are more favorable to increasing levels of trust, commitment, cooperative norms, organisational compatibility, and managerial support, based on data collected from 518 respondents. As a result of good supplier development and integration efforts, internal quality performance tends to improve. The study also found that a supply chain-oriented culture has a moderating effect on the relationship between supplier quality management and firm internal quality performance in a long-term way through successful buyer-supplier relationships.

Yu and Huo (2019) also explored the association between relational capital, supplier quality integration, and operational performance. The findings demonstrated that relational capital has a beneficial effect on operational performance and that supplier quality integration plays a complete mediating role in the connection, based on data collected from 308 manufacturing enterprises in China. Furthermore, quality orientation has a positive impact on the integration of relational and supplier quality. This means that relational capital helps to implement supplier quality integration, which leads to improved operational performance, and the presence of quality orientation boosts relational capital's positive impact on supplier quality integration. Fening, Amaria, and Frempong (2016) found supplier quality management as a vital

element of quality management since supplied materials are usually the major sources of quality concerns.

Customer Focus and Competitive Advantage

Truong et al. (2017) wanted to present empirical evidence about the link between supply chain management methods and operational success in Vietnamese clothing companies. Their findings revealed that the practices had a resonant impact on operational performance, with the practices accounting for 52.6 percent of the variance in this output concept. Customer focus and supplier management, for instance, have both direct and indirect effects on operational performance, whereas top management support and process control or improvement have only indirect and direct effects, respectively.

According to Truong et al. (2017), successful customer focus practice implementation aids organisations in better understanding customer expectations and market opportunities, balancing supply and demand and effectively coordinating machines, equipment, and human resources to reduce process variance and improve operational performance. Furthermore, the authors discovered that top management support for customer focus acts as a mediating factor in the link between top management support and operational performance. Srinivas, Swamy, and Nanjundeswaraswamy (2020) investigated the quality management techniques in India's oil and gas business using data from 299 respondents. Customer focus, along with other critical variables including top management commitment, staff involvement, training and development, and supplier quality control, had a beneficial impact on the oil and gas industry's organisational performance, according to their findings.

Similarly, Anil and Satish (2019) highlighted customer attention as one of the essential success elements for implementing quality management practices across all organisational functions. Leadership and top management commitment, supplier quality management, continuous improvement, employee empowerment, education and training, quality information analysis, quality assurance, process management, and knowledge management were among the other aspects. Customer focus and knowledge management were seen by respondents as the most dominating overall quality management methods connected with customer happiness, according to Anil and Satish. As a result, client satisfaction and relationships are critical components in improving business performance (Singh, Kumar, & Singh, 2018).

Kebede and Tegegne (2018) investigated how customer relationship management methods affect commercial bank performance in Ethiopia's Amhara region in terms of customer satisfaction. The study used a Binary-Logistics regression model with a response rate of 94.4 percent to examine the impact of the dimensions of customer relationship management, namely customer focus, knowledge management, customer relationship management organisation, and technology-based customer relationship management, on bank performance. All aspects of customer relationship management were statistically significant (*with a p value of 0.5*) in determining the performance of commercial banks in Ethiopia, according to the study. The study also discovered that knowledge management is more significant than customer satisfaction in determining bank performance.

Guerola-Navarro, Oltra-Badenes, Gil-Gomez, and Fernández (2021) looked at how customer relationship management (CRM) and innovation might help wineries enhance their performance. The goal of the study was to evaluate the necessary and sufficient factors for enhanced firm performance in vineyard organisations in Spain when CRM was applied. Employing the qualitative comparative analysis methodology and with a sample size of 74 wine production companies. The revealed that firm performance requires either CRM technology or CRM culture. Also, a sufficient condition for firm performance is CRM culture altogether with innovation. Lastly, the study revealed that CRM is crucial from both a cultural and technology standpoint.

Chapter Summary

This chapter presented a review of scholarly related literature that has accumulated in the past concerning supply chain quality management practices and how they affect the performance and competitiveness of organisations. The theories: Resource-Based and Extended Resource-Based Theory and the Resource Advantage underpinning the study were reviewed. There was also a conceptual and empirical review of the major variables used for the study. That is, supplier selection, supplier quality management, supplier participation or involvement, and customer focus measuring supply chain quality management practices; product and process innovation measuring innovation; and product quality, customer satisfaction, delivery time/service, and price/cost reduction as a measure of competitive advantage. Out of these reviews, the conceptual framework for the study was developed. The next chapter presents the research methods employed for the study.

CHAPTER THREE

RESEARCH METHODS

Introduction

The study researched how supply chain quality management practices influence the competitive advantage of food processing firms in Ghana, and how innovation affects the relationship between these two variables. This chapter presents the research methods that were used for the study. It highlights the research philosophy, research design, study area, population, sampling procedure, sample size, data collection instruments, data collection procedures, data processing, and analysis. This research draws inferences from the positivism philosophy therefore, it relied on an objective systematic scientific approach to undertake the study.

Research Philosophy

A research philosophy, as defined by Ryan (2018), is what the researcher perceives to be truth, reality, and knowledge. Ryan (2018) further explained that the research philosophy outlines the beliefs and values that guide the design of the study, as well as the collection and analysis of data in a research study, these choices complementing philosophical principles. Understanding paradigm-specific assumptions help illuminate the quality of findings that support scientific studies and identify gaps in generating sound evidence (Park, Konge, & Artino, 2020). Philosophical assumptions guide decisions concerning the appropriate research approaches, whether quantitative, qualitative or mixed designs that should be implemented to achieve the research objectives (Creswell & Creswell, 2017). According to Ryan (2018), there are three commonly known

philosophical research paradigms used to guide research methods and analysis, and these are positivism, interpretivism, and critical theory. This study adopted the positivism research philosophy due to its objectivity nature.

The Positivism Research Philosophy

The positivism research philosophy detailed that there is only one truth. According to Ryan (2018), it resulted from foundationalism and empiricism and positivists value objectivity and proving or disproving hypotheses. Empiricism as the core of positivism maintains that what is observable by the human senses is factual, and that suggests the existence of an objective universal reality that is subject to universal laws and mechanisms (Creswell, 2014). The philosophy claim that people want the truth and also believe that there is only one truth hence, they recognize and depend on a phenomenon that can be scientifically verified. According to Corry, Porter, and McKenna (2019), the positivism philosophy was developed by Auguste Comte who was a French philosopher and sociologist, as a model for understanding society. The authors further highlighted that the philosopher embraced science as a means of understanding society and human behaviour. Therefore, the consistent practical successes of natural sciences inspired him to develop the positivism philosophy.

Positivism is quantitative and focuses on traditional, empirical, and experimental research approaches which seek to reveal the true nature of reality and how it truly works (Muchanga, 2020). Studies that are associated with positivism generally concentrate on detecting explanatory associations or causal relationships by employing quantitative approaches, which favor empirical findings resulting from large sample sizes (Park, Konge, & Artino, 2020).

Therefore, generalizable inferences, replication of findings, and controlled experiments are the principles that underpin positivist science (Park et al., 2020). Positivism adopts a clear quantitative approach to investigating a phenomenon and it tends to be methodologically conservative (Crossan, 2003; Muchanga, 2020).

The positivist philosophy dwells on objectivity and distance which involves testing theories and highlights the researcher and the subject of the research as distinct and independent elements (Kelly, Dowling, & Millar, 2018). Amidst positivism, objective measurement of social issues is emphasized, and it is assumed that reality comprises facts, therefore, researchers can clearly observe and measure positivism objectively, without exerting any influence during the data collection process (Hennink, Hutter, & Bailey, 2020). According to Sekaran and Bougie (2019), positivists prioritize reliability of observations, rigor, and replicability of their research, and generability of findings hence scientific research experiment is their major approach since it allows them to test cause-and-effect relationships through manipulation and observation, and objective measurement of variables. Similar to other research philosophies, positivism is premised on some assumptions and these are presented in the subsequent paragraph.

Assumptions of the positivism philosophy

Flick (2018) outlined the following as the basic assumptions of the positivism research philosophy. This includes phenomenalism, deductivism, and inductivism. The phenomenalism assumption of the philosophy stipulates that phenomena and knowledge confirmed by only science can be warranted as

knowledge. The deductivism assumption suggests that theories are used to generate hypotheses that can be tested and also, allow explanations of laws to be assessed. The inductivism assumption proposes that knowledge can be produced by a collection of facts that prove the basis for laws. Another assumption of positivism indicates that science can and must be conducted in a manner that is value-free and therefore, objective. Lastly, positivism assumes that there is a clear difference between scientific and normative statements.

Criticism/Limitations of the positivism philosophy

Similar to other research philosophies, the positivism philosophy also has some limitations. According to Hennink, Hutter, and Bailey (2020), positivists are usually criticized for their assumptions concerning objective measurement which necessarily separates the researcher from the research subject, and does not acknowledge the interactive and co-constructive nature of data collection with human beings. This critique implies that positivists only focus on capturing facts, and do not consider or account for the contextual influences on people's lives. Alharahsheh and Pius (2020) added that the motive of positivism which essentially seeks to reduce complexity to simplicity by controlling and simplifying given variables, and also, the assumption of difficulties and challenges in isolating some variables, makes it difficult for researchers to adopt the philosophy.

Another limitation, highlighted by Saunders (2014), indicates that the statistical tests by positivists can be misused and hence lead to misinterpretation of research findings because of incorrect selection statistical tests. Moreover, the positivism philosophy is criticized for largely depending on sample size for

its results and the significance of statistical tests (Saunders, 2014). Additionally, Scotland (2012) mentioned that individuals and their actions may not be fully explored and understood due to the generalization of findings of the positivism research. Lastly, Scotland (2012) revealed that per the existing condition of the positivism philosophy, it relies more on descriptive findings hence it can be challenging for researchers to obtain further in-depth knowledge on issues and add them to their research.

Interpretivism Research Philosophy

Similar to positivism, the interpretivism research philosophy also originated from anthropology, and because of its opposition to positivism, it is also referred to as anti-positivism (Flick, 2018). Interpretivism suggests that truth and knowledge are subjective and are culturally and historically oriented based on people's experiences and their understanding of them, hence it is not possible for researchers to be completely separate from their own beliefs and values, hence which will certainly inform how they collect, interpret and analyze data (Ryan, 2018). Interpretivism emphasize the intrinsic subjectivity of humans as both study participants and researchers and further maintains that the background and values of a researcher affect the creation of research data (Hennink, Hutter, & Bailey, 2020).

Interpretivists assume that actions and facts are always traceable to beliefs that continually change and get modified by individuals who are always embedded in a historically shaped social background (Ban, 2019). A researcher using interpretivism as a research procedure listens to many voices, including the position as a describer, analyst, and interpreter, the research participants,

and readers of the findings since interpretivist posit that each reader creates a unique interpretation of the results of the study (Van der Walt, 2020; Thanh & Thanh, 2015; Barrett, 2009). The interpretivism philosophy recognizes that people's perception and experiences of reality are subjective, hence there is the possibility of having multiple perspectives on reality than a single truth as emphasized by positivists (Hennink, Hutter, & Bailey, 2020).

Critical Theory/Realism Research Philosophy

Critical theorists present a contrary view of the empiricism emphasized by the positivism philosophy, which is generally linked with quantitative research (North, 2017). The philosophy proposes that the researcher is part of the object of inquiry at all times because the subject of the study and the object of study are inseparably linked (Ryan, 2018). Critical realists reject the assertion that external reality which is objective truth as argued by positivists, can be measured in an objective way, therefore they claim that observations will always be subjected to interpretation (Sekaran & Bougie, 2019). Researchers are, therefore, required to consider subjective presumptions about the philosophy and the subject under study (Ryan, 2018).

According to Howell (2013), critical theorists value modified subjectivity which implies that the researcher and the society are influenced by their own observations and experiences, which are manipulated by power structures such as the mass media, culture, politics, race, and class and gender. The theory acknowledges the epistemological view and posits that objects and structures are real and available out there therefore, they do not exist in the constructions or interpretations of researchers, nor are they easily known to

science or alternative means of knowing (Ryba, Wiltshire, North, & Ronkainen, 2020). Critical realists believe that researchers are inherently biased hence they proposed the usage of triangulation as necessary in all various imperfect and erroneous methods, observations, and researchers to gain better knowledge of what is happening around us (Sekaran & Bougie, 2019).

Research Design

According to Kazdin (2021), research design refers to the experimental arrangement or the plan employed to assess interesting questions and hypotheses to reach valid inferences. Research design can be grouped into three broad categories namely: exploratory, descriptive, and explanatory design, and their usage is based on the purpose or objective of the study (Sekaran & Bougie, 2019; Saunders & Lewis, 2016). Even though each of the three categories of research design offers essential information, their differences portray in the extent to which they enable researchers to draw confident causal inferences from the findings of the research (Marczyk, DeMatteo, & Festinger, 2021).

Exploratory Research Design

According to Sekaran and Bougie (2019), the exploratory design tries to find out more about a core issue and aims to answer these two questions: ‘what is happening?’ and ‘why is it problematic?’ Van-Wyk (2012) detailed that exploratory research are typically characterized by a high degree of flexibility, and lacks formal structure. Kazdin (2021) clarified that when there is a new or relatively under-researched topic, then exploratory research is a way of learning about that topic since it can assist in filling knowledge or research gap about the new or under-researched topic, or approach the topic from a different

perspective to generate new and emerging insights. Hay et al. (2020), also highlight that exploratory design considers diverse interpretations of an open-ended problem and generates associated solutions.

For a better understanding of a phenomenon, it is recommended that interviews, observation, case studies, focus groups, and the survey should be used for data collection data when employing the exploratory research design (Thomas & Lawal, 2020; Marczyk, DeMatteo, & Festinger, 2021). The primary goal of exploratory research is to identify the boundaries of the environment within which the problem, opportunity, or situation of interest exists, and to identify significant variables or factors which could be relevant to the research there (Van-Wyk, 2012). Conducting exploratory research is a necessary first step in satisfying the researchers' inquisitiveness concerning the topic or research subject, and gaining detailed insights about the phenomenon and the research participants to subsequently design a larger study (Sheppard, 2020).

Descriptive Research Design

Descriptive studies are conducted to understand the characteristics of organisations following common practices, and their objective is to give the researcher a profile, and or to describe relevant aspects of the phenomenon under study from an individual, organisational, industry-oriented, or other perspectives (Sekaran & Bougie, 2019). Descriptive research is generally undertaken with large numbers of study participants or subjects within a natural setting and without manipulating the situation (Grove, Gray, & Faan, 2019). According to Leavy (2017), the descriptive research design is appropriate when describing individuals, groups, activities, events, or situations.

Van Wyk (2012) specified that descriptive design is more structured than exploratory design and its primary goal is to deliver an accurate and valid representation of the variables or factors that reflect or are important to the research question or hypothesis. According to Akinlua and Haan (2019), descriptive research methods consist of correlational studies, observational studies, survey research, and developmental design. Grove, Gray, and Faan (2019) highlighted that descriptive studies make it possible for researchers to discover new meaning, describe what exists, determine the frequency with which something occurs, and categorize information in real-world settings.

Explanatory Research Design

According to Boru (2018), explanatory research design builds on exploratory and descriptive research designs and further identifies actual reasons a phenomenon occurs. Explanatory research design aims to answer 'why' questions and that helps the researcher in identifying the causes and effects of the phenomenon under study (Sheppard, 2020). As revealed by Gray (2019), whereas descriptive studies may ask the 'what' kind of questions, explanatory studies ask the 'why' and 'how' questions. In support of that assertion, Boru (2018) further explained that explanatory research seeks to identify determinants and reasons and presents evidence that supports or refutes a prediction or explanation, and it is basically undertaken to disclose and also, report on some relationships among diverse aspects of the phenomenon being studied.

The Research Design Employed for the Study

This study adopted the explanatory research design because its objectives and hypotheses align with the characteristics of the design, and its fitness in providing the necessary research output and reports such as correlation and causal relationships of the variables under study. According to Leavy (2017), when researchers seek to explain causes and effects, correlations, or why things are the way they are, the explanatory research is appropriate since this particular research design provides evidence for causal relationships, which suggests that A causes B, and or that A causes B only under some specific circumstances. In view of that, the explanatory research design was adopted to help explain the causal relationship between Supply Chain Quality Management Practices and Competitive Advantage, and how this relationship is influenced by Innovation.

Research Approach

A research approach consists of the outline or strategy for the collection, measurement, analysis of data, interpretation, and reporting of findings and conclusions Vijay (2015). According to Creswell and Creswell (2017), there are three categories of research approaches and these constitute the qualitative, quantitative, and mixed method research approaches. Concerning the qualitative approach, Hennink, Hutter, and Bailey (2020) explained that the approach enables researchers to examine people's experiences in detail by employing some specific methods such as focus group discussion, in-depth interviews, observation, visual methods, content analysis, and life histories or biographies.

Tracy (2019) empirically supported the assertion by adding that in a qualitative research approach, the instrument for data collection is the researcher.

Sample size determination in a qualitative research approach is contextual and partially reliant on the scientific paradigm on which the research is based (Boddy, 2016). For instance, a larger sample size will be required for qualitative research that is geared toward positivism than in-depth qualitative studies will require, for the whole population being studied to be adequately represented (Boddy, 2016). Typically, qualitative research discovers the answers to the 'what' kind of questions alongside the 'why' and 'how' questions, and from a broader perspective, it explores the answers to a phenomenon descriptively and extensively (Alam, 2020).

When it comes to quantitative research, Grove, Gray, and Faan (2019) described it as a formal, rigorous, objective, and systematic process for generating numerical information about the world. Grove et al. (2019) further explained that it is undertaken to enable the researcher to describe new events, situations, or concepts, examine the relations among variables, and also, to determine the effectiveness of certain interventions on selected outcomes. Tracy (2019) revealed that, unlike qualitative research where the researcher is the research instrument, the research instrument in qualitative studies is separate and different from the researcher controlling the instrument. The mixed method research approach is a combination of the qualitative and quantitative approaches (Creswell & Creswll, 2017). Table 1 shows the difference between the qualitative and quantitative research approaches to conducting research and the circumstances under which each of them is appropriate.

Table 1: Key Differences Between Qualitative and Quantitative Research

	Qualitative Research	Quantitative Research
Objective	To gain a contextualized understanding of behaviour, beliefs, and motivation.	To quantify data and extrapolate results to a broader population
Purpose	To understand why? how? what is the process? What are the influences or contexts?	To measure, count, or quantify a problem. To answer: how much? How often? What proportion? Which variables are correlated?
Data	Data are words, called textual data.	Data are numbers, called statistical data
Study population	Small number of participants; selected purposively (non-probability sampling)	A large sample size of representative cases
	Referred to as participants	Referred to as respondents or subjects
Data Collection methods	In-depth interviews, observation, group discussions	Population surveys, opinion polls, exit interviews
Analysis	Analysis is interpretive	Analysis is statistical
Outcome	To develop an initial understanding, to identify and explain behaviour, beliefs, or actions	To identify prevalence, averages, and patterns in data. To generalize to a broader population.

Source: Hennink, Hutter, and Bailey (2020)

The Research Approach Employed for the Study

Reliant on the review of the literature concerning the various types of research approaches in the paragraphs above, the quantitative research approach was employed for this study. According to Grove, Gray, and Faan (2019), quantitative research is categorized into four types and these are descriptive, correlation, quasi-experimental, and experimental. Gray et al. (2019) detailed that where little knowledge about a situation, event, or phenomenon is available,

descriptive and correlational studies are undertaken frequently to provide a basis for the more highly controlled quasi-experimental and experimental studies. Gray et al (2019) referred to a descriptive study as exploring and describing a phenomenon in real-life situations, and its outcome comprises the identification of possible relations among concepts and the development of the hypotheses that offer grounds for future quantitative studies.

According to Gray et al. (2019), the purpose of quasi-experimental research is to determine the effect and or assess the causal relationships of one measurable variable on the other. With regard to experimental research, Gray et al. (2019) described it as an objective, systematic, and highly controlled research undertaken to predict and control a phenomenon, and because of its rigorous control of variables, it is noted as the most powerful quantitative method. Concerning correlational research, Gray et al (2019) explained it to involve systematic investigation, analysis, and reports of relationships among or between variables. The authors further revealed that when undertaking this type of research, the researcher measured selected sampled variables, and employ correlational statistics to determine the relationships among or between the variables under study. According to Grove and Cipher (2017), the strength of a relationship varies and it ranges from negative one (-1), which means 'perfect negative correlation' to a positive one (+1) which means 'perfect positive correlation' and zero (0) indicating 'no relationship.'

Study Area

The Accra Metropolis was the study area for this research. This area was selected because it qualified as one of the major industrial hubs in Ghana. Also. this study area has an adequate representation of the target population, that is, the food processing firms, from which the sampling frame and the sample size were drawn for the study. According to Agyapong (2020), one of the reasons why food processing firms are situated in urban centers, as compared to rural and developing areas, is the access to market and infrastructure. Therefore, the researcher had good prospects of easy access to data or the respondents in this selected area concerning time, cost, and response rate. Also, comparing the populous nature of food processing firms in the 16 regions in Ghana, this region has a majority of such companies.

Population

The broad objective of this study was to examine the relationship between supply chain quality management practices and the competitive advantage of food processing firms in Ghana and how the relationship is influenced by innovation. Therefore, the target population for the study comprised key personnel or managers of food processing firms in the country. However, food processing firms that operate on a small scale were excluded from the study. In a preliminary study, such a group identified inadequate resources as a challenging factor in managing quality across the supply chain. This confirms the assertion by Swedicj (2018) that it is often costly and capital intensive to manage quality within and across a firm's supply chain. Therefore, the study focused on medium-large scale food processing firms located within

the Accra Metropolis. Statistics from the Food and Drugs Authority (FDA, 2019) and Ghana Standards Authority (GSA, 2019) indicated that there are 206 of those firms in the region. This, therefore, constitutes the population size for the study.

Sampling Procedure

Considering the small nature of the population size, the census sampling technique was employed for the study. This technique is also termed saturation (Ratnasari, Fitri, Zulkifli, Nasrul, & Supardi, 2020). With this type of technique, every unit in the population is used in the data collection exercise. Involving all members of a target population helps in gathering large and rich data necessary for drawing inferences and relevant conclusions. Therefore, this technique is considered to provide a higher degree of reliability and accuracy in a study's findings (Saunder & Thornill, 2016). The census sampling technique was also applied because of the homogeneity of the target population. Employing this census technique, data was collected from one key personnel of each of the 206 food processing firms within the Accra Metropolis. The rationale for the choice of key personnel was because of their direct involvement in their firms' strategic decisions concerning supplier chain quality management. Therefore, with their experience, they would provide valuable information to improve the overall quality of the study.

Data Collection Instruments

A self-administered structured questionnaire was used for data collection from 206 owners/managers and key personnel of food processing firms in the country, specifically within the study area. Ajayi (2017) described

a questionnaire as an observational technique for data collection which contains several question items given to a respondent in a written form, and the respondent is expected to respond by writing or ticking items considered appropriate. A questionnaire was used for this study because it is more precise, and concise and gives the respondents options to choose from, and also to answer of their free will and convenient time. Also, the use of a questionnaire is appropriate when collecting data from a large population, that is, more than 50 respondents. However, some drawbacks of using the questionnaire, according to (Gray, 2019), include a possible non-response rate, uncompleted answering of questions, and limitation of the volume of information the respondents may be willing to provide since such data collection instrument uses close-ended questions.

The question items in the structured questionnaire for this study were put on a seven-point Likert scale to measure respondents' agreement with various statements where one (1) indicated the least agreement and seven (7) represented the highest agreement. The structured questionnaire was divided into four sections (that is, Sections A to D) with each section addressing a particular concern. Section A contained 40 question items on the four dimensions of supply chain quality management practices, that is, supplier selection, supplier quality, supplier participation, and customer focus, therefore each of the variables had 10 question items.

Section B focused on soliciting respondents' views on each of the two innovation dimensions: product, and process innovation under study. It contained 30 question items with each dimension having 10 question items. Section C contained 40 question items on the measurement of the competitive

advantage. The dimensions measuring competitive advantage, that is, product quality, customer satisfaction, delivery service, and price/cost reduction carried 10 question items each except for price/cost reduction which carried seven question items. Finally, Section D was designed to collect the demographic characteristics of the respondent. All the question items were adapted from empirical reviews and that is shown in the next section.

Measurement of variables

All the question items for this study were adapted from empirical reviews of related works of literature and some were slightly modified to reflect the context of this study. The variables and their respective measurement indicators and sources are presented in Table 2.

Table 2: Measurement of Variables

Variable	Measurement Indicators	Source
Supplier Selection	delivery reliability, product quality, product performance, unit price of products, suppliers' scope of resources, technical expertise, supplier ability to meet delivery due date, supplier ability to respond to unexpected demand, third-party quality certification, supplier conformance to perceived quality	Tracey and Tan (2001); Nwankwo, Obidigbo and Ekwulugo (2002).
Supplier Quality	supplier audits, information about supplier performance, feedback suppliers' products, participation in supplier quality activities, formal program for supplier qualification, frequent communication with suppliers, product quality, special contracts with suppliers, monitor suppliers' compliance with quality standards	Soares, Soltani and Liao (2017); Nwankwo, Obidigbo and Ekwulugo (2002).
Supplier Participation/ Involvement	suppliers suggest improvements, consult and refer to supplier's opinion, continuous improvement programs including suppliers, suppliers' participation in planning and setting strategies, sharing of vital information with suppliers, providing tangible and intangible resources to suppliers, allow suppliers to partake in new product development, information sharing by suppliers	Ullah and Narain (2020); Zhang and Yang (2016);
Customer Focus	closer contact with major customers, customers feedback on quality performance, processes are certified by customers, customers share quality requirements, customer involvement in quality improvement, jointly solve quality problems with major customers, customers feedback on quality, evaluation of customer complaints, communicate customers' needs throughout the chain, customer's ability to seek assistance	Yu and Huo (2018): Soares, Soltani and Liao (2017)
Innovation	launches new products, extension of product lines, enlarges new market, launches customized products, develop environmental-friendly products, replace products being phased-out, improve existing products, totally new products to firms.	Atalay, Anafarta, and Sarvan (2013); Darroch, (2005); Song and Parry (1997); Bagchi-Sen (2001); Lau, Tang and Yam (2010); Li and Atuahene-Gima, (2001);

Source: Author's Construct, Buer (2021)

Measurement of Variables, Table continued.

Variable	Measurement Indicators	Source
Innovation (continued)	adoption of advanced real-time process control technology, imports advanced automatic quality restriction equipment, introduces new process technology, improvement of existing production processes, continuous innovation in core processes, ability to offer environmentally friendly processes, continually develops programs to reduce production cost.	Panayides and Lun (2009); Camisón and Villar-López (2014); Singh, Khamba, and Nanda (2017); Alegre, Lapiedra and Chiva (2006).
Competitive advantage	Product Quality, Customer Satisfaction, Delivery Service, Price/Cost Reduction, Products conform to prearranged specifications, Reliable products, high customer retention, products have re-purchase rate, a reliable order processing time, ability to reduce waste and cut down cost, offer prices as low as or lower than competitors	Soares, Soltani and Liao (2017); Sharma and Joshi (2020),

Source: Author's Construct, Buer (2021)

Pilot Study

A pilot study was undertaken to test the measurement instrument. Arain, Campbel, Cooper, and Lancaster (2010) described piloting to mean a small feasibility study designed and undertaken to examine the various aspects of the research methods prearranged or intended for a larger, more rigorous, or confirmatory research. According to Polit and Beck (2017), researchers conduct pilot studies to determine the adequacy or appropriateness of their intended research methods and procedures. From the reviews above, it could be deduced that piloting a questionnaire enables the researcher to remove and or at least reduce question items that might mislead respondents. In that regard, the study used 30 respondents who are similar in key characteristics to the target respondents to identify errors, weaknesses, or ambiguities of the measurement instrument and the result is shown in Table 3.

Table 3: Reliability and Validity of Measurement Instruments

Constructs	Number of Items	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Competitive Advantage	10	0.913	0.929	0.724
Customer Focus	10	0.887	0.807	0.682
Innovation	10	0.874	0.824	0.612
Supplier Participation	10	0.837	0.871	0.576
Supplier Quality Management	10	0.766	0.895	0.809
Supplier Selection	10	0.827	0.868	0.621

Source: Authors Construct, Buer (2021)

The reliability of the load (λ) of each individual item was first measured. Usually, the minimum level for acceptance which is $\lambda \geq 0.707$ is established as part of the construct (Hair et al., 2013). As shown in Table 3, the study relied on the rho_A figures instead of Cronbach's alpha to report on the reliability of the constructs. The minimum threshold for construct reliability for rho_A is 0.7 ($\lambda \geq 0.7$). The consistency of the constructs was therefore tested using the rho_A and the composite reliability. According to Hair et al. (2019), the evaluation measures the consistency of a construct based on its indicators. That is, specifically evaluating or examining the rigor with which the elements or indicators measure the same latent variable (Ramírez & Palos-Sánchez, 2018).

As presented in Table 3, all the variables met the threshold for reliability and consistency. The convergent validity of the constructs was also tested and according to Ramírez and Palos-Sánchez (2018), the Average Variance Extracted (AVE) is the most common measure of examining convergent validity in PLS-SEM. Hair et al. (2019) and Henseler et al. (2014) revealed that an AVE value of 50 percent or higher implies that on average, a construct accounts for more than half of the variance of its indicators. It can, therefore, be deduced from Table 3 that all the constructs met this criterion.

Data Collection Procedures

In the wake of the coronavirus pandemic, the posting service, email, or online-based survey is recommended for data collection exercises. This, in essence, reduces human contact with the respondents, therefore, reducing the contract and spread of the virus. However, experts' opinions also indicated that the response rate for such an approach, is relatively low, compared to the hard-print and in-person delivery of questionnaires. Since a good response rate is needed to ensure reliability, validity, and generalisation of the results, the researcher used the in-person approach. That is, practically distributing hardcopy questionnaires to the respondents. Nevertheless, adherence to the COVID-19 protocols such as face mask-wearing, frequent washing of hands with soap and under running water, keeping social distance, and the usage of hand sanitiser among others, were strictly complied with. Data collection was done during weekdays, working hours– between 8 AM and 4 PM, and between 20th September 2021 to 18th October 2021.

Before the distribution of the questionnaire, an introductory letter (Appendix 2) obtained from the department was given to the respondents, introducing the researcher as a student and also the purpose of the research being for academics. The self-administered structured questionnaires for the data collection were given to the respondents to answer at their own time but within two weeks, and were collected afterward in person. The questionnaire had a clause, indicating and assuring the respondents of their anonymity and confidentiality of the information to be provided. The respondents were located and reached through their business addresses which were obtained from their respective websites, social media handles, and also their affiliated bodies such

as the Association of Ghana Industries. To encourage participation by potential respondents, a summary of the findings was assured. Respondents who were yet to complete/return their questionnaires within the two weeks were reminded and also encouraged to do so, but voluntarily.

Response Rate

The study aimed at collecting data from one key personnel from each of the 206 food processing firms which constitute the target population/sample for the study. Out of the 206 questionnaires distributed to the respondents, those that were thoroughly answered and returned were 166. These 166 valid responses constitute about 80.5 percent of the targeted population (206). Barbie and Kidder (2017) specified that in social sciences research, a response rate of at least 50 percent of the sample is acceptable. The response rate of 80.5 percent of the 206 population/sample for this study exceeded the threshold indicated by Barbie and Kidder (2017). Therefore, this response rate of 166 (80.5%) of 206 respondents is valid for analysis.

Ethical Considerations

The research was approved by the Institutional Review Board of the University of Cape Coast. Consent from the participants was sought prior to the data collection. The respondents were also assured of the anonymity and confidentiality of their organisations' and personal data to be provided. They were also allowed to answer the questionnaire at a time convenient to them. Also, it was not made compulsory for participants to answer all question items in the questionnaire. They were also informed that participation in the data

collection exercise is voluntary hence they have the choice to redraw consent at any time.

The study also avoided the use of children or participants below the age of 18 years. It also ensured that only key personnel in the food processing organisations were allowed to participate. Completed questionnaires from the participants in key positions were randomly numbered, hence no identifying information was presented in the data file used for the analysis. In addition, all COVID-19 protocols were assured, especially during the data collection exercise. There was the strict and constant wearing of face masks, washing of hands with soap and under running water, sanitizing, and keeping a social distance. Also, participants who preferred to answer the questionnaire online instead of the hardcopy questionnaire were given a Google Form link to do so.

Data Processing and Analysis

The study used inferential statistical methods for data analysis. It employed the SmartPLS version 3.3 and the Statistical Package for Social Sciences (SPSS version 2) software for data processing, computation, and generation of statistical test results. The SPSS 26 was useful for initial data entry, cleaning, validating, and the production of statistical outputs such as frequencies, correlations, and regression where necessary, to make it easier for analysing and interpreting the finding. The SmartPLS was used for the variance-based structural equation modelling using the partial least squares (PLS-SEM) path modelling method. The PLS-SEM method was employed because, according to Purwanto and Sudargini (2021), it allows researchers to estimate complex models with several constructs, indicator variables, and structural

paths without imposing distribution assumptions on the data. Therefore, it enabled the generation of inferential statistics such as the testing of the hypotheses for this study.

According to Purwanto and Sudargini (2021), the first stage in assessing PLS-SEM results requires the examination of the measurement model, and the criteria vary for formative and reflective constructs. The measurement model for this study is reflective. That is, the indicators for each construct were considered to be caused by that construct, unlike the formative model where the indicators cause the construct (Ramayah, Cheah, Chuah, Ting, & Memon, 2018). According to Hair et al. (2017), the researcher needs to assess the structural model if the measurement model meets all the necessary criteria. Similar to other statistical methods, the PLS-SEM also has a rule of thumb that serves as a guide for evaluating model results (Hair et al., 2017; Roldan & Sanchez-Franco, 2012). As indicated above, the measurement model for this study is reflective therefore the criterion guiding reflective constructs is employed to evaluate the model's results.

Purwanto and Sudargini (2021) revealed that the first step in the evaluation of the reflective measurement model requires examining the indicator loadings. The authors explained that item loadings above 0.708 are recommended since it shows that the construction explains more than 50 percent of the variance of the indicator and that provides an acceptable item of reliability. The researchers revealed that the second step in the PLS-SEM is to examine the reliability of internal consistency, most often using Joreskog's (1971) composite reliability, and a higher value designates a higher level of reliability. Purwanto and Sudargini (2021) referenced that a reliability value of

0.60 to 0.70 is considered acceptable, and those that range from 0.70 to 0.90 are considered 'satisfactory to good.' However, a reliability value of 0.95 is considered problematic since it highlights a probable undesirable or unwanted response pattern.

According to Hair, Risher, Sarstedt, and Ringle (2019), the third step in assessing the reflective measurement model involves a discussion of the convergent validity of each construct measure. Purwanto and Sudargini (2021) defined convergent validity as the degree to which the constructs converge to explain the variance of the items. The authors further indicated the average variance extracted (AVE) as the metric employed by researchers to assess the convergent validity for items in each construct. In support, Ramírez and Palos-Sánchez (2018) also considered the Average Variance Extracted (AVE) as the most common measure of examining convergent validity in PLS-SEM. Hair et al. (2019) revealed that an AVE value of 0.50 is acceptable or higher which means that the construct explains or accounts for at least 50 percent of the variance of the items.

Purwanto and Sudargini (2021), and Hair et al. (2019) revealed the assessment of discriminant validity as the fourth step in assessing the reflective measurement model. According to Hair et al. (2019), discriminant validity shows the extent to which construction empirically differs from other constructs in the structural model. Henseler et al. (2015) revealed the heterotrait-monotrait ratio of correlations (HTMT) as the threshold for measuring the discriminant validity after proving that Fornell and Larcker's (1981) criterion did not perform well over time. The HTMT is a measure of similarities between latent variables (Henseler, 2017). Thus, Henseler et al (2015)'s threshold for the HTMT is < 90.

The authors explained that the discriminant validity exists if the HTMT value is high, that is, > 90, particularly when the constructs are conceptually different.

To ensure unbiased regression results, collinearity is checked before assessing the structure of the relationships and to examine the collinearity, the variance inflation factors (VIF) are calculated (Purwanto & Sudargini, 2021). VIFs are used to measure the induced collinearity in the effects (Craney & Surles, 2002). According to Purwanto and Sudargini (2021), an ideal VIF value should be close to three (3) and lesser (that is, VIF ≤ 3). VIF values above five (5) indicate that there is a possible collinearity problem among the predicting constructs (Purwanto & Sudargini (2021). Hair et al. (2019) specified that if the model is free from collinearity, the next step is to assess the R Square (R^2) of the endogenous construct.

Rigdon (2012) described the R^2 as the predictive power in the sample. Purwanto and Sudargini (2021) revealed that the R^2 ranges from zero to one (0-1) where higher values are regarded as having greater explanatory power in the sample. According to Henseler et al. (2019), values of 0.75, 0.50, and 0.25 signify or are considered substantial, moderate, and weak. Hair et al. (2019) detailed that researchers can assess how the deletion of some predictor constructs affect the f Square (f^2) value of the endogenous constructs. Per Cohen's (1988) rule of thumb, values higher than 0.02, 0.15, and 0.35 signify small, medium, and large effect size. For easier reference, the thresholds for the various measurement criteria are made concise in Table 4.

Table 4: Thresholds for the Measurement Criteria

Measurement criteria	Recommended	Reference
Indicator loading	≥ 0.708	Purwanto and Sudargini (2021)
Composite Reliability	≥ 0.60	Hair et al. (2018)
Average Variance Extracted (AVE)	> 0.50	Hair et al. (2019)
rho_A	≥ 0.70	Dijkstra and Henseler (2015)
HTMT Ratio	< 0.90	Henseler et al. (2015)
Cronbach's Alpha	≥ 0.70	Henseler et al. (2015)
Variance Inflation Factors (VIF)	≤ 3.3	Purwanto and Sudargini (2021)

Source: Author's Construct, Buer (2021)

Chapter Summary

This chapter looked at the research methods used for the study. It presented positivism as the research paradigm that guided the study. The study adopted an explanatory research design, and that enabled it to explain the causal relationships among the variables. The study employed the quantitative research approach as the formal, objective, rigorous, and systematic process for generating numerical information. This chapter also highlighted the study area (Accra Metropolis), population size, sampling procedure, data collection instrument (questionnaire), data collection process, data processing, and analytical techniques used for the study. The statistical data processing tools– SPSS and SmartPLS– were used for data processing, computation, and generation of results for interpretation. Reliability and validity of variables adopted, ethical considerations, and the response rate was also presented in the chapter. The next chapter presents the results and discussion of the study.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

The study researched how supply chain quality management practices influence the competitive advantage of food processing firms in Ghana, and how innovation affects the relationship between these two variables. This chapter presents the results and discussion of the study. Data were collected using a structured questionnaire. The Partial Least Square Structural Equation Modelling was the data analytical technique employed. This chapter presents information on the socio-demographic characteristics of the respondents, and how supply chain quality management practices affect the competitive advantage of the food processing firms in Ghana. The moderating role of innovation on the relationship between the supply chain quality management practices and competitive advantage is also explained. The results are subsequently presented.

Socio-Demographic Characteristics of Respondents

A total number of five socio-demographic characteristics of respondents were examined. This includes Sex, Age, Current Job Position, Years of Working Experience, and Affiliation to a Professional Body. Out of the 166 valid questionnaires, the total number of responses for sex was 162. The total number of responses for Age, Current Job Position, Years of Working Experience, and Affiliation to a Professional Body, were 166 in each case. Table 5 shows the socio-demographic characteristics of respondents.

Table 5: Socio-Demographic Characteristics of Respondents

Characteristic	Category	Frequency	Percentage
Sex	Male	90	54.2
	Female	72	43.4
	Missing	4	2.4
	Total	166	100
Age (in years)	25-29	9	5.4
	30-34	17	10.2
	35-39	51	30.7
	40-44	37	22.3
	45-49	33	19.9
	50-54	19	11.4
	Total	166	100
Job Position	Operations/Production	73	44.0
	Procurement	43	25.9
	Sales/Marketing	32	19.3
	Administrator	14	8.4
	Quality Control	1	0.6
	Accountant	3	1.8
	Total	166	100
Work Experience	1-5 years	70	42.2
	6-10 years	80	48.2
	11-15 years	12	7.2
	16-20 years	2	1.2
	Missing	2	1.2
	Total	166	100
Professional Certificate	CIPS	45	27.1
	CILT	1	0.6
	GIPS	15	9.0
	ACCA	21	12.7
	CMA	2	1.2
	PMI	8	4.8
	CIMA	1	0.6
	ICAG	30	18.1
	Others	43	25.9
	Total	166	100.0

Source: Field Survey, Buer (2021)

Table 5 indicates that out of the 162 valid responses for sex, 54.2% of the participants were males, while 43.4% of them are females. Even though the percentage difference (10.8%) for that category is small, it brings to light male dominance in key and managerial positions in the food processing firms compared to females. Also, the majority of the respondents aged between 35-39 years constituted 30.7% of the total respondents (166), while only 5.4% of them were between the ages of 25-59 years. Furthermore, respondents aged between 40-44 years constituted 22.3%, while those between the ages of 45-49 years constituted 19.9%. Respondents who are aged 50-54 years constituted 11.4% whiles those made up of 30-34 years old constituted 10.2%.

It could be deduced that the majority of the employees in the food processing firms who are in key managerial positions are aged 35 years and above. This shows that employees below the age of 35 years are for in operational and supportive activities. This is an indication that irrespective of one's academic qualification, some level of work experience is a prerequisite to being in a managerial or key position. Also, 44% of the total respondents were found to have oversight in productions/operational activities. Respondents with job positions as procurement officers constituted 25.9%. Those found in marketing and sales constituted 19.3%. The remaining respondents in key and managerial positions included Administrators (8.4%), quality control managers (0.6%), and Accountants (1.8%).

This shows that the majority of the key personnel in the food processing firms are directly involved in the production or operations of the firms. The second majority were procurement officials, while the least among the rest were Quality Control Managers. Even though quality management is key to the

operations of the firms, the firms under study did not have much key personnel mandated to manage quality in the firm. Quality management among the firms is rather embedded in all the functional areas of the organisations. Therefore, employees in key managerial positions such as operations or production are also entitled to manage quality in the operations of the business. In terms of working experience, the majority of the respondents with 6-10 years of experience constituted 48.2%, while those with 1-5 years of experience constituted 42.2%. Those with 11-15 years were 7.2% and the remaining was 1.2%.

It was also discovered that apart from the respondents' academic qualifications, the majority of them also had professional certifications and affiliations. Out of the 166 respondents, 27.1% indicated membership with the Chartered Institute of Procurement and Supply Chain Management. Furthermore, 18.1% mentioned their affiliations with the Institute of Chartered Accountants, Ghana. Those having membership with the Association of Chartered Certified Accountants were 12.7%, while those with the Ghana Institute of Procurement and Supply constituted 18.1%. Among the remaining respondents, 0.6% of them indicated affiliations with the Chartered Institute of Logistics and Transport. 9.0% were members of the Ghana Institute of Procurement and Supply, while 4.8% belonged to the Project Management Institute, and 0.6% Chartered Institute of Management Accountants. Others such as the Chartered Institute of Marketing constituted 25.9%.

Items Loadings (Structural and Measurement)

The item loadings of the variables are discussed in this section. The five exogenous variables used for the model are supplier selection, supplier participation, customer focus, and supplier quality. There was only one endogenous variable which is a competitive advantage. Figure 4 presents the structure of the model with the various constructs and their associated item loadings.

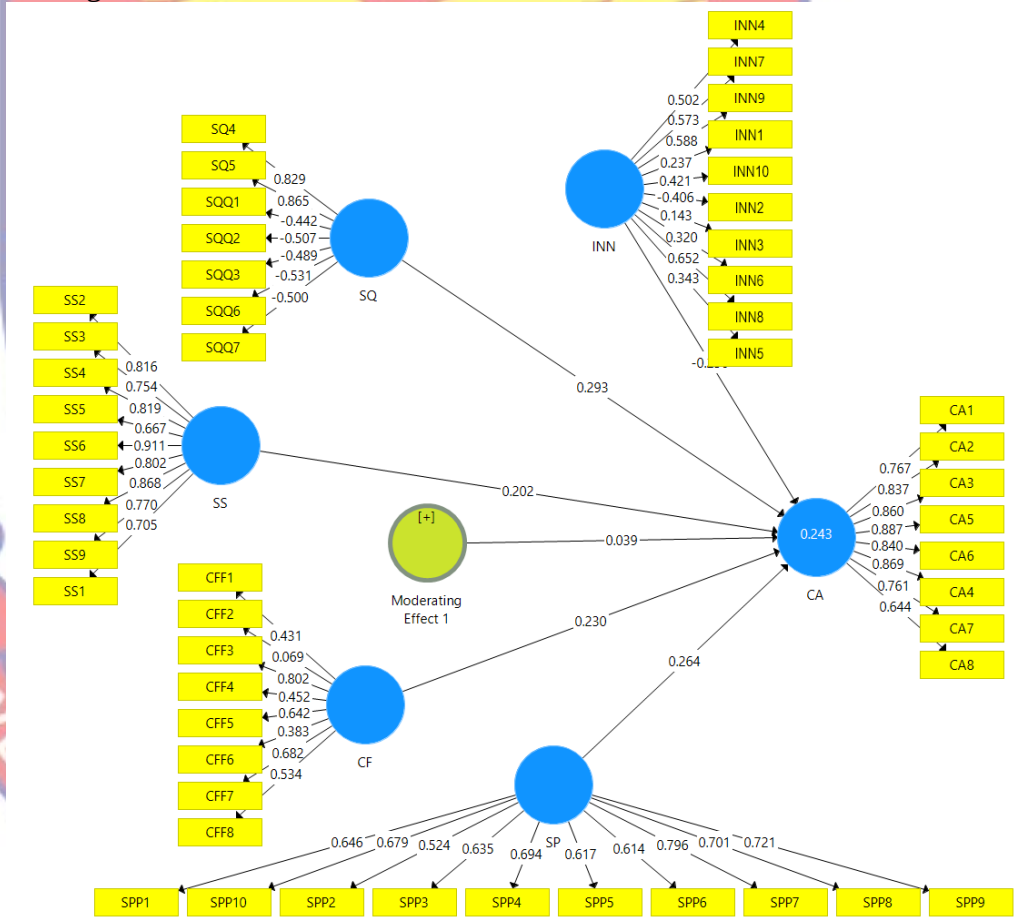


Figure 4: Inner and Outer Model Output

Source: Field Survey, Buer (2021)

Figure 4 shows that exogenous constructs supplier selection (SS) had nine indicators which are SS1, SS2, SS3, SS4, SS5, SS6, SS7, SS8, and SS9; customer focus (CF) also consisted of eight indications which are CFF1, CFF2, CFF3, CFF4, CFF5, CFF6, CFF7, and CFF8; Supplier Participation (SP)

contained ten indicators: SPP1, SPP2, SPP3, SPP4, SPP5, SPP6, SPP7, SPP8, SPP9, and SPP10; Supplier Quality (SQ) had seven indicators which are SQQ1, SQQ2, SQQ3, SQQ4, SQQ5, SQQ6, and SQQ7. The moderating variable innovation (INN) had ten indicators which comprised INN1, INN2, INN3, INN4, INN5, INN6, INN7, INN8, INN9, and INN10. Lastly, the endogenous construct competitive advantage had eight indicators consisting of CA1, CA2, CA3, CA4, CA5, CA6, CA7, and CA8.

These constructs and their respective indicators were used to draw the five paths with arrows showing the relationship among them. As indicated in Figure 4, the arrows moving from the independent variables: SS, CF, SQ, and SP, and also the moderating variable INN, show that those variables could have a significant association with the independent variable: CA. The paths, therefore, highlight the following correlations: SS and CA; CF and CA; SQ and CA; and SP and CA. Finally, the influence of the INN is tested on the CA. The model was assessed by evaluating the indicator values of the constructs to ensure that each indicator appropriately measures its assigned constructs.

Per the rule of thumb according to Hair et al (2019), to show quality or reliability, each indicator's loading should be > 0.70. In view of that, item loadings of constructs that loaded < 0.70 were removed from the model, that is, in Figure 4. Such item loadings were deleted because, by assumption, they are considered inferior measures of their assigned constructs. That is, such item loadings do not provide a quality measure of the constructs they seek to measure. Hair et al. (2019) emphasized that the failure to remove such loadings is likely to affect the outcome of the model.

As a result, even though all the items were adopted from previous studies, those with loadings that do not meet the threshold of 0.70 were removed since they could not prove to be a quality measure of the constructs under study. Even though item loadings of < 0.70 were removed from the model, that of items INN4 and CFF5 which loaded 0.681 and 0.679, respectively, were maintained in the model since they were very critical in measuring the constructs. Figure 5 shows the final model structure after all indicator loadings < 0.70 with the exception of INN4 and CFF were removed.

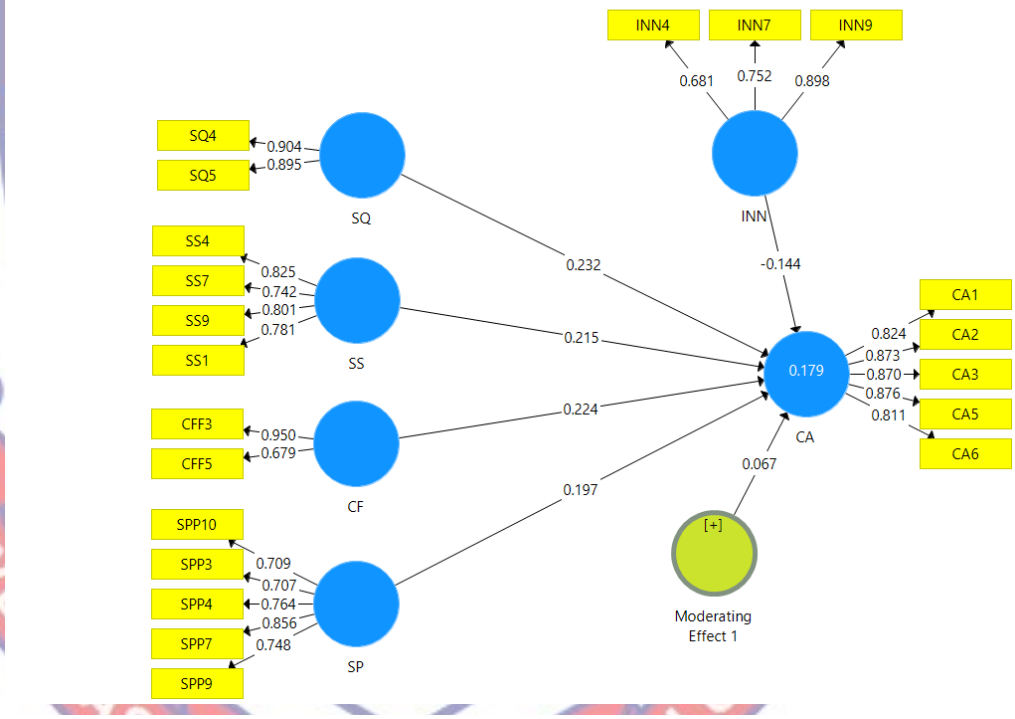


Figure 5: Final Model Structure

Source: Field Survey, Buer (2021)

Figure 5 shows that apart from CFF5 and INN4 with item loadings of 0.679 and 0.681 respectively, all the remaining constructs' indicators have item loadings > 0.70. That is indicators with loadings < 0.70 were removed from the initial model to ensure that the indicators provide quality and reliable measures

of their individually assigned constructs. Precisely, for CFF, indicator CFF1, CFF2, CFF4, CFF6, CFF7 and CFF8 were removed. SPP had SPP1, SPP2, SPP5, SPP6, and SPP8 removed. Also, for SQ, the following indicators: SQ1, SQ2, SQ3, SQ6, and SQ7 were removed. Furthermore, INN had INN1, INN2, INN3, INN5, INN6, INN8, and INN10 removed, and finally, SS had SS2, SS3, SS5, SS6, and SS8 removed. Therefore, the testing of the hypotheses of this study was based on the structure of this model.

Assessment of Measurement Model

Table 6 presents the model quality output consisting of Indicator Reliability (IR), Construct Reliability (CR), Construct Validity (CV) using Average Variance Extracted (AVE), and multicollinearity based on the inner Variance Inflation Factor (VIF) values.

Table 6: Assessment of Measurement Model

Constructs	rho_A	Composite Reliability	Average Variance Extracted (AVE)	Inner VIF Values
Competitive Advantage	0.913	0.929	0.724	
Customer Focus	0.887	0.807	0.682	1.148
Innovation	0.874	0.824	0.612	1.161
Supplier Participation	0.837	0.871	0.576	1.366
Supplier Quality	0.766	0.895	0.809	1.170
Supplier Selection	0.827	0.868	0.621	1.057

IR (rho_A) – Indicator reliability; CR – Construct Reliability; AVE – Convergent Validity.

Source: Field Survey (2021)

Table 6 shows the indicator reliability of the model using the rho_A scores. Hair et al. (2017) explained that the indicator signifies the portion of an indicator's variance that is explained by its associated latent variables. According to Henseler, Hubona, and Ray (2016) and Hair et al. (2014), the

rho_A scores provide a much better and more reliable outcome compared to the Chronbach Alpha (CA) so they were recorded instead of the latter. According to Wong (2019) and Hair et al (2017), the thumb rule for assessing the IR posit that the rho_A values should be > 0.60. The IR is vital in evaluating the uni-dimensionality of scale items to ensure reliability (Wong, 2019). From the model's rho_A scores, all the constructs had values > 0.6 and that implies reliability. Specifically, Supplier Quality (SQ) had the lowest rho_A score of 0.766 while Competitive Advantage (CA) had the highest value of 0.913.

Table 6 also presented the construct reliability (CR) scores of each construct. The CR explains the degree to which a particular variable is well measured by its assigned measurement indicators when combined. Obtaining CR implies that there is a strong correlation among all the indicators of a particular construct (Hair et al., 2019). According to Ringle et al. (2012), the thumb rule of the CR requires the value of a given construct to should be > 0.7. From Table 6, it could be seen that all the constructs had CR values >0.7. While the least recorded CR was 0.807 (CFF), the highest was 0.929 for competitive advantage (CA). This shows that all the indicators assigned to their constructs had strong correlations.

The results of the convergent validity (CV) of the model were also assessed with the results shown in Table 6. According to Hair et al (2017) and Hensler et al. (2014), the CV is assessed using the values of the average values extracted (AVE). The AVE values show the degree to which the variance of an indicator is captured by the latent variable with respect to the sum of variance and its resulting measurement error. The thumb rule as indicated by Henseler et al (2016) requires the value of the AVE to be > 0.50 for CV to occur. As shown

in Table 6, all the AVE scores for each construct were > 0.50. The highest AVE value recorded was 0.809 for the construct: supplier quality (SQ) and the lowest value was 0.576 for Supplier Participation (SPP). This shows that the model's validity was convergent and meets the quality criteria.

The model was tested to ensure that it was free from bias. Table 6 shows the inner Variance Inflation Factor (VIF) values to help in testing for possible multicollinearity. Multicollinearity is evaluated to check whether the path coefficients are free from bias. In addition, it ensures that the significant levels of possible collinearity among the exogenous are minimized drastically. According to Pallant and Manuel (2007), when checking for multicollinearity using the VIF, the thumb rule requires the VIF values to be < 10. That is, multicollinearity exits when the VIF scores are > 10 and that could affect the quality of the PLS-SEM. As reported in Table 6, it is clear that all the VIF values were <10 and that shows the nonappearance of multicollinearity among the constructs. For concision, the VIF values ranged between 1.057 and 1.366, which met the threshold of < 10 and also proves that there was no multicollinearity among the constructs.

The quality of the model was also assessed by testing for discriminant validity as proposed by Henseler et al. (2019). According to Hair et al. (2017), discriminant validity (DV) is employed to check issues of collinearity in a model. DVs that are discriminantly valid mostly lack significant levels of collinearity (Hair et al., 2017). Studies in the past have presented three major approaches for checking for DV in a PLS-SEM. These include the Fornell and Larcker (1981), cross-loadings, and Heterotrait-Monotrait (HTMT) ratio. Among these three approaches, the HTMT was used to test for DV because,

according to Hair et al. (2019), it shows superior output due to its strength in easily detecting the absence of DV in basic research. Table 7 shows the output of the HTMT ratio.

Table 7: Heterotrait-Monotrait (HTMT) Ratio

	CA	CF	INN	SP	SQ	SS
CA						
CF	0.281					
INN	0.097	0.296				
SP	0.195	0.538	0.390			
SQ	0.168	0.265	0.233	0.476		
SS	0.211	0.238	0.238	0.167	0.092	

Source: Field Survey, Buer (2021)

According to Wetzels, Odekerken-Schroder and Vab Oppen (2009), the rule of thumb for assessing the HTMT ratio requires the correlation values among the constructs to be < 0.85. Therefore, discriminant validity is achieved if the HTMT values are <0.85. As indicated in Table 7, all the HTMT values of the constructs are <0.85, and that meets the threshold. The highest value recorded is 0.476 and that is in the relationship between SQ and SP. This result implies that the constructs are different from one another.

Significance of Path Coefficients

The study reported hypotheses results after assessing the PLS-SEM to check its quality. The hypotheses sought to examine how SP, CF, SQ, SS, and INN affect the competitive advantage of food processing firms within the Accra Metropolis. The hypotheses scores were reported to establish whether there are significant effects among these relationships. It also provided the strength and direction of each relationship using 5000 bootstraps in the model as proposed

by Hair et al. (2017). Table 8 shows the results of the tested hypotheses. The table is made up of five columns with each representing structural paths, path coefficients, t-stats, p-values, and decision rule of each hypothesis.

Table 8: Structural Equation Model Output and Decision Rule

Structural Path	(β)	t-stats	p-values	Decision Rule
CF ➔ CA	0.224	2.872	0.004	H_1 (supported)
SP ➔ CA	0.197	2.382	0.017	H_2 (supported)
SQ ➔ CA	0.232	2.471	0.014	H_3 (supported)
SS ➔ CA	0.215	3.023	0.003	H_4 (supported)
Moderating Effect 1➔CA	0.067	0.168	0.867	H_5 (not supported)

Note: * = t > 1.96; p < 0.05

Source: Field Survey, Buer (2021)

The hypotheses were tested using the values of the t-statistics (t-stats). According to Hair et al (2014) and Henseler et al (2014), there is a significant relationship between the variables if the model's t-stats are>1.96 and p values are < 0.05. This implies that the directional hypothesis as shown in Table 8 is supported by its t-stats is >1.96 and that shows that there is a significant correlation between the variables. The results of the hypotheses are discussed in the subsequent sections.

Customer Focus and Competitive Advantage

The study's first hypothesis (H_1) stated that customer focus (CF) had a significant effect on competitive advantage (CA) within the study area. Considering the t-stat value of 2.872 and p-value of 0.004, it means the study's hypothesis was supported. The t-stat of the hypothesis was >1.96 and which shows that there is a significant effect of CF on CA. Furthermore, the β value of 0.224 indicates that there is a positive significant relationship between CF

and CA. That is, a unit increase in CF will result in a significant unit increase in CA by 22.4 percent. This result also means that CF has a significant but weak effect on CA. This is because if there is any change in CF, CA will increase by only 22.4 percent. It is, therefore, concluded that adopting customer focus as a supply chain quality management practice will lead to a significant unit increase in the performance of the food processing firms under study.

Customers play a major role in businesses and per the results of this study, it was discovered that they are very significant in contributing to the competitive advantage of the food processing firms. Customers are regarded as the most important partners in most supply chains (Vanichchinchai, 2021). Truong et al (2017) discovered that the successful implementation of customer focus practice helps organisations to better understand customer expectations and market opportunities so that firms can balance supply and demand, and effectively coordinate machines, equipment, and human resources to minimise process variance and increase operational performance.

The need to achieve a sustained competitive advantage through increased market share could be one of the reasons why business organisations commit a considerable amount of resources to attract and maintain customers. According to Othman, Ghani, and Choon (2020), customer focus or satisfaction is an important part of the inputs to the quality management system. Srinivas, Swamy, and Nanjundeswaraswamy (2020) revealed that customer focus had a positive impact on organisational performance of the oil and gas industry. Customer satisfaction and relationship are important elements that help in upgrading business performance (Singh, Kumar, & Singh, 2018). Maintaining customers requires understanding the needs of the customers and strategically

putting in measures to address those needs within a specified time to satisfy them.

Prioritizing customer focus as a supply chain quality management practice requires the food processing firms to establish close contact with their major customers in quality management. Anil and Satish (2019) identified customer focus as part of the critical success factors for the implementation of quality management practices in all functional aspects of an organisation. Astuty, Zufrizal, Pasaribu, and Rahayu (2021) support this with the assertion that customer focus is one of the factors that affect the effectiveness of supply chain management. As revealed by this study, close contact with customers enhances efficient information flow on customer requirements and enables the firms to get feedback on quality performance. The firms under study also indicated that they do not only wait for the customer for feedback but also, they employ proactive measures such as following up with customers for feedback on quality. Hence where quality-related problems are identified, they are mutually resolved with their customers.

The study also discovered that the firms put in measures to enhance customers' ability to seek assistance from them. Not limited to that, customers' complaints which could be either formal or informal are given equal attention and are cooperatively resolved. A study by Rajab, Ngugi, and Kiarie (2021) found that customer relations management has a positive impact on the performance of manufacturing firms. As part of the measures to keep track of customer focus, the study also discovered that the food processing firms communicate customers' future strategic needs including their quality requirements forecasts throughout the entire supply chain. This helps the

various partners in the chain to tailor their value creation activities to meet the strategic needs of the customer. When those strategic needs are met, it will enhance customer satisfaction.

The food processing firms also revealed that they usually engage their key customers in quality improvement efforts such as improvement in existing business processes, product quality, or introduction of new brands. Organisations can therefore capitalize on these interactions to generate new offers or to modify an existing product using inputs from customers (Bettiga & Ciccullo, 2019). It was also discovered that the firms under study allow their major customers to rate and certify their business processes. Therefore, beyond product quality, that gives the customers the assurance that the processes used to produce the goods– processed foods are of standard. This increases customer loyalty, confidence, and referrals and, therefore, increases the market share of the firm. Eventually, that enhances the competitive position of the firms.

Previous studies that support or validate customer focus as a major contributor to sustained competitive advantage and overall performance are subsequently discussed. A study by Truong et al. (2017) about the relationship between supply chain management practices and operational performance among Vietnamese clothing companies revealed that customer focus among other practices has both direct and indirect effects on operational performance. Srinivas, Swamy, and Nanjundeswaraswamy's (2020) study of quality management techniques discovered customer focus as part of the critical variables that have a positive impact on organisational performance of firms in the oil and gas industry.

Furthermore, a study by Anil and Satish (2019) also revealed customer focus as one of the success factors for implementing quality management practices across all organisational functions. Kebede and Tegegne's (2018) investigation of how customer relationship strategies affect the performance of commercial banks in Ethiopia revealed that all aspects of customer relationship management, including customer focus, were statistically significant in determining the performance of the banks. This shows that customer satisfaction and relations are critical components in improving business performance (Singh, Kumar, & Singh, 2018).

Supplier Participation and Competitive Advantage

The significant effect of supplier participation (SPP) on the competitive advantage (CA) of the food processing firms was also tested and presented. Table 8 shows a t-stat of 2.382 which is >1.96 and that indicates that the hypothesis is supported. This indicates that the hypothesis that a significant positive relationship exists between SPP and CA is supported. The β value of 0.197 was positive and that indicates that SPP has a positive significant effect on CA. The β value of 0.197 means that SPP contributes about 19.7 percent of any change in CA. That is, for any unit change in SPP, CA significantly changes by 19.7 percent. The results however show a weak significant effect of SPP on CA. It is, therefore, concluded that the involvement of suppliers in managing supply chain quality will significantly increase competitive advantage by 19.7 percent.

Suppliers are very important because they provide the inputs required for business operations. Supplier involvement equips the organisations with

insightful information to effectively absorb suppliers' ideas into new products or process development (Cheng & Krumwiede, 2018). Therefore, strategically involving them in quality-related decision-making processes enhances business efficiency. This study revealed that the competitive advantage of the food processing firms increases by 19.7 percent when suppliers are involved in managing quality-related issues in the supply chain. The study also revealed that allowing supplier participation is a major driver for quality product output. Bettiga and Ciccullo (2019) asserted that for effective and efficient development of an optimum shared solution, all participants, including suppliers, should be recognized as equal and joint problem solvers. That is, suppliers are able to contribute expertise in the supply market when the firms involve them in designing and developing new products.

The study revealed that suppliers provide valuable information such as alternative raw materials, new sources of supply, market trends, and supply fluctuation, among others. Therefore, they allow and encourage the suppliers to suggest improvements in their existing and new products because supplier involvement is very crucial, particularly in new product design and development. Wang, Modi, and Schoenherr (2021) posited that while firms may capitalize on internal sustainable design practices to develop profitable and environmentally sustainable new products, the new trend is to leverage the expertise of suppliers in such endeavors. When firms avoid suppliers during the new product design stage, it becomes challenging for them to obtain the right quality and quantity of raw materials. The respondents highlighted that even where the right quality and quantity of suppliers abound, getting those supplies are a relatively lower price and within a specified time because challenging

when major suppliers for strategic items are not involved at the early stages of product development.

Not limited to the involvement of the suppliers in product design, the study also revealed that they consult and refer to their suppliers' opinions about product prototypes, consider their suggestions and mutually resolve any quality concerns. In addition, they indicated that they proactively share crucial information with suppliers to enable such suppliers to align with the quality requirements of the firm. Information flows to and from both directions of the supply chain– upstream and downstream– and enables supply chain partners in strategic decision-making (Xiao, Petkova, Molleman, & van der Vaart, 2019). The respondents indicated that inasmuch as they share crucial information with suppliers, they also encourage information sharing by suppliers, and this helps them to plan and set strategies in managing quality in the supply chain which eventually enhances their competitive advantage. Cheng and Krumwiede (2018) revealed that information shared by suppliers enables firms to absorb the suppliers' ideas into product or process development.

The firms under study also specified that they include their suppliers in continuous improvement programs for capacity building. Besides, where necessary, they also provide tangible and intangible resources to the suppliers to equip and motivate them to participate in managing quality issues in of the focal firms. For an effective and efficient creation of optimum shared solutions, all members including suppliers should be recognized as equal and joint problem solvers (Bettiga & Ciccullo, 2019). According to the study, all the aforementioned practices in relation to supplier involvement enable the food processing firms to enhance their competitive advantage. A comparative study

of quality management practices by Nguyen, Anh, and Matsui (2021) resulted that the involvement of suppliers has a positive impact on quality improvement and process control.

Previous studies that support or validate supplier participation as a major contributor to sustained competitive advantage and overall performance as subsequently discussed. A study by Feng, Sun, and Zhang (2010) about how supplier and customer involvement influence the competitive advantage of manufacturing firms in China revealed that supplier involvement reduces cost, hence enabling the firms under study to produce and sell at a lower cost and price, making it possible to achieve competitive advantage. Wagner (2016) also revealed that supplier development strategies such as supplier participation or involvement and improving supplier relationships substantially support the buying firms' competitive strategies. Wang, Modi, and Schoenherr (2021) discovered that while firms may capitalize on internal capabilities for profitability and new product development, the modern trend is to rely on the knowledge of suppliers, hence supplier involvement is key to achieving competitive advantage.

Supplier Quality and Competitive Advantage

The third research hypothesis was also tested and, as indicated in Table 8, the t-stat for supplier quality (SQ) is 2.471 and its p-value is 0.014. With the t-stats >1.96 and p-value <0.05, the results demonstrate support for the study's hypothesis. That is, the hypothesis that there is a significant positive effect of SQ on competitive advantage (CA) was supported. In view of that, any unit change in SQ tends to cause an increase in CA. The β value of 0.232 indicates

that any significant increase in SQ will result in a significant unit increase in CA by 23.2 percent. This reveals that the effect of SQ on CA was positive but weak. Therefore, it is concluded that SQ plays a significant positive but weak role in causing a change in CA.

The study revealed that supplier quality is vital in improving the competitive advantage of food processing firms. As part of the measures to ensure that the firms maintain quality suppliers, the respondents indicated that they regularly conduct supplier audits. In doing so, they focus on areas such as suppliers' reputation and track record for quality, manufacturing and engineering processes, customer complaints, and product quality mechanisms such as quality control and quality assurance practices. This helps in resolving and preventing identified misalignments and gaps related to suppliers' quality efficiency.

Apart from the suppliers' audit, the respondents also indicated that they have detailed information about suppliers' performance. Thence, they only deal with suppliers with continuous improvement towards quality. The firm also enters into special contracts with a supplier with improved performance. Even where such special agreements are entered, the respondents revealed that they continuously monitor such suppliers' compliance with quality standards and requirements. Therefore, underperforming suppliers are cautioned and subsequently avoided in the procurement process. The food processing firms also indicated that they recognize feedback as part of the quality improvement activities hence their suppliers are always given feedback concerning the performance of their products.

The respondents revealed that they have frequent face-to-face communication with key suppliers to additionally examine and mutually solve the quality-related issue. They also participate in suppliers' activities related to quality, and where appropriate, suppliers are given the resources required to upgrade their quality offerings. They also indicated that where the resource investment in supplier quality is huge, they rely on the gain-sharing model to have a special agreement with the suppliers. To achieve supplier quality, the respondents also indicated that they are able to influence main suppliers' responsiveness to their quality requirements to get the best outcome. The food processing firms also revealed that they have formal procedures for evaluating and recognizing suppliers and during their procurement process, they regard product quality as a critical factor in selecting suppliers.

Previous studies that support or validate supplier quality as a major contributor to sustained competitive advantage and overall performance are subsequently discussed. Fening, Amaria, and Frempong (2016) found supplier quality management as a vital element of quality management since supplied materials are usually the major sources of quality concerns, and this contributes significantly to the firms' competitiveness. Yu and Huo (2019) also explored the association between relational capital, supplier quality integration, and operational performance. As part of their findings, the authors discovered that supplier quality integration completely mediates the relationship between relational capital and operational performance. A study by Rashidirad and Soltani (2021) revealed that supplier quality management positively influences the internal quality performance of firms through successful buyer-seller relationships, contributing to the buying firms' competitiveness.

Supplier Selection and Competitive Advantage

The fourth hypothesis that 'supplier selection has a significant positive effect on competitive advantage' was also tested, and its t-stat of 3.023 shows that the hypothesis was supported. This result indicates that supplier selection (SS) plays a significant role in improving the competitive advantage (CA) of the food processing firms within the Accra metropolis. The model also produced a β value of 0.215 and which shows SS has a positive but weak effect on CA. This implies that SS plays a significant positive but weak role in causing any change in CA. Therefore, for any variation in SS, CA will significantly improve by 21.5 percent. The results, therefore, demonstrate that supplier selection strategy as a practice of supply chain quality management significantly increases the competitive advantage of food processing firms.

As shown in the model, supplier selection plays a very significant role in increasing the competitive advantage of the food processing firms studied. That is, the firms are likely to lose their competitiveness when the right suppliers are not selected. Therefore, selecting the right suppliers is a greater strategic concern for business organisations. The implication is that, when the right suppliers are not selected, quality will be compromised since the least qualified supplier when contracted, would not be able to meet the quality levels expected. Therefore, prior to selecting suppliers, firms develop or adopt proven supplier selection criteria to evaluate the suppliers to select the most promising one.

In the context of this study, the respondents indicated product quality as part of the supplier selection strategies. This implies that suppliers with a poor track record in product quality stand the least chance of being selected. Only suppliers that can meet the specification of the procurement requirements are

selected. Another key supplier selection strategy indicated by the respondents is delivery reliability, which evaluates suppliers based on their ability to deliver procured supplies within schedule. That is, even if a particular supplier meets the threshold for product quality, such a supplier must also meet the delivery reliability so that the quality product procured will be available when needed.

Product performance and unit price of products were also considered by the respondents as part of the strategies for supplier selection. That implies that the food processing firms select suppliers who are reliable, and also supply the required items at a relatively lower price. Prices of raw materials affect production costs and also the pricing of goods. Therefore, if the firms can procure the requirement at a relatively reduced price, they are also able to sell their products at a reduced price, gaining a competitive edge over competitors. Furthermore, the respondents indicated that the scope of suppliers' resources as well as their technical expertise is also considered a criterion for supplier selection. These selection criteria enable the focal firms to determine the supplier's ability to meet delivery deadlines and also, their readiness to respond to unexpected demand.

The respondents also indicated that they also rely on third-party certification as part of the strategies to prequalify and select the suppliers. Such third-party quality certification includes those from the International Organisation for Standardization (ISO), Food and Drugs Board Authority (FDA), and Ghana Standards Authority (GSA). Suppliers bearing certificates from such independent third parties indicate that they have met some specified quality thresholds. Therefore, the firms evaluate and select suppliers based on their conformance to some of these perceived qualities.

Previous studies that indicate that supplier selection has a significant effect on competitive advantage are discussed. For example, a study by Famiyeh and Kwarteng (2018) about the impact of supplier selection strategies on competitive advantage and overall performance of firms in developing countries revealed that good supplier selection improves the buying firms' competitiveness and overall performance. Therefore, according to Taherdoost and Brad (2019), it is prudent to use structured decision-making processes including both qualitative and quantitative criteria when dealing with complex situations. Ullah and Narain (2020) also examined the impact of supplier selection and management techniques on the mass customization capabilities of Indian manufacturing firms. Their study revealed that with a focus on response and reconfiguration capability, all five measures of supplier selection had a substantial impact on the firms' mass customization capabilities.

Interaction Effect of Innovation on Supply Chain Quality Management Practices and Competitive Advantage.

The final hypothesis that innovation has a positive significant effect on the relationship between supply chain quality management practices and competitive advantage was tested. This was done by creating a second order construct which tested how innovation influences the composite SCQMP and competitive advantage of food processing firms. As indicated in Table 8, this hypothesis (H_5) was not supported since it did not meet the thumb rule of the t-stats being >1.96 and p-value being <0.05. The t-stats for the moderator–innovation (INN) was 0.168 which is <1.96 and the p-value is 0.867 which is >0.05. This implies that INN as a moderator's role in improving the competitive advantage of food processing firms within the Accra Metropolis is insignificant.

Therefore, the study did not support hypothesis H_5. The model also produced a β value of 0.067 which specifies that the effect of INN on CA is positive but very weak. That means that INN's role in causing any change in CA is positive but insignificant and very weak. The β value implies that any variation in INN will improve by only 6.7 percent and that is insignificant. These results, therefore, recommend that for INN to be significant and have a positive strong effect on CA, food processing firms should invest more resources to improve their products and business processes.

Previous studies, however, contradicted the findings of this study that innovation had no impact on competitive advantage. For example, Anning-Dorson (2018) examined how emerging market firms in India and Ghana create competitive advantage through innovation, and the study found that innovation has a positive relationship with a competitive advantage. A study by Chahal and Bakshi (2015) also found that innovation fully mediates the relationship between intellectual capital and competitive advantage. Furthermore, Al-Khatib and Al-ghanem (2021) assessed the impact of radical innovation and incremental innovation on competitive advantage. The study revealed that both radical and incremental innovation explains more than half, that is, 60.2 percent of the variance in competitive advantage and that both constructs have a statistically significant effect on competitive advantage. Al-Abdallah and Al-Salim's (2021) hypothesis that green innovation has a statistically significant positive impact on competitive advantage was confirmed.

Explanation of Target Endogenous Variable Variance

The model's predictive accuracy is presented under this session by reporting the coefficient of determination (R^2) score. Other key estimations such as predictive relevance (Q^2) based on the Stone-Giesser's test, effect size (f), and the model's relative impact score (q^2). Table 9 presents the output of these elements.

Table 9: Explanation of Target Endogenous Variable Variance.

L.V	R^2	f^2	Q^2	q^2
CA	0.179		0.113	
CF		0.053	0.084	0.33
INN		0.022	0.103	0.088
SP		0.034	0.095	0.159
SQ		0.056	0.082	0.035
SS		0.053	0.084	0.033

Note: L.V = Latent variable, R^2 = R squared, f^2= effect size, Q^2 = predictive relevance, q^2 = relevant impact of the model.
Source: Field Survey, Buer (2021)

In Table 9, the predictive relevance score using the R^2 value was first reported. The R^2 represents the combined contributions of the independent constructs (SS, SQ, CF, and SP) to the dependent construct (CA) (Hair et al., 2017). That is the R^2 measures the proportion of variations in the dependent variable that can be attributed to the independent variable. In the context of this study, the R^2 shows the change in CA that is linearly accounted for by the combination of the four supply chain quality management practices: SS, SQ, CF, and SP. According to Hensler et al. (2009), R2 values <0.29, 0.29 – 0.67, and >0.67 indicate weak, moderate, and substantial contributions of the independent variables to the dependent variable.

As shown in Table 9, the R^2 value was 0.179 and that means that the supply chain quality management practices collectively account for about 17.9 percent of change in competitive advantage. That is, the implementation of the four supply chain quality management practices will contribute about 17.9 percent to any change in competitive advantage. Therefore, and per the context of this study, collectively, these practices' (SS, SQ, CF, and SP) contribution to any change in the competitive advantage of the food processing firms is weak based on Hensler et al's (2009) aforementioned criteria. As such, other independent constructs such as total quality management, supply chain collaboration, and supply chain integration among others collectively accounts for the remaining 83.1 percent.

Table 9 also shows the effect size (f^2) of each independent construct using Cohen's (1988) impact criterion. According to Cohen (1988), values 0.02, 0.15, and 0.35 indicates small, medium, and large effect size respectively. From the table, INN had the lowest f^2 value of 0.022 and SQ had the highest f^2 value which is 0.056. Also, CF and SS each had the second highest f^2 value of 0.053 and lastly, SP came third highest with an f^2 value of 0.034. Based on Cohen's (1988) aforementioned criterion, all the practices had small effect sizes > 0.02 but < 0.15. This result indicates that, relatively, when all these practices are implemented, supplier quality will have a higher effect on competitive advantage. Supplier participation will have the least effect on the competitive advantage of the food processing firms.

The next element in the table is the model's predictive relevance based on Stone-Geisser's (Q^2) test (Hair et al., 2014). Roldán and Sanchez-Franco (2012) mentioned that Q^2 is analyzed by removing part of the data from the matrix, analyzing the model, and predicting the removed part using estimations. Chin (2010) suggested that predictive relevance is achieved if its values are greater than zero for the construct. According to Henseler et al. (2009), $0.02 \leq Q^2 < 0.15$ shows a weak effect, and $0.15 \leq Q^2 < 0.35$ shows a moderate effect whiles $Q^2 > 0.35$ indicates a strong effect. Sarstedt et al. (2014) posited that Q^2 is purposed to show predictions but does not show the quality of the prediction. From the figures present in the table, all the Q^2 values were > 0 and also fall within the $0.02 \leq Q^2 < 0.15$ and which shows a weak predictive relevance.

The quality of the predictive relevance of the constructs was assessed by reporting the q^2 values. The q^2 values were calculated using the formula: $q^2 = (Q^2 \text{ included} - Q^2 \text{ excluded}) / (1 - Q^2 \text{ included})$. The results were interpreted using Hensler et al (2009)'s criterion. From the table, the q2 values INN=0.088, SQ=0.035 and SS=0.33 were < 0.15 whiles those for SP=0.159 and CF=0.33 were >0.15 but <0.35. These results indicate that the quality of the model ranges between weak and moderate. Notwithstanding that, the q^2 values for all the endogenous variables (SS, SQ, SP, and CF) were >0 since they can explain the exogenous variable (CA). Moreover, Henseler et al. (2014) also emphasized that q^2 values show quality predictive relevance when they are more than zero.

Theoretical Implication of the Findings

The study contributes to knowledge in supply chain management by examining how quality management at the supply chain level affects food processing firms in Accra Metropolis. The RBT and the ERBT's position that food processing firms can gain a competitive advantage by capitalizing on their internal and external resources was confirmed in this study. That is, quality as a valuable, rare, inimitable, and organized resource which is usually embedded in the food processing firms' human resources and strategies concerning customer focus, supplier quality, supply selection, and supplier involvement, enables the food process firms to achieve competitive advantage. This implies that the RBT and the ERBT are significant positive predictors of the competitive advantage of food processing firms in Accra Metropolis. Even though the R-A prides itself on innovation as a key resource to achieving competitive advantage, this was not confirmed in this study, as innovation did not influence the relations studied.

Managerial implication of the findings

The findings of this study proved that SCQMP improves the competitive advantage of food processing firms within the Accra Metropolis. That is, when managers of the food processing firms implement these quality management practices at the supply chain level, it will improve the competitiveness of their firms in areas including product quality, lower-cost production, customer satisfaction, and shortened lead time, among others. Managers of food processing firms should formulate policies and strengthen existing ones concerning supply chain quality management. Aside from policy formulation,

when managers of food processing firms show immerse support and show commitment in terms of resource allocation among others in the management of quality at the supply chain level, it will enhance the competitiveness of the firms.

Chapter Summary

This present chapter discussed the results of the study. In light of that, the chapter established that all the four supply chain management quality management practices namely, customer focus, supplier selection, supplier quality, and supplier participation, have a statistically positive and significant effect on the competitive advantage of the food processing firms within the Accra Metropolis. The study, however, revealed that innovation did not influence the relationship between supply chain quality management practices and the competitive advantage of the food processing firms. The next chapter presents the summary, conclusions, and recommendations of the study.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The study researched how supply chain quality management practices influence the competitive advantage of food processing firms in Ghana, and how innovation affects the relationship between these two variables. This chapter presents an overview of the study in brief. It begins with an overview of the purpose of the study, the research hypothesis that guided the study, and the research methods employed. It then summarizes the major findings, concludes, makes recommendations based on the key findings of the study, and finally gives suggestions for future research based on the limitations of the study.

Summary of this Study

The study investigated how supply chain quality management practices affect the competitive advantage of food processing firms within the Accra Metropolis and how innovation influences the relationship. Previous studies have looked at how quality management philosophies and approaches such as total quality management, kaizen, quality control, quality assurance, and lean-sigma among others affect the performance of both manufacturing and service provision firms across several sectors such as hospitality, pharmaceuticals, electrical and electronic gadgets, and food processing. Those studies focused on the traditional approach to managing quality which is organisational specific.

Despite its relevance, one of the critiques of those approaches is that they are yet to recognize quality management at the supply chain level because "the supply chain is as weak as its weakest link." The need to promote the extension of quality management beyond the boundaries of firms to the supply chain level necessitated this research. The specific objectives of this research, therefore, were to:

1. determine the effect of customer relation on the competitive advantage of food processing firms within the Accra Metropolis.
2. understand the role of supplier participation on the competitive advantage of food processing firms within the Accra Metropolis.
3. assess the contribution of supplier selection to the competitive advantage of food processing firms within the Accra Metropolis.
4. examine the influence of supplier quality on the competitive advantage of food processing firms within the Accra Metropolis.
5. assess the moderating role of innovation on the relationship between supply chain quality management practices and the competitive advantage of food processing firms within the Accra Metropolis.

The study was underpinned by the resource base theory, the extended resource-based theory, and the resource advantage theory. These interrelated theories suggest that firms can achieve sustained competitive advantage and overall performance if they are able to capitalize on their unique resources within and beyond their boundaries, as well as incremental or radical changes geared towards continuous improvement. The study was quantitative therefore it employed a structured questionnaire for data collection from respondents who are key personnel in the food processing firms within the Accra metropolis.

The study employed the census technique to gather data from 206 respondents but obtained a valid response of 166 which accounted for 80.5% of the targeted respondents. Respondents were assured of their anonymity and the confidentiality of the information to be provided. Also, all COVID-19 safety protocols were strictly adhered to. Respondents had the option to answer the printed hardcopy questionnaire or answer online on google forms of which links to the forms were made available to them. The study also avoided the use of children since they are considered vulnerable. Field assistants were above 18 years old and prior to the data collection, they were trained for two days on the procedure and ethical considerations for the data collection. Prior to the commencement of the study, ethical clearance was sought and obtained from the University of Cape Coast's Institutional Review Board.

The Statistical Package for the Social Sciences (SPSS version 26) and the Smart Partial Least Squares Structural Equation Modeling (PLS-SEM version 3.3) data processing software was used to process the data and generate output for interpretation. The SPSS was useful for data input and data cleaning as well as validation and generation of output on demographic characteristics of the respondents. The SMART PLS was used for the variance-based structural equation modeling using the partial least squares path modeling method. The PLS-SEM method was used because it enables researchers to estimate complex models with many constructs, indicator variables, and structural paths without imposing distribution assumptions on the data. It enabled the generation of inferential statistics such as the testing of the hypotheses for this study. The study's key findings are summarized in the subsequent sections.

H_1: Customer focus has a significant influence on competitive advantage.

Firstly, the study examined how customer focus affects the competitive advantage of food processing firms within the Accra metropolis. The results indicated that customer focus had a significant positive and strong effect on competitive advantage. This implies that understanding and fulfilling customers' quality requirement in the supply chain is critical to enhancing the competitive advantage of the food processing firms. Statistically, a unit increase in customer focus could result in a unit increase in competitive advantage in terms of product quality, customer satisfaction, shorter lead time, and cost/price reduction. Therefore, per the context of this study, customer focus is found to improve the competitive advantage of the food processing firms within the study area.

H_2: Supplier participation has a significant effect on competitive advantage.

Secondly, the study investigated how supplier participation influences the competitive advantage of food processing firms in relation to price/cost reduction, customer satisfaction, product quality, and lead time. The results revealed that involving suppliers in managing quality had a significant positive and strong effect on the competitive advantage of the food processing firms studied. Statistically, the study found that a unit increase in supplier involvement significantly leads to a unit increase in the competitive advantage of food processing firms in Ghana. That is, there is a tendency for the food processing firms to improve their competitive advantage if they invest in suppliers and also allow them to partake in quality management in relation to quality supplies, and product design among others.

H_3: Supplier selection significantly influences competitive advantage.

Thirdly, the study assessed how supplier selection criteria such as price and supplier quality certification influence the competitive advantage of the food processing firms. The results showed that supplier selections had a significantly positive and strong effect on competitive advantage. Statistically, the assessment proved that a unit change in the competitive advantage of the firms under study could result from a unit increase in supplier selection. That is, when suppliers are strategically selected based on some predetermined quality criteria such as proven track record and continuous improvement in quality supplies, it will have a positive effect on the competitiveness of the food processing firms concerning product quality, customer satisfaction, shortened lead time and price/production cost reduction. Therefore, supply selection is critical to enhancing the competitive advantage of the food processing firms in Ghana.

H_4: Supplier quality has a significant effect on competitive advantage.

Fourthly, research objective four examined how supplier quality management affects the competitive advantage of the food processing firms in Ghana. The study found that supplier quality had a substantially positive and strong influence on the competitive advantage of the food processing firms. This implies that, statistically, a unit increase in supplier quality management will cause a unit increase in the competitive advantage of the firms under study. The food processing firms' competitive advantage with regards to lead time, cost reduction, product quality, and customer satisfaction will improve when they monitor suppliers' compliance with quality standards, regularly conduct

supplier audits and frequently participate in supplier activities related to quality. In concision, supplier quality management was found to significantly play a critical role in improving the competitive advantage of the food processing firms in Ghana.

H_5: The effect of supply chain quality management practices on competitive advantage is stronger when innovation is high.

Finally, objective five investigated whether or not the presence of innovation as a moderating variable had any effect on the relationship between supply chain quality management practices and the competitive advantage of the food processing firm within the country. Quite unusual and per the context of this study, the study revealed a shocking result indicating that innovation in business processes and products had no influence on the competitive advantage of the food processing firms in Ghana. That is, statistically, a unit increase or decrease in innovation has no influence on the relationship between supply chain quality management practices and the competitive advantage of the food processing firms. This could be a result of the relatively smaller sample size used for the study and also the limited geographical area of the study.

Conclusions

The study examined the relationship between supply chain quality management practices and the competitive advantage of food processing firms with innovation as a moderator. There were five specific objectives and the following are conclusions from its major findings.

Concerning the first objective, the study found that customer focus statistically enhances the competitive advantage of food processing firms in Ghana. This finding confirms previous studies which found that customer focus is a key measure of supply chain quality management and also enhances competitive advantage and overall firm performance. Customer focus is considered a major dimension because it enables the food processing firms to understand the quality requirement from the perspective of the customer, and its fulfillment in turn enhances their competitive advantage. The study concludes that customer focus plays a critical role in improving the competitiveness of food processing firms. This is because, among other things, it enables such firms to have close contact with major customers concerning quality management; encourage customers to share quality requirements forecasts with them and evaluate both formal and informal customer complaints concerning quality issues.

The study also found supplier participation in quality management issues to significantly improve the competitive advantage of the firms studied. This finding is also in line with previous studies which found that suppliers' involvement in managing quality enhances competitive advantage and overall performance of firms. Strategically, such studies proposed that suppliers' involvement is needed in designing quality products and even the entire production process since they can contribute valuable resources such as information and expertise to focal firms.

Therefore, food processing firms should establish continuous improvement programs that include suppliers and also involve them in new product development processes since those strategies decrease cost, enhance

customer satisfaction, and improves product quality. The study concludes that supplier involvement in managing quality within the supply chain significantly improves the competitive advantage of the food processing firms within the study area. Therefore, food processing firms should consider it a priority.

Objective three also found that supplier selection substantially improves the competitive advantage of food processing firms in Ghana. Similarly, previous studies reported that manufacturing firms that use determined strategies to select prospective vendors sustain their competitive advantage and increase performance. Predetermined supplier selection standards disqualify incapable suppliers and ensure that only suppliers that are competent enough get selected. The studies pointed out technical and financial capabilities, financial capabilities, availability of skilled workforce, suitable building infrastructure, adequate production capacity and machinery, and quality supplies as part of the supplier selection strategies.

Suppliers play a key role in the supply chain hence selecting the best one enables focal firms to obtain raw materials in the right quality, right quantity, reduced price, right time, and the right place, and also ensure supply security during supply shortages and price fluctuations. This helps the focal firms to meet customer requirements and satisfaction, and therefore increase competitive advantage. It is concluded that supplier selection enhances the competitive advantage of food processing firms.

In terms of objective four, the study revealed that supplier quality also significantly increases the competitive advantage of food processing firms in Ghana. This outcome is supported by previous related literature which revealed that regularly conducting supplier audits, regarding product quality as a critical

factor for selecting suppliers, monitoring suppliers' compliance with quality standards, training and educating suppliers about quality-related issues, and continuous improvement programs develop and enhances their capabilities. Hence, it enables the focal firms to obtain quality supply and relationships and this helps them to meet and even exceed customer needs. As a result, that enhances the performance of the firms, and therefore, gives them a competitive edge over their rivals. Relatively, supplier quality management as a dimension of supply chain quality management practices enhances the competitive advantage of the food processing firms within Ghana. It is, therefore, concluded that supplier quality is an important predictor of competitive advantage.

Finally, the last objective's motive of testing whether innovation had any influence on the relationship between supply chain quality management practices and competitive advantage revealed that the variable had no effect. That is, innovation as the moderator did not strengthen, diminish, negate, or alter the relationship of the dependent and independent variables. This is quite different from previous studies which showed that innovation affects competitive advantage and overall performance of firms.

Recommendations

Based on the key findings of the study, the following recommendations are made to supply chain managers, quality experts, firms in both manufacturing and service provision, and policymakers across various business organisations.

With customer focus enhancing competitive advantage, the study recommends that supply chain managers and policymakers, including management of the food processing firms, should continuously engage their

customers to understand their needs. They should invest in building and managing efficient relationships with their key customers to understand their needs relating to quality requirements. Efficient communication should be encouraged to allow timely and free flow of information. This will enable the managers or organisations to understand customers' concerns and address them. Feedback from customers should be encouraged and customer complaints – both formal and informal, should be timely evaluated and addressed. Customers should also be included in quality improvement programs and efforts so that their needs will always be addressed. Procedures for customers to seek assistance should also be simple so that such methods do not complicate whatever problems to be resolved.

For objective two, the study encourages the management of food processing firms to involve key suppliers in quality management since it was found that supplier involvement enhances competitive advantage. Suppliers are able to make significant contributions to product design and this improves product quality. Based on their expertise in the supply market, they are able to give valuable information concerning supply security, alternative sources of supply, availability of material substitutes, and inventory management, among others. Focal firms are therefore encouraged to provide both tangible and intangible resources to suppliers where necessary to boost their capabilities to meet quality expectations. Continuous improvement programs such as training of suppliers' staff on quality improvement strategies should also be established. Focal firms should also make it flexible for suppliers to suggest improvements in existing or new products. Early involvement of suppliers in product design,

prototype evaluations, and actual productions enhances overall product quality and customer satisfaction.

Objective three revealed that supplier selection also contributes to the competitive advantage of food processing firms. As such, it is recommended that policymakers for such firms and others implement robust supplier selection strategies that will enable them to get the most promising and competent suppliers. If proven selection criteria are not adopted to evaluate and qualify suppliers, the least qualified supplier is likely to be contracted. When that happens such a supplier is likely to offer substandard supplies which may lead to poor quality products, customer dissatisfaction, decreased market share, drop in profit margin, and negatively affect competitive advantage and overall performance of firms. Therefore, firms such as those in food processing should pay attention to suppliers' ability to meet delivery dates or deadlines, their conformance and performance to perceived quality, their ability to meet unexpected demands, and also third-party quality certification, when they are prequalifying potential suppliers.

Objective four discovered that managing supplier quality has the tendency to significantly enhance the competitive advantage of food processing firms. The quality of a supplier reflects in the products and services it offers. Therefore, it is recommended that policymakers and managers of food processing firms will regard product quality as a critical factor in selecting suppliers. Also, they should enter special contracts with a supplier with improved performance in quality offerings. Focal firms should also dedicate time and other resources to strategically monitor suppliers' compliance with quality standards and requirements. To do this, the firms should regularly

conduct site visits at the suppliers' premises to gain practical insights into their operations. Regular face-to-face meetings should also be conducted. Feedback on the performance of suppliers' products should be communicated to them including reg flags concerning quality. Food processing firms should also frequently participate in suppliers' activities and programs related to quality improvements.

Concerning objective five, it was expected that innovation in business processes and products could strengthen the relationship as proved by other studies in the past. Contrary to a majority of those studies, innovation as a moderator in this research showed no effect on the relationship between the dependent and independent variables. This could be due to the limited number of data collected, and also the scope of the study focusing on food processing firms situated within Accra Metropolis alone. It could also be that the firms under study were not adopting the right innovational activities. It is, therefore, recommended that managers of food processing firms and policymakers will increase their commitment to research and development efforts. That will enable them to continuously improve existing products, replace products that are being phased out, launch customized products due to market demands, and continuously pursue continuous innovation in core processes. These incremental and radical improvements will enhance customer satisfaction and lead to sustained competitive advantage and overall performance.

Recommendation on National Policy

It is recommended that government institutions such as the Food and Drugs Authority and the Ghana Standards Authority will formulate national

policies that look beyond quality management at the firm-specific level to include entire supply chains of the focal firms. For example, firms should be required to present strategies they employ or intend to implement to manage quality at the supply chain level, including both upstream and downstream sides of the supply chain. There should also be a national policy necessitating the need for food processing firms to follow predetermined supply chain quality management principles and practices. The supply chain quality management practices studied: customer focus, supplier quality, supplier selection, and supplier involvement, should be made a key policy in supply chain quality management in the food processing sector since they proved to enhance the competitiveness of these firms in terms of product quality, customer satisfaction, and shortened lead-time.

Suggestions for Further Research

Based on the study's objectives, methodology, findings, and limitations, the following suggestions are made for future research. The study mainly focused on supply chain quality management practices and the competitive advantage of food processing firms located within the Accra Metropolis. That limited participation of food processing firms in other regions mainly because of covid-19 restrictions. For that reason, the study's findings were restricted to the opinions and suggestions of the food processing firm in the aforementioned study area. In view of that, it is suggested that further research will include all or majority of food processing firms across the country.

The study was also solely quantitative hence it is suggested that further research will employ the mix research methods which uses both the quantitative

and qualitative research approach. Using the qualitative method, in addition, will enable the researcher to gain a deeper understanding of the phenomenon or specific issues under study to produce in-depth empirical results. A case study approach could also be employed to provide insightful information about supply chain quality management practices and their effect on competitive advantage and the overall performance of firms.

It is further recommended that similar studies should be conducted to cover other manufacturing sectors such as pharmaceuticals, automobiles, electrical equipment, electronic gadgets, clothing and textile, furniture, refined petroleum products, soap, and detergent, among others, to examine the effect of supply chain quality management practices on their competitive advantage and overall business performance. Furthermore, future researchers could also repeat the study to confirm the reliability of the instruments adopted and modified to suit the current study. Finally, the study could also be repeated in other developing countries to assess whether or not its findings confirm that of this study.

REFERENCES

Abdallah, A. B., Alfar, N. A., & Alhyari, S. (2021). The effect of supply chain quality management on supply chain performance: The indirect roles of supply chain agility and innovation. *International Journal of Physical Distribution & Logistics Management*, *51*(7), 785-812.

Abdollahi, M., Arvan, M., & Razmi, J. (2015). An integrated approach for supplier portfolio selection: lean or agile? *Expert Systems with Applications*, *42*(1), 679-690.

Ackah, C., Adjasi, C., & Turkson, F. E. (2016). *Industrial policy in Ghana: Its evolution and impact.* Accra, Ghana: University of Ghana Press.

Addae-Korankye, A. (2013). Total quality management (TQM): A source of competitive advantage. a comparative study of manufacturing and service firms in Ghana. *International Journal of Asian Social Science*, *3*(6), 1293-1305.

Agyabeng-Mensah, Y., Ahenkorah, E., Afum, E., & Owusu, D. (2020). The influence of lean management and environmental practices on relative competitive quality advantage and performance. *Journal of Manufacturing Technology Management*, *31*(7), 1351-1372.

Agyapong, D. (2020). Analysing financial risks in small and medium enterprises: evidence from the food processing firms in selected cities in Ghana. *International Journal of Entrepreneurial Behaviour & Research*, *27*(1), 45-77.

Ajayi, V. O. (2017). Primary sources of data and secondary sources of data. *Benue State University*, *1*(1), 1-6.

Akinlua, S., & Haan, P. (2019). Comparing and contrasting descriptive designs: Observational studies, correlational research, developmental design and survey research. *Journal of Quantitative Studies*, *12*(2), 192-211.

Al-Abdallah, G. M., & Al-Salim, M. I. (2021). Green product innovation and competitive advantage: an empirical study of chemical industrial plants in Jordanian qualified industrial zones. *Benchmarking: An International Journal*, *28*(8), 2542-2560.

Alam, M. K. (2020). A systematic qualitative case study: Questions, data collection, NVivo analysis and saturation. *Qualitative Research in Organisations and Management: An International Journal*, *16*(1), 1-31.

Aldridge, D. (2018). Religious education's double hermeneutic. *British Journal of Religious Education*, *40*(3), 245-256.

Alegre, J., Lapiedra, R., & Chiva, R. (2006). A measurement scale for product innovation performance. *European Journal of Innovation Management*, *9*(4), 333-346.

Alembummah, A. B. (2015). *Entrepreneurial orientation and SME growth: A study of the food processing sector of Ghana* (Doctoral dissertation, University of Ghana).

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

Al-Khatib, A. W., & Al-ghanem, E. M. (2021). Radical innovation, incremental innovation, and competitive advantage, the moderating role of technological intensity: Evidence from the manufacturing sector in Jordan. *European Business Review*, *34*(3), 344-369.

Ali, M. (2021). Imitation or innovation: To what extent do exploitative learning and exploratory learning foster imitation strategy and innovation strategy for sustained competitive advantage? *Technological Forecasting and Social Change*, *165*, 120527.

Ali, S., Wu, W., & Ali, S. (2021). Adaptive marketing capability and product innovations: the role of market ambidexterity and transformational leadership (evidence from Pakistani manufacturing industry). *European Journal of Innovation Management*, *25*(4), 1056-1091

Alqershi, N., Ismail, A. I., Abualrejal, H., & Salahudin, S. N. (2020). Competitive advantage achievement through customer relationship management dimensions. *The Journal of Distribution Science*, *18*(11), 61-67.

Ampah, J., Ribeiro, J. X. F., Bugyei, K. A., Kumi, F., Akowuah, J. O., Ofori, H., & Otchere, C. (2021). Status, challenges and prospects of food processing equipment fabricators in Ghana. *Scientific African*, 01, 843.

Andam, K., & Asante, S. (2018). Determinants of firm exit and growth in the food processing sector: Evidence from Ghana. *Journal of Agriculture and Applied Sciences*, *34*(3), 345-379

Anil, A. P., & Satish, K. P. (2019). Enhancing customer satisfaction through total quality management practices–an empirical examination. *Total Quality Management & Business Excellence*, *30*(14), 1528-1548.

Anil, A. P., & Satish, K. P. (2019). TQM practices and its performance effects–an integrated model. *International Journal of Quality & Reliability Management*, *36*(8), 1318-1344.

Anning-Dorson, T. (2018). Innovation and competitive advantage creation: The role of organisational leadership in service firms from emerging markets. *International Marketing Review*, *35*(4), 580-600.

Armstrong, C. E., & Shimizu, K. (2007). A review of approaches to empirical research on the resource-based view of the firm. *Journal of Management*, *33*(6), 959-986.

Arya, B., & Lin, Z. (2007). Understanding collaboration outcomes from an extended resource-based view perspective: The roles of organisational characteristics, partner attributes, and network structures. *Journal of Management*, *33*(5), 697-723.

Astuty, W., Zufrizal, Z., Pasaribu, F., & Rahayu, S. (2021). The effects of customer relationship management, human resource competence and internal control systems on the effectiveness of supply chain management in the Indonesian public sector. *Uncertain Supply Chain Management*, *9*(3), 595-602.

Arain, M., Campbell, M. J., Cooper, C. L., & Lancaster, G. A. (2010). What is a pilot or feasibility study? A review of current practice and editorial policy. *BMC Medical Research Methodology*, *10*(1), 1-7.

Attakora-Amaniampong, E., Salakpi, A., & Bonye, F. (2014). Total Quality Management and its impact on the level of customer focus within construction project management in Ghana. *International Journal of Business and Management Invention*, *3*(7), 36-48.

Attakora-Amaniampong, E., Salakpi, A., & Bonye, F. (2014). Total quality management and its impact on the level of customer focus within construction project management in Ghana. *International Journal of Business and Management Invention*, *3*(7), 36-48.

Ayala, N. F., Gaiardelli, P., Pezzotta, G., Le Dain, M. A., & Frank, A. G. (2021). Adopting service suppliers for servitisation: Which type of supplier involvement is more effective? *Journal of Manufacturing Technology Management*, *32*(5), 977-993.

Aydin, H. (2020). Market orientation and product innovation: the mediating role of technological capability. *European Journal of Innovation Management*, *24*(4), 1233-1267.

Ayers, J. B. (2001). *Handbook of supply chain management*, Florida, United States: St. Lucie Press.

Bagchi-Sen, S. (2001). Product innovation and competitive advantage in an area of industrial decline: The Niagara region of Canada. *Technovation*, *21*(1), 45-54.

Ban, C. (2019). Beyond social science naturalism: The case for ecumenical interpretivism. *Critical Review*, *31*(3-4), 454-461.

Barnett, J., Begen, F., Howes, S., Regan, A., McConnon, A., Marcu, A., & Verbeke, W. (2016). Consumers' confidence, reflections and response strategies following the horsemeat incident. *Food Control*, *59*, 721-730.

Barney, J. B. (1986). Strategic factor markets: Expectations, luck, and business strategy. *Management Science*, *32*(10), 1231-1241.

Barney, J., Wright, M., & Ketchen Jr, D. J. (2001). The resource-based view of the firm: Ten years after 1991. *Journal of Management*, *27*(6), 625-641.

Barrett, S. (2009). *Anthropology: A student's guide to theory and method*. Toronto, Canada: University of Toronto Press.

Beamon, B. M. (1998). Supply chain design and analysis: Models and methods. *International Journal of Production Economics*, *55*(3), 281-294.

Bettiga, D., & Ciccullo, F. (2019). Co-creation with customers and suppliers: An exploratory study. *Business Process Management Journal*, *25*(2), 250-270.

Birou, L. M., & Fawcett, S. E. (1994). Supplier involvement in integrated product development: A comparison of US and European practices. *International Journal of Physical Distribution & Logistics Management*, *24*(5), 4-14.

Boddy, C. R. (2016). Sample size for qualitative research. *Qualitative Market Research: An International Journal*, *19*(4), 426-432.

Bolatan, G. I. S., Gozlu, S., Alpkan, L., & Zaim, S. (2016). The impact of technology transfer performance on total quality management and quality performance. *Procedia-Social and Behavioral Sciences*, *235*, 746-755.

Boru, T. (2018). Chapter five research design and methodology. *TB Lelissa. Research Methodology*. University of South Africa, PHD Thesis.

Bouncken, R. B., Clauß, T., & Fredrich, V. (2016). Product innovation through coopetition in alliances: Singular or plural governance? *Industrial Marketing Management*, *53*, 77-90.

Camisón, C., & Villar-López, A. (2014). Organisational innovation as an enabler of technological innovation capabilities and firm performance. *Journal of Business Research*, *67*(1), 2891-2902.

Carr, A. S., Kaynak, H., Hartley, J. L., & Ross, A. (2008). Supplier dependence: Impact on supplier's participation and performance. *International Journal of Operations & Production Management*, 28(*9*), 899-916.

Cavusgil, S. T., & Knight, G. (2015). The born global firm: An entrepreneurial and capabilities perspective on early and rapid internationalization. *Journal of International Business Studies*, *46*(1), 3-16.

Chahal, H., & Bakshi, P. (2015). Examining intellectual capital and competitive advantage relationship: Role of innovation and organisational learning. *International Journal of Bank Marketing*, *33*(3, 376-399.

Chang, Y. C., Chiu, W. H., Wang, J. H., & Teng, M. J. (2021). Customer involvement in the new process innovation: Antecedents, mediation and performance. *European Journal of Innovation Management*, *25*(4), 1115-1141.

Charterina, J., & Landeta, J. (2013). Effects of knowledge-sharing routines and dyad-based investments on company innovation and performance: An empirical study of Spanish manufacturing companies. *International Journal of Management*, *30*(1), 197.

Chen, M., Tang, T. Y., Wu, S., & Wang, F. (2020). The double-edged sword of coopetition: differential effects of cross-functional coopetition on product and service innovations. *Journal of Business & Industrial Marketing*, *36*(2), 191-202.

Cheng, C. C., & Krumwiede, D. (2018). Enhancing the performance of supplier involvement in new product development: the enabling roles of social media and firm capabilities. *Supply Chain Management: An International Journal*. 34(3), 354-379.

Chin, K. S., Duan, G., & Tang, X. (2006). A computer-integrated framework for global quality chain management. *The International Journal of Advanced Manufacturing Technology*, *27*(5-6), 547-560.

Choi, K., & Kim, S. W. (2008). From R&D to commercialization: A system dynamic approach. *Asian Journal on Quality*, *9*(3), 123-144.

Clemons, R., Baddam, S. R., & Henry, R. M. (2020). Factors influencing swift and effective resolution of supplier problems. *International Journal of Productivity and Performance Management*, *70*(3), 526-543.

Cooper, R. G. (1984). The strategy-performance link in product innovation. *R&D Management*, *14*(4), 247-259.

Correia, R. J., Dias, J. G., & Teixeira, M. S. (2020). Dynamic capabilities and competitive advantages as mediator variables between market orientation and business performance. *Journal of Strategy and Management*, *14*(2), 187-206.

Corry, M., Porter, S., & McKenna, H. (2019). The redundancy of positivism as a paradigm for nursing research. *Nursing Philosophy*, *20*(1), e12230.

Craney, T. A., & Surles, J. G. (2002). Model-dependent variance inflation factor cutoff values. *Quality Engineering*, *14*(3), 391-403.

Creswell, J. W. (2014). *Qualitative, quantitative and mixed methods approaches*. London, United Kingdom: Sage Publications, Inc.

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. London, United Kingdom: Sage Publications.

Croitoru, A. (2012). Schumpeter, JA, 1934 (2008), The theory of economic development: An inquiry into profits, capital, credit, interest and the business cycle. *Journal of Comparative Research in Anthropology and Sociology*, *3*(02), 137-148.

Crossan, F. (2003). Research philosophy: Towards an understanding. *Nurse Researcher*, *11*(1), 46.

Darroch, J. (2005). Knowledge management, innovation and firm performance. *Journal of Knowledge Management*, *9*(3), 101-115.

De Clercq, D., Thongpapanl, N., & Dimov, D. (2011). A closer look at cross-functional collaboration and product innovativeness: Contingency effects of structural and relational context. *Journal of Product Innovation Management*, *28*(5), 680-697.

Dicksen, P. R. (1996). The static and dynamic mechanics of competitive theory. *Journal of Marketing*, *60*(10), 102-106.

Dinesh, K. K. (2021). Strategic innovation and entrepreneurial ownership: An analysis using GEM data and fuzzy simulation. *Benchmarking: An International Journal*, *28*(10), 2896-2915.

Dixit, S., Singh, S., Dhir, S., & Dhir, S. (2021). Antecedents of strategic thinking and its impact on competitive advantage. *Journal of Indian Business Research*, *13*(4), 437-458.

Dzikunoo, J., Letsyo, E., Adams, Z., Asante-Donyinah, D., & Dzah, C. S. (2021). Ghana's indigenous food technology: A review of the processing, safety, packaging techniques and advances in food science and technology. *Food Control*, *127*, 108116.

Espino-Rodríguez, T. F., & Ramírez-Fierro, J. C. (2017). Factors determining hotel activity outsourcing. An approach based on competitive advantage. *International Journal of Contemporary Hospitality Management*, *29*(8), 2006-2026.

Etgar, M. (2008). A descriptive model of the consumer co-production process. *Journal of the Academy of Marketing Science*, *36*(1), 97-108.

Ettlie, J. E., & Sethuraman, K. (2002). Locus of supply and global manufacturing. *International Journal of Operations & Production Management*, *22*(3), 349-370.

Famiyeh, S., & Kwarteng, A. (2018). Supplier selection and firm performance: Empirical evidence from a developing country's environment. *International Journal of Quality & Reliability Management*, *35*(3), 690-710.

Feng, T., Sun, L., & Zhang, Y. (2010). The effects of customer and supplier involvement on competitive advantage: An empirical study in China. *Industrial Marketing Management*, *39*(8), 1384-1394.

Fening, F. A., Amaria, P., & Frempong, E. O. (2013). Linkages between total quality management and organizational survival in manufacturing companies in Ghana. *International Journal of Business and Social Science*, *4*(10).

Fening, F. A., Pesakovic, G., & Amaria, P. (2008). Relationship between quality management practices and the performance of small and medium size enterprises (SMEs) in Ghana. *International Journal of Quality & Reliability Management*, *25*(7), 694-708.

Ferdousi, F., Baird, K., Munir, R., & Su, S. (2019). Mediating role of quality performance on the association between organisational factors and competitive advantage. *International Journal of Productivity and Performance Management*, *68*(3), 542-560.

Flick, U. (2018). *An introduction to qualitative research*. London, United Kingdom: Sage Publications.

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

Foster Jr, S. T. (2008). Towards an understanding of supply chain quality management. *Journal of operations management*, *26*(4), 461-467.

Fu, X., Mohnen, P., & Zanello, G. (2018). Innovation and productivity in formal and informal firms in Ghana. *Technological Forecasting and Social Change*, *131*, 315-325.

Gallegos, J. F. D. C., & Miralles, F. (2021). Interrelated effects of technological and non-technological innovation on firm performance in EM–A mediation analysis of Peruvian manufacturing firms. *International Journal of Emerging Markets*, *11*(2),08-91.

Gao, D., Xu, Z., Ruan, Y. Z., & Lu, H. (2017). From a systematic literature review to integrated definition for sustainable supply chain innovation (SSCI). *Journal of Cleaner Production*, *142*, 1518-1538.

Gao, H., Ding, X. H., & Wu, S. (2020). Impact of knowledge search on product and process innovation: Mediating role of absorptive capacity and moderating role of IT capability. *European Journal of Innovation Management*, *25*(2), 325-346.

Gnanasekaran, S., & Velappan, S. (2006). application of analytical hierarchy process in supplier selection: An automobile industry case study. *South Asian Journal of Management*, *13*(4).

Gómez, J., Salazar, I., & Vargas, P. (2016). Sources of information as determinants of product and process innovation. *PloS One*, *11*(4), e0152743.

Gonzalez, M. E., Quesada, G., & Monge, C. A. M. (2004). Determining the importance of the supplier selection process in manufacturing: A case study. *International Journal of Physical Distribution & Logistics Management*, *34*(6), 492-504.

Grant, R. M. (1991). The resource-based theory of competitive advantage: implications for strategy formulation. *California Management Review*, *33*(3), 114-135.

Gray, D. E. (2019). *Doing research in the business world*. London, UK: Sage Publications.

Grove, S. K., & Cipher, D. J. (2017). *Statistics for nursing research*. Maryland Heights, United States: Riverport Lane Publication.

Grove, S. K., Gray, J. R., & Faan, P. R. (2019). *Understanding nursing research: First South Asia edition, e-book: Building an evidence-based practice*. India, South Asia: Elsevier, Inc.

Guerola-Navarro, V., Oltra-Badenes, R., Gil-Gomez, H., & Fernández, A. I. (2021). Customer relationship management (CRM) and Innovation: A qualitative comparative analysis (QCA) in the search for improvements on the firm performance in winery sector. *Technological Forecasting and Social Change*, *169*, 120838.

Gupta, S., Chatterjee, P., Yazdani, M., & Gonzalez, E. D. S. (2021). A multi-level programming model for green supplier selection. *Management Decision*, *59*(10), 2496-2527.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2-24.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2015). When to use and how to report the results of PLS-SEM. *European Business Review*, *32*(3), 22-236.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2018). When to use and how to report the results of PLS-SEM. *European Business Review*, *41*(9), 8-30.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2014). When to use and how to report the results of PLS-SEM. *European Business Review*, *60*(10), 223-244.

Hay, L., Duffy, A. H., Grealy, M., Tahsiri, M., McTeague, C., & Vuletic, T. (2020). A novel systematic approach for analysing exploratory design ideation. *Journal of Engineering Design*, *31*(3), 127-149.

Henao-García, E. A., & Montoya, R. A. C. (2021). Fostering technological innovation through management and marketing innovation. The human and non-technological linkage. *European Journal of Innovation Management*, *34*(2), 134-148.

Henseler, J. (2017). Bridging design and behavioral research with variance-based structural equation modeling. *Journal of Advertising*, *46*(1), 178-192.

Henseler, J. (2020). *Composite-based structural equation modeling: Analyzing latent and emergent variables*. New York, United States: Guilford Publications.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2014). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115–135.

Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2015). The use of partial least squares path modeling in international marketing. *Advances in International Marketing*, *20*, 277–319.

Henseler, J., Dijkstra, T. K., Sarstedt, M., Ringle, C. M., Diamantopoulos, A., Straub, D. W., … Calantone, R. J. (2014). Common beliefs and reality about PLS: Comments on Ronkko and Evermann (2013). *Organisational Research Methods*, *17*(2), 182–209.

Hennink, M., Hutter, I., & Bailey, A. (2020). *Qualitative research methods*. London, UK: Sage Publication, Inc.

Hili, P., Gani, M. U., Hamzah, N., Rahman, Z., & Sjahruddin, H. (2017). *Effect of human capital and leadership on institutions performance and competitive advantages*. Virginia, United States: Center for Open Science.

Hodgson, G. M. (1998). Evolutionary and competence-based theories of the firm. *Journal of Economic Studies*, *25*(1), 25-56.

Hong, J., Zhang, Y., & Shi, M. (2018). The impact of supply chain quality management practices and knowledge transfer on organisational performance: An empirical investigation from China. *International Journal of Logistics Research and Applications*, *21*(3), 259-278.

Hong, J., Zhou, Z., Li, X., & Lau, K. H. (2020). Supply chain quality management and firm performance in China's food industry: The moderating role of social co-regulation. *International Journal of Logistics Management*, *31*(1), 99-122.

Howell, K. E. (2013). *An Introduction to the philosophy of methodology*. London, United Kingdom: SAGE Publication.

Hunt, S. D. (1999). The strategic imperative and sustainable competitive advantage: Public policy implications of resource-advantage theory. *Journal of the Academy of Marketing Science*, *27*(2), 144-159.

Hunt, S. D. (2017). Strategic marketing, sustainability, the triple bottom line, and resource-advantage (RA) theory: Securing the foundations of strategic marketing theory and research. *AMS Review*, *7*(1), 52-66.

Hunt, S. D., & Davis, D. F. (2008). Grounding supply chain management in resource-advantage theory. *Journal of Supply Chain Management*, *44*(1), 10-21.

Hunt, S. D., & Morgan, R. M. (1996). The resource-advantage theory of competition: Dynamics, path dependencies, and evolutionary dimensions. *Journal of Marketing*, *60*(4), 107-114.

Huo, B., Ye, Y., Zhao, X., & Zhu, K. (2019). Supply chain quality integration: A taxonomy perspective. *International Journal of Production Economics*, *207*, 236-246.

Hutahayan, B., & Yufra, S. (2019). Innovation speed and competitiveness of food small and medium-sized enterprises (SME) in Malang, Indonesia: Creative destruction as the mediation. *Journal of Science and Technology Policy Management*, *10*(5), 1152-1173.

Jia, X., Huang, J., Luan, H., Rozelle, S., & Swinnen, J. (2012). China's milk scandal, government policy and production decisions of dairy farmers: The case of Greater Beijing. *Food Policy*, *37*(4), 390-400.

Jimenez-Jimenez, D., & Sanz-Valle, R. (2008). Could human resource management support organisational innovation? *The International Journal of Human Resource Management*, *19*(7), 1208-1221.

Joyce, P., & Winch, G. (2004). A framework for codifying business models and process models in e-Business design. In *Value creation from e-business models* (pp. 35-64). Butterworth-Heinemann.

Kabadurmus, F. N. K. (2020). Antecedents to supply chain innovation. *The International Journal of Logistics Management*, *31*(1), 145-171.

Kaynak, H., & Hartley, J. L. (2008). A replication and extension of quality management into the supply chain. *Journal of Operations Management*, *26*(4), 468-489.

Kazdin, A. E. (2021). *Research design in clinical psychology*. Cambridge, United Kingdom: Cambridge University Press.

Kaur, R., Sharma, R. K., & Goyal, S. (2019). Improving organisational performance through competitive advantage: An empirical analysis with reference to Indian IT industry. *Journal of Asia-Pacific Business*, *20*(4), 281-301.

Kebede, A. M., & Tegegne, Z. L. (2018). The effect of customer relationship management on bank performance: In context of commercial banks in Amhara Region, Ethiopia. *Cogent Business & Management*, *5*(1), 1499183.

Kelly, M., Dowling, M., & Millar, M. (2018). The search for understanding: The role of paradigms. *Nurse Researcher*, *25*(4), 9-13.

Khalilzadeh, M., Karami, A., & Hajikhani, A. (2020). The multi-objective supplier selection problem with fuzzy parameters and solving the order allocation problem with coverage. *Journal of Modelling in Management* *15*(3), 705-725.

Kissi, E., Agyekum, K., Musah, L., Owusu-Manu, D. G., & Debrah, C. (2020). Linking supply chain disruptions with organisational performance of construction firms: The moderating role of innovation. *Journal of Financial Management of Property and Construction*, *26*(1), 158-180.

Kumar, S., Kumar, S., & Barman, A. G. (2018). Supplier selection using fuzzy TOPSIS multi criteria model for a small-scale steel manufacturing unit. *Procedia computer science*, *133*, 905-912.

Lakhal, L. (2009). Impact of quality on competitive advantage and organisational performance. *Journal of the Operational Research Society*, *60*(5), 637-645.

Lai, F., Zhang, M., Lee, D. M., & Zhao, X. (2012). The impact of supply chain integration on mass customization capability: An extended resource-based view. *IEEE Transactions on Engineering Management*, *59*(3), 443-456.

Lau, A. K., Tang, E., & Yam, R. C. (2010). Effects of supplier and customer integration on product innovation and performance: Empirical evidence in Hong Kong manufacturers. *Journal of Product Innovation Management*, *27*(5), 761-777.

Lavie, D. (2006). The competitive advantage of interconnected firms: An extension of the resource-based view. *Academy of Management Review*, *31*(3), 638-658.

Leavy, P. (2017). Research design: *Quantitative, qualitative, mixed methods, arts-based, and community-based participatory research approaches*. New York, United States: The Guilford Press

Lee, K. H., & Kim, J. W. (2011). Integrating suppliers into green product innovation development: an empirical case study in the semiconductor industry. *Business Strategy and the Environment*, *20*(8), 527-538.

Lee, S. (2019). When is the atypical design not penalized? Moderating role of product innovativeness and technological sophistication in consumer's evaluation of new products. *American Journal of Business*, *34*(3/4), 169-188.

Lestari, S. D., Leon, F. M., Widyastuti, S., BRABO, N. A., & Putra, A. H. P. K. (2020). Antecedents and consequences of innovation and business strategy on performance and competitive advantage of SMEs. *The Journal of Asian Finance, Economics and Business*, *7*(6), 365-378

Lewis, M., Brandon-Jones, A., Slack, N., & Howard, M. (2010). Competing through operations and supply: The role of classic and extended resource-based advantage. *International Journal of Operations & Production Management*, *30*(10), 1032-1058.

Li, H., & Atuahene-Gima, K. (2001). Product innovation strategy and the performance of new technology ventures in China. *Academy of Management Journal*, *44*(6), 1123-1134.

Li, S., Ragu-Nathan, B., Ragu-Nathan, T. S., & Rao, S. S. (2006). The impact of supply chain management practices on competitive advantage and organisational performance. *Omega*, *34*(2), 107-124.

Lin, C., Kuei, C. H., & Chai, K. W. (2013). Identifying critical enablers and pathways to high performance supply chain quality management. *International Journal of Operations & Production Management*, *33*(3), 347-370.

Lo, V. H. Y., Sculli, D., & Yeung, A. H. W. (2006). Supplier quality management in the Pearl River Delta. *International Journal of Quality & Reliability Management*, *23*(5), 513-530.

Lundvall, B. Å., & Christensen, J. L. (2004). Introduction: Product innovation–on why and how it matters for firms and the economy. In *Product Inovation, Interactive Learning and Economic Performance*, *8*, 1-18

Madhani, P. M. (2010). Resource based view (RBV) of competitive advantage: an overview. *Resource based view: Concepts and Practices*, *Pankaj Madhani, ed*, 3-22.

Madichie, N. O., & Yamoah, F. A. (2017). Revisiting the European horsemeat scandal: the role of power asymmetry in the food supply chain crisis. *Thunderbird International Business Review*, *59*(6), 663-675.

Mahasneh, M. M., Alnahdi, S. A., & Bani Hani, J. S. (2020). Innovation in health services alignment with the competitive advantage achievement in private hospitals in Saudi Arabia: Strategic evidence. *International Journal of Business and Social Science*, *11*(3), 58-68.

Marczyk, G. R., DeMatteo, D., & Festinger, D. (2021). *Essentials of research design and methodology*. Ontario, Canada: John Wiley & Sons, Inc.

Maritan, C., & Peteraf, M. (2016). Competitive advantage. *The Palgrave Encyclopedia of Strategic Management. London: Palgrave Macmillan*, *10*(978-1).

Matthyssens, P. (2019). Reconceptualizing value innovation for Industry 4.0 and the Industrial Internet of Things. *Journal of Business & Industrial Marketing*, *34*(6), 1203-1209.

McGinnis, M. A., & Vallopra, R. M. (1999). Purchasing and supplier involvement in process improvement: a source of competitive advantage. *Journal of Supply Chain Management*, *35*(3), 42-50.

Mensah, J. V., Morrison, D. A., & Ekumah, E. K. (2016). Training interventions and processes in selected food processing companies in Tema, Ghana. *Management Today*, *6*(3), 124-130.

Mikkola, J. H., & Skjøtt-Larsen, T. (2006). Platform management: Implication for new product development and supply chain management. *European Business Review*, *18(*3), 214-230.

Mishra, A. K., Sinha, A. K., Khasnis, A., & Vadlamani, S. T. (2021). Exploring firm-level innovation and productivity in India. *International Journal of Innovation Science*, *13*(5), 583-609.

Mitchell, M. D., Hargrove, G. L., Collins, M. H., Thompson, M. P., Reddick, T. L., & Kaslow, N. J. (2006). Coping variables that mediate the relation between intimate partner violence and mental health outcomes among low-income, African American women. *Journal of Clinical Psychology*, *62*(12), 1503-1520.

Monczka, R. M., Handfield, R. B., Giunipero, L. C., & Patterson, J. L. (2015). *Purchasing and supply chain management*. Cengage Learning.

Morehouse, J., Freienstein, C., & Cardoso, L. (2010). Food fraud in the global Supply chain: the best way to protect consumers-and your brand-is to apply a comprehensive set of deterrence strategies to prevent adulteration before product enters the supply chain. *Food Logistics*, *120*, 31.

Muchanga, M. (2020). Reflexive debate on use of philosophy in scientific research. *International Journal of Humanities, Social Sciences and Education*, *7*(6), 208-213.

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

Napier, N. K., & Nilsson, M. (2006). The development of creative capabilities in and out of creative organisations: Three case studies. *Creativity and Innovation Management*, *15*(3), 268-278.

Ndzana, M., Cyrille, O., Mvogo, G., & Bedzeme, T. (2021). Innovation and small and medium enterprises' performance in Cameroon. *Journal of Small Business and Enterprise Development*, *28*(5), 724-743.

Newbert, S. L. (2007). Empirical research on the resource-based view of the firm: an assessment and suggestions for future research. *Strategic Management Journal*, *28*(2), 121-146.

Nguyen, M. H., Anh, P. C., & Matsui, Y. (2021). A comparative study of quality management practices between Vietnamese and Japanese manufacturing plants. *International Journal of Productivity and Quality Management*, *33*(1), 127-156.

Nieto, M. (2004). Basic propositions for the study of the technological innovation process in the firm. *European Journal Of Innovation Management*, *7*(4), 314-324.

North, J. (2017). *Sport coaching research and practice: Ontology, interdisciplinarity and critical realism*. London, UK: Routledge.

Nwankwo, S., Obidigbo, B., & Ekwulugo, F. (2002). Allying for quality excellence: Scope for expert systems in supplier quality management. *International Journal of Quality & Reliability Management*, *19*(2), 187-205.

Nwokah, N. G. (2009). Customer-focus, competitor-focus and marketing performance. *Measuring Business Excellence*, *13*(3), 20-28.

Nwokah, N. G., & Maclayton, D. W. (2006). Customer-focus and business performance: The study of food and beverages organisations in Nigeria. *Measuring Business Excellence*, *10*(4), 65-76.

Oh, J., & Rhee, S. K. (2010). Influences of supplier capabilities and collaboration in new car development on competitive advantage of carmakers. *Management Decision*, *48*(5), 756-774.

Olani, P. O. (2017). *Marketing practices and business performance of small Scale food processing firms in Ghana* (Doctoral dissertation, University of Ghana).

Oliva, F. L., Semensato, B. I., Prioste, D. B., Winandy, E. J. L., Bution, J. L., Couto, M. H. G., ... & Massaini, S. A. (2019). Innovation in the main Brazilian business sectors: Characteristics, types and comparison of innovation. *Journal of Knowledge Management*, *23*(1), 135-175.

Organisation for Economic Co-operation and Development, & Statistical Office of the European Communities. (2018). *Oslo Manual 2018: Guidelines for collecting, reporting and using data on innovation*. Oslo, Norway: OECD publishing.

Othman, I., Ghani, S. N. M., & Choon, S. W. (2020). The total quality management (TQM) journey of Malaysian building contractors. *Ain Shams Engineering Journal*, *11*(3), 697-704.

Pan, X., Ai, B., Li, C., Pan, X., & Yan, Y. (2019). Dynamic relationship among environmental regulation, technological innovation and energy efficiency based on large scale provincial panel data in China. *Technological Forecasting and Social Change*, *144*, 428-435.

Pan, X., Guo, S., & Chu, J. (2021). P2P supply chain financing, R&D investment and companies' innovation efficiency. *Journal of Enterprise Information Management*, *34*(1), 578-597.

Panayides, P. M., & Lun, Y. V. (2009). The impact of trust on innovativeness and supply chain performance. *International Journal of Production Economics*, *122*(1), 35-46.

Parast, M. M. (2019). A learning perspective of supply chain quality management: empirical evidence from US supply chains. *Supply Chain Management: An International Journal*, *25*(1), 17-34.

Park, Y. S., Konge, L., & Artino, A. R. (2020). The positivism paradigm of research. *Academic Medicine*, *95*(5), 690-694.

Parker, D. B., Zsidisin, G. A., & Ragatz, G. L. (2008). Timing and extent of supplier integration in new product development: a contingency approach. *Journal of Supply Chain Management*, *44*(1), 71-83.

Pazhani, S., Ventura, J. A., & Mendoza, A. (2016). A serial inventory system with supplier selection and order quantity allocation considering transportation costs. *Applied Mathematical Modelling*, *40*(1), 612-634.

Penrose, E., & Penrose, E. T. (2009). *The theory of the growth of the firm*. England, United Kingdom: Oxford University Press.

Peters, B. (2008). Productivity effects of innovation activities. *Innovation and Firm Performance: An Empirical Investigation for German Firms*, 109-150.

Phan, A. C., Nguyen, H. A., Trieu, P. D., Nguyen, H. T., & Matsui, Y. (2019). Impact of supply chain quality management practices on operational performance: Empirical evidence from manufacturing companies in Vietnam. *Supply Chain Management: An International Journal*, *24*(6), 855-871.

Phung, T. M. T., Tran, D. T., Vermeulen, P. A. M., & Knoben, J. (2021). The effects of internal and external innovation strategies on process innovation in Vietnamese firms. *Asia Pacific Journal of Innovation and Entrepreneurship*, *15*(1), 26-38.

Pokhariyal, G. P. (2019). Importance of moderating and intervening variables on the relationship between independent and dependent variables. *International Journal of Statistics and Applied Mathematics*, *4*(5), 1-4.

Polit, D. F., & Beck, C. T. (2008). *Nursing research: Generating and assessing evidence for nursing practice*. Pennsylvania, United States: Lippincott Williams & Wilkins.

Porter, M. E. (1985). Creating and sustaining superior performance. *Competitive Advantage*, *167*, 167-206.

Porter, M. E. (1990). New global strategies for competitive advantage. *Planning Review*, *18*(3), 4-14.

Prahalad, C. K., & Ramaswamy, V. (2004). Co-creation experiences: The next practice in value creation. *Journal of Interactive Marketing*, *18*(3), 5-14.

Prajogo, D. I., & McDermott, C. M. (2008). The relationships between operations strategies and operations activities in service context. *International Journal of Service Industry Management*, *19*(4), 506-520.

Priem, R. L., Li, S., & Carr, J. C. (2012). Insights and new directions from demand-side approaches to technology innovation, entrepreneurship, and strategic management research. *Journal of Management*, *38*(1), 346-374.

Purwanto, A., & Sudargini, Y. (2021). Partial Least Squares Structural Squation Modeling (PLS-SEM) Analysis for Social and Management Research: A Literature Review. *Journal of Industrial Engineering & Management Research*, *2*(4), 114-123.

Quang, H. T., Sampaio, P., Carvalho, M. S., Fernandes, A. C., An, D. T. B., & Vilhenac, E. (2016). An extensive structural model of supply chain quality management and firm performance. *International Journal of Quality & Reliability Management*, *33*(4), 444-464.

Quartey, E. T., & Darkwah, S. (2015). Factors affecting the use of modern technologies in agro processing in Ghana. *Academia Journal of Agricultural Research*, *3*(7), 99-115.

Radicic, D., & Djalilov, K. (2019). The impact of technological and non-technological innovations on export intensity in SMEs. *Journal of Small Business and Enterprise Development*, *26*(4), 612-638.

Rajab, F., Ngugi, P., & Kiarie, D. (2021). Influence of customer relationship management on performance of manufacturing firms in Kenya. *International Journal of Supply Chain Management*, *6*(1), 14-28.

Ramayah, T. J. F. H., Cheah, J., Chuah, F., Ting, H., & Memon, M. A. (2018). Partial least squares structural equation modeling (PLS-SEM) using smartPLS 3.0. *An updated guide and practical guide to statistical analysis*. Kuala Lumpur, Malaysia: Pearson.

Ramírez, R. R., & Palos-Sánchez, P. R. (2018). Environmental firms' better attitude towards nature in the context of corporate compliance. *Sustainability*, *10*(9), 3321.

Rampersad, G. C., Hordacre, A. L., & Spoehr, J. (2019). Driving innovation in supply chains: an examination of advanced manufacturing and food industries. *Journal of Business & Industrial Marketing*, 35(5). 835-847

Rasheed, M. A., Shahzad, K., & Nadeem, S. (2021). Transformational leadership and employee voice for product and process innovation in SMEs. *Innovation & Management Review*, *18*(1), 69-89.

Rashid, K. T. S., Ismael, D. A., Othman, B., & Ali, R. (2019). Dimensions of service quality and their effects on achieving competitive advantage: An exploratory study of banking organisations in Sulaimaniyah city-Iraq. *International Journal of Psychosocial Rehabilitation*, *23*(2), 548-565.

Ratnasari, S. L., Fitri, D., Zulkifli, Z., Nasrul, H. W., & Supardi, S. (2020). Analysis of Change Management, Transformational Leadership, Organisational Structure, Organisational Culture and Work Discipline on Employee Performance. *Jurnal Benefita*, *5*(2), 225-237.

Ray, S. K., Basak, A., Fatima, K., & Seddiqe, M. I. S. (2016). Study on Supply Chain Management of Industries in FMCG Sector in Bangladesh. *Global Journal of Research In Engineering*, *16* (2-G).

Reid, R. D., & Sanders, N. R. (2019). *Operations management: An integrated approach*. New Jersey, United States: John Wiley & Sons.

Ritter, T., & Walter, A. (2012). More is not always better: The impact of relationship functions on customer-perceived relationship value. *Industrial Marketing Management*, *41*(1), 136-144.

Robinson, C. J., & Malhotra, M. K. (2005). Defining the concept of supply chain quality management and its relevance to academic and industrial practice. *International Journal of Production Economics*, *96*(3), 315-337.

Rumelt, R. P., Schendel, D., & Teece, D. J. (Eds.). (1994). *Fundamental issues in strategy: A research agenda*. New Jersey, United States: Rutgers University Press.

Rungtusanatham, M., Salvador, F., Forza, C., & Choi, T. Y. (2003). Supply-chain linkages and operational performance: A resource-based-view perspective. *International Journal of Operations & Production Management*, *23*(9), 1084-1099.

Ryan, G. (2018). Introduction to positivism, interpretivism and critical theory. *Nurse Researcher*, *25*(4), 41-49.

Ryba, T. V., Wiltshire, G., North, J., & Ronkainen, N. J. (2020). Developing mixed methods research in sport and exercise psychology: potential contributions of a critical realist perspective. *International Journal of Sport and Exercise Psychology*, *20*(1), 147-167

Sachdeva, N., Shrivastava, A. K., & Chauhan, A. (2019). Modeling supplier selection in the era of Industry 4.0. *Benchmarking: An International Journal*, *28*(5), 1809-1836.

Salimian, H., Rashidirad, M., & Soltani, E. (2021). Supplier quality management and performance: the effect of supply chain-oriented culture. *Production Planning & Control*, *32*(11), 942-958.

Santos-Vijande, M. L., López-Sánchez, J. Á., & Trespalacios, J. A. (2012). How organisational learning affects a firm's flexibility, competitive strategy, and performance. *Journal of business research*, *65*(8), 1079-1089.

Saunders, M. (2014). *Research Methods for Business Students* (6th edn.). London, United Kingdom: Pearson Education Limited.

Saunders, M., & Lewis, P. (2016*). In Thornhill Adrian (Ed.). Research methods for business students* (ed.). Harlow, England: Pearson Education Limited.

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

Sekaran, U., & Bougie, R. (2019). *Research methods for business: A skill building approach*. New Jersey, United States: John Wiley & Sons.

Sen, D. K., Datta, S., & Mahapatra, S. S. (2018). Sustainable supplier selection in intuitionistic fuzzy environment: A decision-making perspective. *Benchmarking: An International Journal*, *25*(2), 545-574.

Shamout, M. D. (2020). The nexus between supply chain analytic, innovation and robustness capability: Does firm age matter? *VINE Journal of Information and Knowledge Management Systems*, *51*(1), 163-176.

Sharma, D. (2016). Enhancing customer experience using technological innovations: A study of the Indian hotel industry. *Worldwide Hospitality and Tourism Themes*, *8*(4), 469-480.

Sheppard, V. (2020). Research methods for the social sciences: An introduction. *Vancouver: BCCampus*, *11*(21), 541-564.

Sheth, A., & Sinfield, J. V. (2021). Systematic problem-specification in innovation science using language. *International Journal of Innovation Science*, *13*(3), 314-340.

Shin, D. H. (2007). User acceptance of mobile internet: Implication for convergence technologies. *Interacting with Computers*, *19*(4), 472-483.

Siddaway, A. P., Wood, A. M., & Hedges, L. V. (2019). How to do a systematic review: A best practice guide for conducting and reporting narrative reviews, meta-analyses, and meta-syntheses. *Annual Review of Psychology*, *70*, 747-770.

Sigalas, C., & Papadakis, V. M. (2018). Empirical investigation of relationship patterns between competitive advantage and superior performance. *Journal of Strategy and Management*, *11*(1), 81-111.

Singh, D., Khamba, J. S., & Nanda, T. (2017). Influence of technological innovation on performance of small manufacturing companies. *International Journal of Productivity and Performance Management*, *66*(7), 838-856.

Singh, V., Kumar, A., & Singh, T. (2018). Impact of TQM on organisational performance: The case of Indian manufacturing and service industry. *Operations Research Perspectives*, *5*, 199-217.

Snihur, Y., & Wiklund, J. (2019). Searching for innovation: Product, process, and business model innovations and search behavior in established firms. *Long Range Planning*, *52*(3), 305-325.

Soares, A., Soltani, E., & Liao, Y. Y. (2017). The influence of supply chain quality management practices on quality performance: An empirical investigation. *Supply Chain Management: An International Journal*, *22*(2), 122-144.

Solaimani, S. & van der Veen, J. (2021). Open supply chain innovation: an extended view on supply chain collaboration. *Supply Chain Management*, *27*(5), 597-610.

Sollish, F., & Semanik, J. (2006). *The Purchasing and Supply Manager's Guide to the CPM Exam*. New Jersey, United States: John Wiley & Sons.

Sombultawee, K., & Pasunon, P. (2021). Long-term buyer-supplier relationships in IT services. *Journal of Business & Industrial Marketing*, *37*(3), 629-642.

Son, I., Lee, D., Lee, J. N., & Chang, Y. B. (2014). Market perception on cloud computing initiatives in organisations: An extended resource-based view. *Information & Management*, *51*(6), 653-669.

Sousa, J. P., Cunha, C. R., Morais, E. P., & Gomes, J. P. (2017). Towards a platform for a supplier quality management system. *IBIMA Business Review*. 1-12

Squire, B., Cousins, P. D., Lawson, B., & Brown, S. (2009). The effect of supplier manufacturing capabilities on buyer responsiveness: The role of collaboration. *International Journal of Operations & Production Management*, *29*(8), 766-788.

Srinivas, R., Swamy, D. R., & Nanjundeswaraswamy, T. S. (2020). Quality Management Practices in Oil and Gas Industry. *International Journal for Quality Research*, *14*(2) 421–438.

Su, J., & Gargeya, V. B. (2016). Supplier selection in small-and medium-sized firms: The case of the US textile and apparel industry. *American Journal of Business*, *31*(4), 166-186.

Su, Q., Liu, Q., Önkal, D., & Aktas, E. (2011). Supply Chain Quality Management by Contract Design. *Supply chain Management-Pathways for Research and Practice*, 57-74.

Sun, Y., & Zhong, Q. (2020). How modularity influences product innovation: The mediating role of module suppliers' relationship-specific investments. *Management Decision*, *58*(12), 2743-2761.

Taherdoost, H., & Brard, A. (2019). Analyzing the process of supplier selection criteria and methods. *Procedia Manufacturing*, *32*, 1024-1034.

Tajudeen, F. P., Nadarajah, D., Jaafar, N. I., & Sulaiman, A. (2021). The impact of digitalisation vision and information technology on organisations' innovation. *European Journal of Innovation Management*, *25*(2), 607-629.

Tay, H. L., & Aw, H. S. (2021). Improving logistics supplier selection process using lean six sigma–an action research case study. *Journal of Global Operations and Strategic Sourcing*, *14*(2), 336-359.

Thanh, N. C., & Thanh, T. T. (2015). The interconnection between interpretivist paradigm and qualitative methods in education. *American Journal of Educational Science*, *1*(2), 24-27.

The Organisation for Economic Co-operation and Development (OECD) (2005). *The measurement of scientific activities: proposed guideline for collecting and interpreting technological innovation data.* Oslo, Norway: Oslo Manual, 2005.

Thomas, O. O., & Lawal, O. R. (2020). Exploratory research design in management sciences: An x-ray of literature. *Annals of the University Dunarea de Jos of Galati: Fascicle: I, Economics & Applied Informatics*, *26*(2), 79-84.

Torres, P., & Augusto, M. (2019). Understanding complementarities among different forms of innovation. *European Journal of Innovation Management*, *23*(5), 813-834.

Tracey, M., & Tan, C. L. (2001). Empirical analysis of supplier selection and involvement, customer satisfaction, and firm performance. *Supply Chain Management: An International Journal*, *6*(4), 174-188.

Tracy, S. J. (2019). *Qualitative research methods: Collecting evidence, crafting analysis, communicating impact*. New Jersey, United States: John Wiley & Sons.

Troisi, O., Visvizi, A., & Grimaldi, M. (2021). The different shades of innovation emergence in smart service systems: The case of Italian cluster for aerospace technology. *Journal of Business & Industrial Marketing*. *18*(12) 423–448.

Truong, H. Q., Sameiro, M., Fernandes, A. C., Sampaio, P., Duong, B. A. T., Duong, H. H., & Vilhenac, E. (2017). Supply chain management practices and firms' operational performance. *International Journal of Quality & Reliability Management*, *34*(2), 176-193.

Tukamuhabwa, B., Mutebi, H., & Kyomuhendo, R. (2021). Competitive advantage in SMEs: Effect of supply chain management practices, logistics capabilities and logistics integration in a developing country. *Journal of Business and Socio-economic Development*, *6*(4), 174-188.

Tusnial, A., Sharma, S. K., Dhingra, P., & Routroy, S. (2020). Supplier selection using hybrid multicriteria decision-making methods. *International Journal of Productivity and Performance Management*, *70*(6), 1393-1418.

Tutu, B. O., & Anfu, P. O. (2019). Evaluation of the food safety and quality management systems of the cottage food manufacturing industry in Ghana. *Food control*, *101*, 24-28.

Udofia, E. E., Adejare, B. O., Olaore, G. O., & Udofia, E. E. (2021). Supply disruption in the wake of COVID-19 crisis and organisational performance: Mediated by organisational productivity and customer satisfaction. *Journal of Humanities and Applied Social Sciences*, *3*(5), 319-338.

Ullah, I., & Narain, R. (2020). Linking supplier selection and management strategies with mass customization capability. *Journal of Business & Industrial Marketing*, *6*(7), 1213-1228.

Uluskan, M., Joines, J. A., & Godfrey, A. B. (2016). Comprehensive insight into supplier quality and the impact of quality strategies of suppliers on outsourcing decisions. *Supply Chain Management: An International Journal*, *21*(1), 92-102.

United Nations (2021). *Global Food Safety Day Celebration:* retrieved from https://www.un.org/en/observances/food-safety-day.

United States Department of Commerce, Bureau of Census (2016). Annual survey of manufactures. Accessed on 29th July 2021 from https://data.census.gov/cedsci/table?tid=ASMAREA2017.AM1831BASIC01

Van der Walt, J. L. (2020). Interpretivism-constructivism as a research method in the humanities and social sciences-more to it than meets the eye. *International Journal of Philosophy and Theology*, *8*(1), 59-68.

Van Weele, A. J. (2010, October). Value creation and purchasing strategy. In *International Trade Forum*, *4*, 34-35.

Van Wyk, B. (2012). Research design and methods Part I. *University of Western Cape*. *12*(9), 734-746.

Vanichchinchai, A. (2021). The linkages among supplier relationship, customer relationship and supply performance. *Journal of Business & Industrial Marketing, 36*(8), 1520-1533.

Varadarajan, R. (2018). Innovation, innovation strategy, and strategic innovation. In *Innovation and Strategy*. *Emerald Publishing Limited, 15*, 143-166.

Viswanadham, N., & Kameshwaran, S. (2013). *Ecosystem-Aware Global Supply Chain Management*. Toh Tuck, Singapore: World Scientific Publishing.

Wade, M., & Hulland, J. (2004). The resource-based view and information systems research: Review, extension, and suggestions for future research. *MIS Quarterly*, 107-142.

Wagner, S. M. (2006). A firm's responses to deficient suppliers and competitive advantage. *Journal of Business Research*, *59*(6), 686-695.

Wahyono, W. (2019). The mediating effects of product innovation in relation between knowledge management and competitive advantage. *Journal of Management Development*, *39*(1),18-30.

Wang, Y., & Yang, J. (2021). Role of supplier involvement and project leader in SNPD: a conceptual model and exploratory case study. *International Journal of Managing Projects in Business*, *14*(4), 960-981.

Wang, Y., Modi, S. B., & Schoenherr, T. (2021). Leveraging sustainable design practices through supplier involvement in new product development: The role of the suppliers' environmental management capability. *International Journal of Production Economics*, *232*, 107919.

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, *5*(2), 171-180.

Wilkinson, J. (2012). The food processing industry, globalization and developing countries. *In the Transformation of Agri-Food Systems*, Routledge. *45*(5), 111-132.

Williams, J., Martin, P., & Martin, P. V. (Eds.). (2011). *Defending the social licence of farming: issues, challenges and new directions for agriculture*. Collingwood, Australia: CSIRO Publishing.

Xiao, C., Petkova, B., Molleman, E., & van der Vaart, T. (2019). Technology uncertainty in supply chains and supplier involvement: The role of resource dependence. *Supply Chain Management: An International Journal*, *24*(6), 697-709.

Xie, Z., Qu, L., Lin, R., & Guo, Q. (2021). Relationships between fluctuations of environmental regulation, technological innovation, and economic growth: a multinational perspective. *Journal of Enterprise Information Management*, *35*(4/5), 1267-1287.

Yamin, S., Gunasekaran, A., & Mavondo, F. T. (1999). Relationship between generic strategies, competitive advantage and organisational performance: an empirical analysis. *Technovation*, *19*(8), 507-518.

Yu, C., & Wong, T. N. (2014). A supplier pre-selection model for multiple products with synergy effect. *International Journal of Production Research*, *52*(17), 5206-5222.

Yu, Y., & Huo, B. (2018). Supply chain quality integration: relational antecedents and operational consequences. *Supply Chain Management: An International Journal*, *23*(3), 188-206.

Yu, Y., & Huo, B. (2019). The impact of relational capital on supplier quality integration and operational performance. *Total Quality Management & Business Excellence*, *30*(11-12), 1282-1301.

Zeng, L., Zhou, L., Pan, P. L., & Fowler, G. (2018). Coping with the milk scandal: A staged approach to crisis communication strategies during China's largest food safety crisis. *Journal of Communication Management*, *22*(4), 432-450.

Zhang, H., & Yang, F. (2016). The impact of external involvement on new product market performance: An analysis of mediation and moderation. *Industrial Management & Data Systems*, *116*(8), 1520-1539.

Zhang, W., Wang, D., & Zhao, Y. (2015). The effects of ties with service intermediaries on service and product innovations in Chinese manufacturing firms: The mediations of innovation search. *Asian Journal of Technology Innovation*, *23*(3), 335-350.

Zhou, K. Z., & Li, C. B. (2012). How knowledge affects radical innovation: Knowledge base, market knowledge acquisition, and internal knowledge sharing. *Strategic Management Journal*, *33*(9), 1090-1102.

Zhu, J., Wang, Y., & Wang, C. (2019). A comparative study of the effects of different factors on firm technological innovation performance in different high-tech industries. *Chinese Management Studies*, *13*(1), 2-25.

APPENDICES

APPENDIX ONE: QUESTIONNAIRE

UNIVERSITY OF CAPE COAST
COLLEGE OF HUMANITIES AND LEGAL STUDIES
SCHOOL OF BUSINESS
DEPARTMENT OF MARKETING AND SUPPLY CHAIN MANAGEMENT

Questionnaire

Dear Respondent,

This questionnaire seeks to solicit information from you on the research topic: ***Supply Chain Quality Management Practices and Competitive Advantage of Food Processing Firms in Ghana: the moderating role of Supply Chain Innovation.*** It is purely for academic purposes and part of the requirement for the award of a Masters degree in Procurement and Supply Chain Management. Answering this questionnaire will take about 10 to 15 minutes of your time.

Your anonymity and confidentiality are highly assured. Therefore, no information provided will be identifiable to you or your organisation since only aggregated data will be reported in this study. You are kindly required to answer the questions as frankly as possible since you will be contributing to knowledge. Participation in this survey is highly valued but voluntary.

This questionnaire was printed and processed under strict covid-19 safety protocols.

Thank you for your valuable time and input.

SECTION A: SUPPLY CHAIN QUALITY MANAGEMENT PRACTICES

This section solicits your views about Supplier Selection, Supplier Involvement, Supplier Quality Management, and Customer Focus as supply chain quality management practices.

On a scale of 1 to 7 with one (1) as least agreement, and seven (7) as highest agreement, kindly indicate your level of agreement with the following supplier selection criteria your organisation employs when selecting suppliers.

SS	Supplier Selection	1	2	3	4	5	6	7
	Preamble: *We evaluate and select suppliers based on:……*							
SS1	product quality							
SS2	delivery reliability							
SS3	product performance							
SS4	their unit price of products							
SS5	the scope of their resources							
SS6	their technical expertise							
SS7	their ability to meet delivery due dates							
SS8	their ability to respond to unexpected demand							
SS9	third-party quality certification							
SS10	their conformance to perceived quality							

With one (1) as least agreement, and seven (7) as highest agreement, kindly indicate your level of agreement with the following supplier quality management practices your organisation employs. Please tick (√)

SQ	Supplier Quality	1	2	3	4	5	6	7
	Preamble: *Our company* ……							
SQ1	regularly conducts supplier audits							
SQ2	has detailed information about supplier performance							
SQ3	always gives feedback on the performance of suppliers' products							
SQ4	always participates in supplier activities related to quality							
SQ5	has a formal program for evaluating and recognizing suppliers							
SQ6	has very frequent face-to-face communication with key suppliers							
SQ7	regards product quality as a critical factor for selecting suppliers.							
SQ8	go into special contracts with suppliers with improved performance.							
SQ9	can influence main suppliers' responsiveness to our requirements							
SQ10	monitor suppliers' compliance with quality standards							

With one (1) as least agreement, and seven (7) as highest agreement, kindly indicate your level of agreement concerning the extent of supplier involvement/participation in your organisation. Please tick (√)

SP	Supplier Involvement/Participation	1	2	3	4	5	6	7
SP1	Our suppliers can suggest improvements in our new products							
SP2	We consult and refer to our supplier's opinion about product prototypes							
SP3	Supplier involvement is needed in product design and development							
SP4	We establish continuous improvement programs that include suppliers							
SP5	We allow our suppliers to participate in planning and setting strategies							
SP6	We proactively share crucial information with suppliers							
SP7	We provide tangible and intangible resources to suppliers, if necessary							
SP8	We allow suppliers to participate in new product development process							
SP9	We encourage information sharing by suppliers							

With one (1) as least agreement, and seven (7) as highest agreement, kindly indicate your level of agreement with the following statements concerning how your organisation manages customer relationships. Tick (√)

CF	Customer Focus	1	2	3	4	5	6	7
CF1	We have close contact with key customers in quality management							
CF2	Our major customers give us feedback on our quality performance							
CF3	Our processes are certified, or qualified, by our major customers							
CF4	Our major customers share quality requirements forecast with us							
CF5	We engage major customers in our quality improvement efforts							
CF6	We jointly solve quality problems with our major customers							
CF7	We follow up with customers for quality/service feedback							
CF8	We evaluate both formal and informal customer complaints							
CF9	We communicate customers' strategic needs throughout the chain							
CF10	We enhance customer's ability to seek assistance							

SECTION B: SUPPLY CHAIN INNOVATION

With one (1) as least agreement, and seven (7) as highest agreement, kindly indicate your level of agreement with the following statements in relation to supply chain innovational activities employed in your organisation.

INN	Innovation	1	2	3	4	5	6	7
INN1	Our company launches new products							
INN2	Our company extends numbers or range of product lines							
INN3	With new product development, our company enlarges new markets							
INN4	Our company launches customized products due to market demands							
INN5	We develop environmental-friendly products							
INN6	Our company adopts advanced real-time process control technology							
INN7	Our firm imports advanced automatic quality restriction equipment.							
INN8	Our company introduces innovative rewards systems for employees							
INN9	Our company frequently introduces new process technology							
INN10	Improvement of existing production processes							

SECTION C: COMPETITIVE ADVANTAGE

With one (1) as least agreement, and seven (7) as highest agreement, kindly indicate your level of agreement with the following statements concerning how supply chain quality management activities affect the competitive advantage of your organisation. Please tick (√) in response to each statement.

CA	Competitive Advantage	1	2	3	4	5	6	7
CA1	Our products have distinctive features when compared to competitors							
CA2	Our company implements frequent quality improvements							
CA3	Our customers are satisfied with our mix of products/services							
CA4	We receive a smaller number of complaints							
CA5	We project and give accurate delivery dates to customers							
CA6	We offer customers a reliable order processing time							
CA7	Our firm has the ability to reduce waste and cut down cost							
CA8	We are able to offer prices as low as or lower than our competitors							

SECTION D: DEMOGRAPHIC INFORMATION

1) Please indicate your gender. Male [ ] Female [ ]

2) Please indicate your age bracket, in years.

25-29		30-34		35-39		40-44		45-49		50-55		Other:
	1		2		3		4		5		6	

3) Please indicate your position in the firm. [ ]

4) How many years have you been practicing in the position marked above? [ ]

5) Indicate your affiliations with any of the following professional bodies.

CIPS		CILT		GIPS		ACCA		CMA		PMI		CIMA		ICAG		Other:
	1		2		3		4		5		6		7		8	

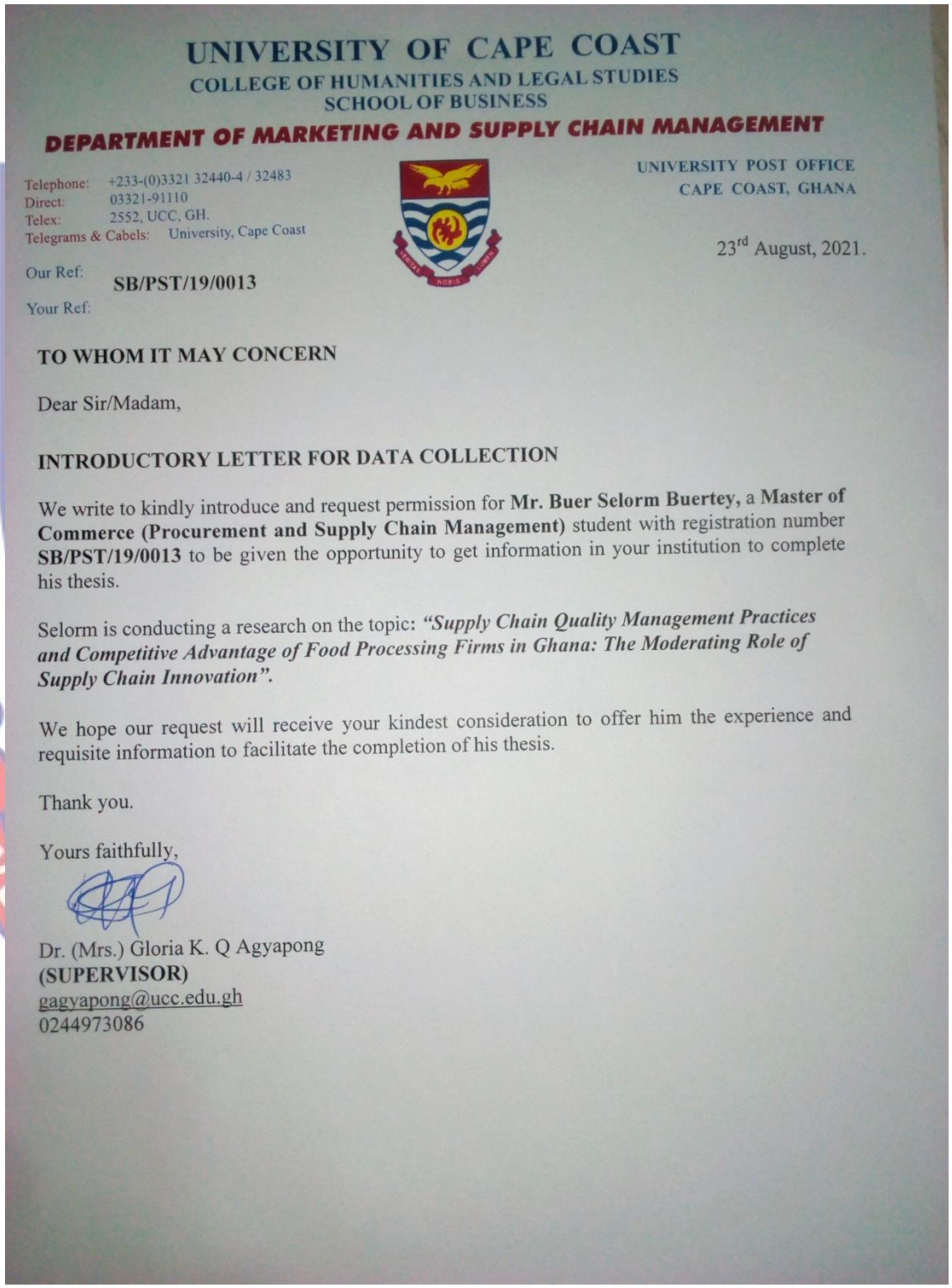
A. If you wish to receive a published copy of the findings of this study, kindly input your email address here……

B. For inquires or a completed questionnaire, you can reach the researcher on: Email: selormbuer@yahoo.com Contact: 0542971553

THANK YOU FOR PARTICIPATING

APPENDIX TWO

INTRODUCTION LETTER FOR DATA COLLECTION



UNIVERSITY OF CAPE COAST
COLLEGE OF HUMANITIES AND LEGAL STUDIES
SCHOOL OF BUSINESS
DEPARTMENT OF MARKETING AND SUPPLY CHAIN MANAGEMENT

Telephone: +233-(0)3321 32440-4 / 32483
Direct: 03321-91110
Telex: 2552, UCC, GH.
Telegrams & Cabels: University, Cape Coast

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref: **SB/PST/19/0013**
Your Ref:

23rd August, 2021.

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

INTRODUCTORY LETTER FOR DATA COLLECTION

We write to kindly introduce and request permission for **Mr. Buer Selorm Buertey,** a **Master of Commerce (Procurement and Supply Chain Management)** student with registration number **SB/PST/19/0013** to be given the opportunity to get information in your institution to complete his thesis.

Selorm is conducting a research on the topic: ***"Supply Chain Quality Management Practices and Competitive Advantage of Food Processing Firms in Ghana: The Moderating Role of Supply Chain Innovation".***

We hope our request will receive your kindest consideration to offer him the experience and requisite information to facilitate the completion of his thesis.

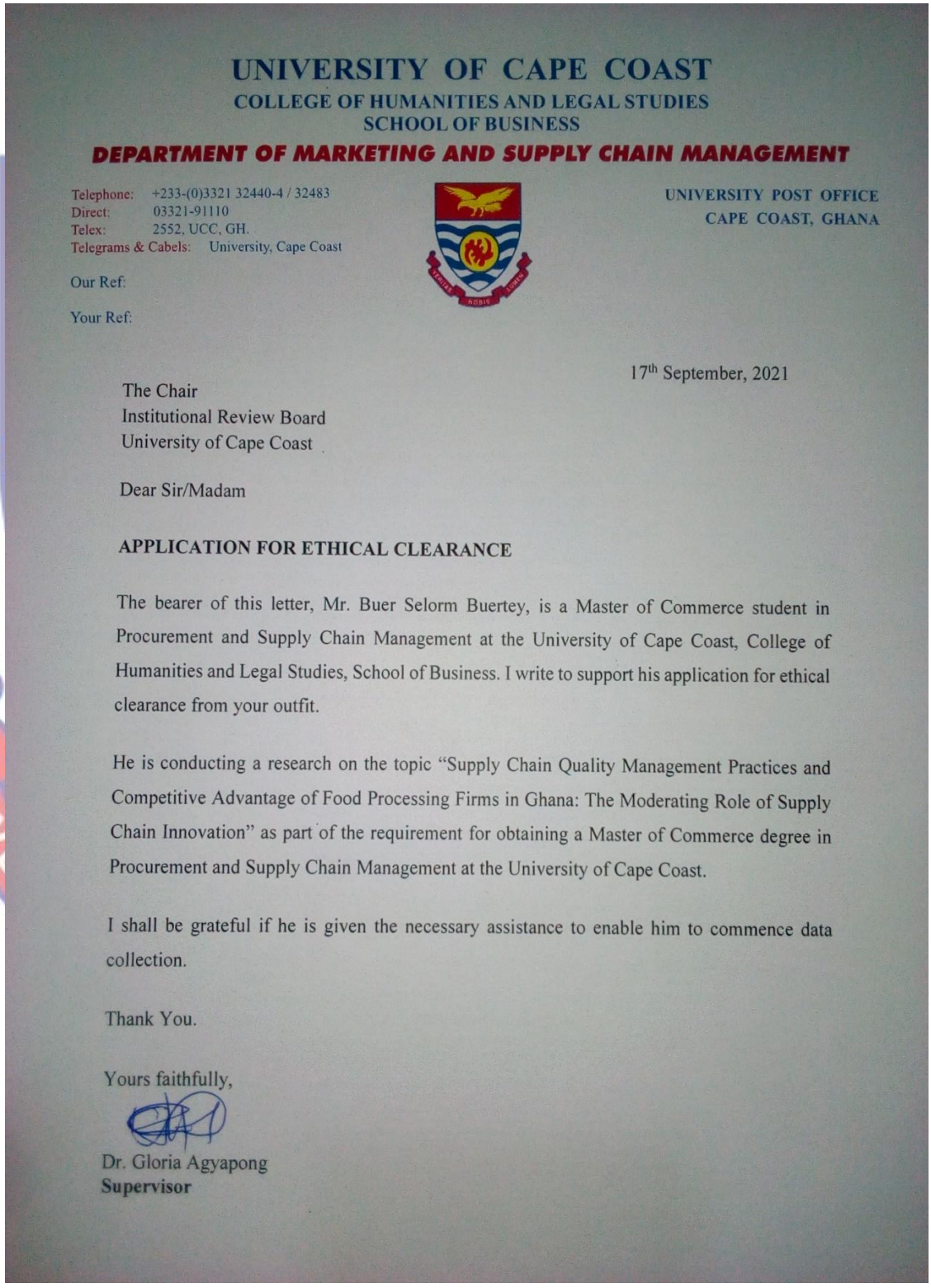
Thank you.

Yours faithfully,

Dr. (Mrs.) Gloria K. Q Agyapong
(SUPERVISOR)
gagyapong@ucc.edu.gh
0244973086

APPENDIX THREE

SUPERVISORS LETTER OF SUPPORT FOR ETHICAL CLEARANCE



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UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref:

Your Ref:

17th September, 2021

The Chair
Institutional Review Board
University of Cape Coast

Dear Sir/Madam

APPLICATION FOR ETHICAL CLEARANCE

The bearer of this letter, Mr. Buer Selorm Buertey, is a Master of Commerce student in Procurement and Supply Chain Management at the University of Cape Coast, College of Humanities and Legal Studies, School of Business. I write to support his application for ethical clearance from your outfit.

He is conducting a research on the topic "Supply Chain Quality Management Practices and Competitive Advantage of Food Processing Firms in Ghana: The Moderating Role of Supply Chain Innovation" as part of the requirement for obtaining a Master of Commerce degree in Procurement and Supply Chain Management at the University of Cape Coast.

I shall be grateful if he is given the necessary assistance to enable him to commence data collection.

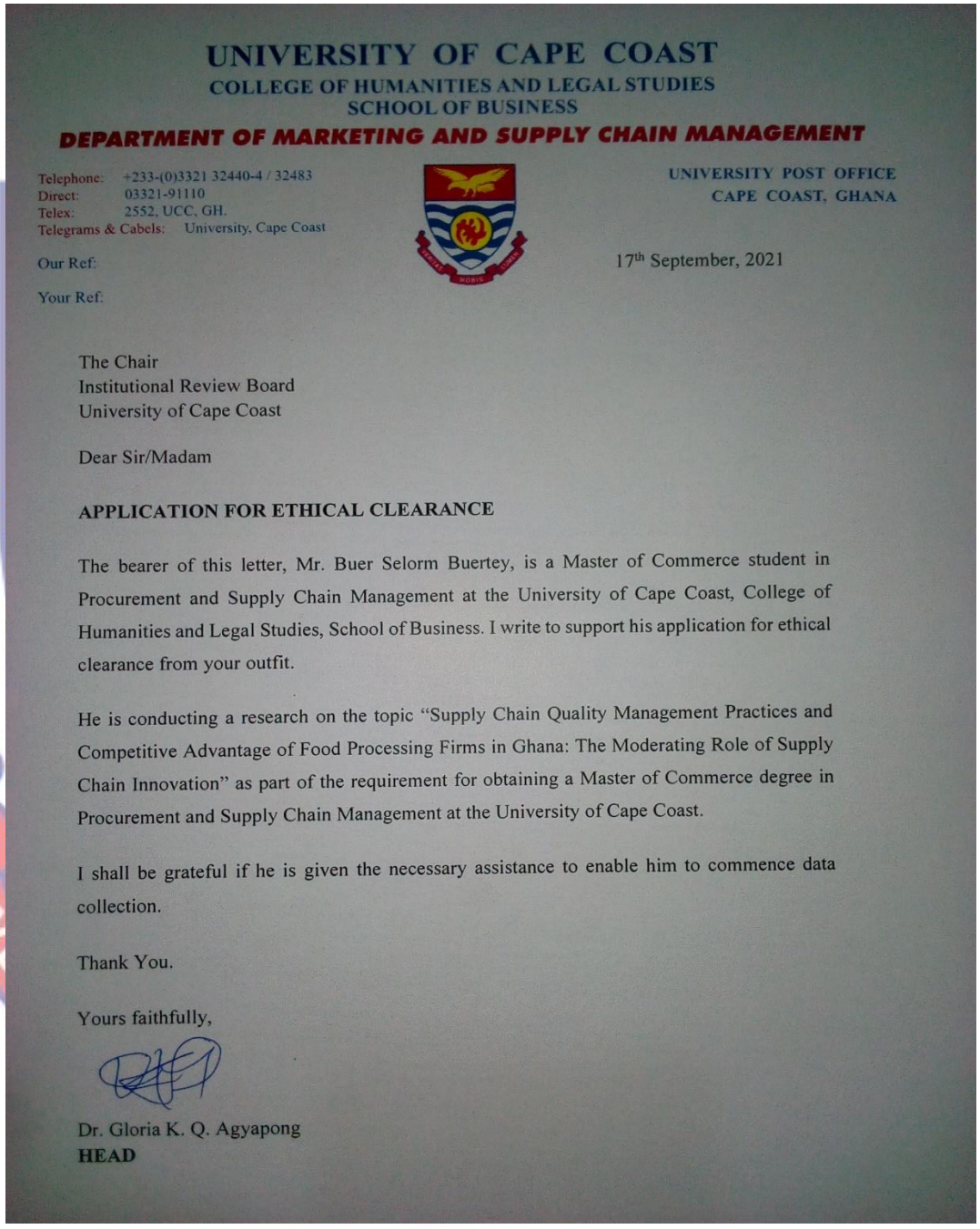
Thank You.

Yours faithfully,

Dr. Gloria Agyapong
Supervisor

APPENDIX FOUR

HEAD OF DEPARTMENTS LETTER OF SUPPORT FOR ETHICAL CLEARANCE



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UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref:

Your Ref:

17th September, 2021

The Chair
Institutional Review Board
University of Cape Coast

Dear Sir/Madam

APPLICATION FOR ETHICAL CLEARANCE

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He is conducting a research on the topic "Supply Chain Quality Management Practices and Competitive Advantage of Food Processing Firms in Ghana: The Moderating Role of Supply Chain Innovation" as part of the requirement for obtaining a Master of Commerce degree in Procurement and Supply Chain Management at the University of Cape Coast.

I shall be grateful if he is given the necessary assistance to enable him to commence data collection.

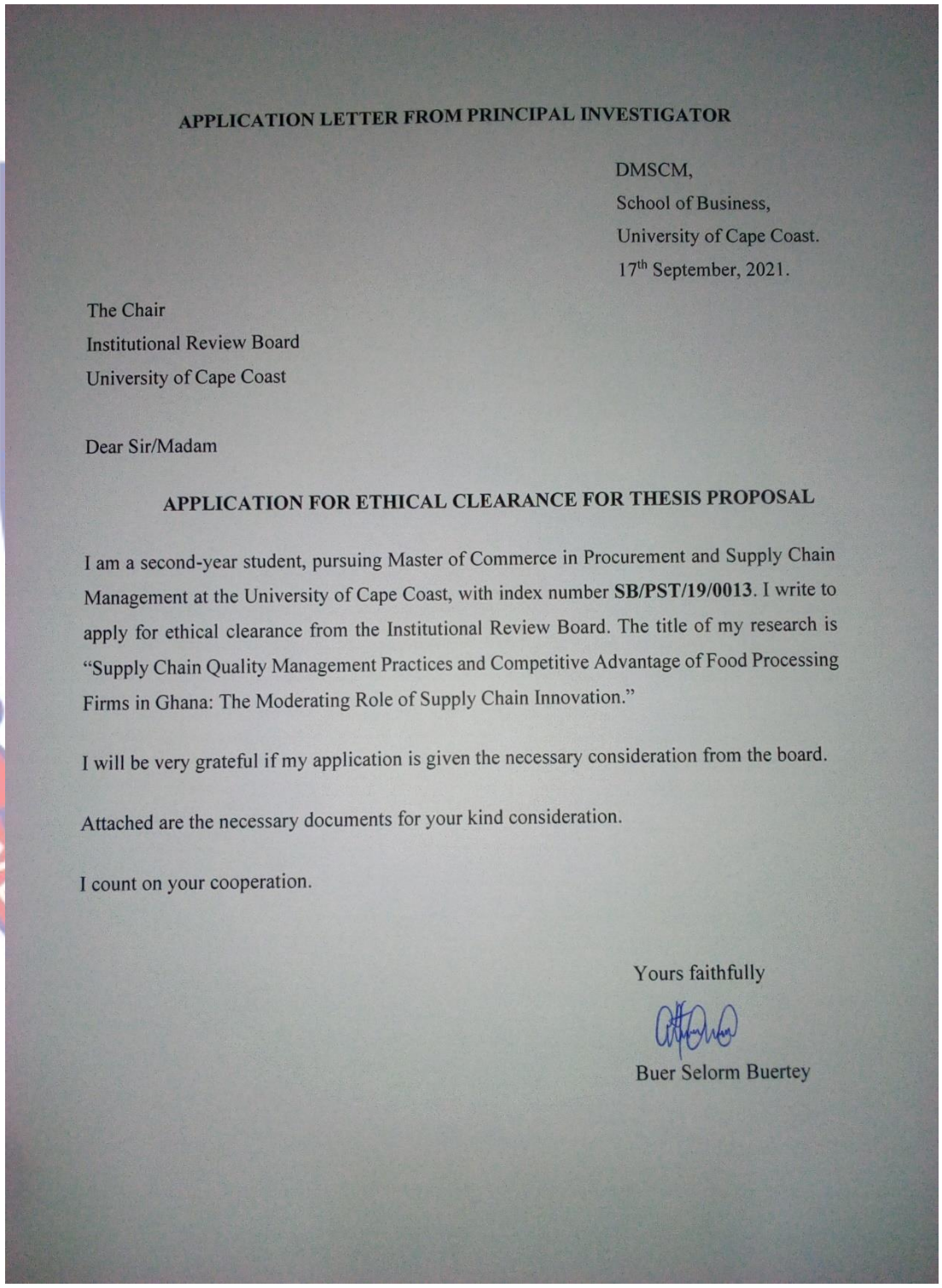
Thank You.

Yours faithfully,

Dr. Gloria K. Q. Agyapong
HEAD

APPENDIX FIVE

ETHICAL CLEARANCE APPLICATION LETTER



APPLICATION LETTER FROM PRINCIPAL INVESTIGATOR

DMSCM,
School of Business,
University of Cape Coast.
17th September, 2021.

The Chair
Institutional Review Board
University of Cape Coast

Dear Sir/Madam

APPLICATION FOR ETHICAL CLEARANCE FOR THESIS PROPOSAL

I am a second-year student, pursuing Master of Commerce in Procurement and Supply Chain Management at the University of Cape Coast, with index number **SB/PST/19/0013**. I write to apply for ethical clearance from the Institutional Review Board. The title of my research is "Supply Chain Quality Management Practices and Competitive Advantage of Food Processing Firms in Ghana: The Moderating Role of Supply Chain Innovation."

I will be very grateful if my application is given the necessary consideration from the board.

Attached are the necessary documents for your kind consideration.

I count on your cooperation.

Yours faithfully

Buer Selorm Buertey