
**UNIVERSITY OF GHANA**

# THE IMPACT OF SUPPLY CHAIN STRATEGIES ON THE OPERATIONS PERFORMANCE OF RETAIL FIRMS IN THE FOOD AND BEVERAGE INDUSTRY IN GHANA

**BY**

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# DEDICATION

This work is dedicated to my late mother, Mrs. Tanjon Konlan.

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# ABSTRACT

The Food and Beverage (F&B) industry contributes greatly to the development of the economy under the manufacturing sector. However, the F&B subsector of the manufacturing sector has received little attention in literature although, it provides both direct and indirect employment opportunities. This sector needs to be coordinated and integrated properly through its supply chains to create value and competitive edge to enhance retail operations performance. This study therefore, sought to assess the impact of supply chain strategies on the operations performance of retail firms in the F&B industry in Ghana. The supply chain strategies identified in the study are the lean, agile and Leagile. The retail operations performance is a dependent variable which was measured by efficiency and responsiveness. The study also sought to determine if the financial position of a firm mediates the supply chain strategies and the operations performance of the retail firms. Quantitative method and a cross-sectional survey research design were used. The study adopted a simple random and purposive sampling techniques for the study. A total of 300 responses out of the 363 retail firms issued with the questionnaires were received. The study used Structural Equation Modelling to analyze the data with the aim of drawing relationships between the independent and dependent variables. The study found that retail operations challenges such as stiff competition and stock out were the major challenges confronting retail operations in the F&B industry in Ghana. It also discovered that while lean supply chain strategy influences efficiency, it does not influence responsiveness. Again, the study revealed that while agile supply chain strategy influences responsiveness, it does not influence efficiency. The study further discovered that, leagile supply chain strategy influences both responsiveness and efficiency. The study again revealed that financial position of a firm has no mediation effect on the relationship between supply chain strategies and retail operations performance. The study ends by examining key contributions to policy, theory and practice on how supply chain strategies can be used to achieve maximum retail operations performance.

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| | | |
|---|---|---|
| ABL | – | Accra Brewery Limited |
| ASC | – | Agile Supply Chain |
| AVE | – | Average Variance Extracted |
| DCs | – | Dynamic Capabilities |
| E | – | Efficiency |
| ERP | – | Economic Recovery Program |
| F&B | – | Food and Beverage |
| FP | – | Financial Position |
| GBL | – | Ghana Brewery Limited |
| GDP | – | Gross Domestic Product |
| GIC | – | Ghana Investment Centre |
| GIPC | – | Ghana Investment Promotion Centre |
| GSA | – | Ghana Standard Authority |
| GSS | – | Ghana Statistical Service |
| ISSER | – | Institute of Statistical, Social and Economic Research |
| ISSP | – | Industrial Sector Support Program |
| KCL | – | Kassapreko Company Limited |
| LASC | – | Leagile Supply Chain |
| LSC | – | Lean Supply Chain |
| MoFEP | – | Ministry of Food and Economic Planning |
| MoTI | – | Ministry of Trade and Industries |
| NQA | – | National Quality Awards |
| OECD | – | Organization for Economic Operation and Development |
| PLS | – | Partial Least Squares |
| PNDC | – | Provisional National Defence Council |
| R | - | Responsiveness |
| RBV | - | Resource-Based View |
| SAP | - | Structural Adjustment Program |
| SEM | – | Structural Equation Model |
| SPSS | – | Statistical Package for Social Science |
| TIP | – | Trade and Investment Program |
| VRIN | – | Valuable, Rare, Inimitable and Non-substitutability |

# CHAPTHER ONE

# INTRODUCTION

## 1.0 Background of the Study

The contribution of retail supply chains to national economies by making products and services available to the citizenry to support everyday living has been very great. Retail supply chain involves the "process of purposefully managing the procurement, movement and storage of materials, parts and finished inventory via the organization and its marketing channels in such a way that current and future profitability are maximized through the cost-effective fulfilment of orders" (Basu & Wright, 2010, P.356).

However, retail supply chains have become more sophisticated due to the emergence of disruptive technologies, e-commence and the continual changes in the taste of consumers, as well as the increasing global competitions (Ross, Weston & Stephen, 2010). Li (2014) posits that, organisations must begin to manage and coordinate their retail supply chains in ways that are responsive and efficient than only concentrating on the mere practice of the flow of goods from one point to the other.

Again, the retail supply chain has become more dynamic and a competitive weapon through which organisations adopt and ensure that, all facets of the retail operations linkages are integrated and coordinated in a quest to achieving optimal customer satisfaction and a business value. This makes supply chain and logistics management especially in the F&B industry of the manufacturing sector more important than ever before (Li, 2014).

Wu and Pagell (2011) argue that, the F&B industry faces perennial and complex challenges in its logistical management due to poor coordination in supply chain linkages. Kaipia, Dukovska-Popovska and Loikkanen (2013) postulate that, managing retail supply chains in the F&B industry has numerous hindrances such as perishability of products, stock forecasting challenges, quality management, returns management, and the influx of unregistered products into the mainstream markets.

Mena and Stevens (2010) further indicate that, in the F&B industry, the products are fragmented and pose grave concerns on the ability of the retail firms to coordinate the systems properly ultimately affecting supply chain efficiency and responsiveness. Firms must therefore improve on their operations performance to become more competitive and remain relevant in the industry within which they operate. Sánchez & Pérez (2005) defined operational performance as the unique and strategic dimensions employed by competing firms and comprises of operational indicators like flexibility, efficiency, responsiveness and delivery.

Many studies revealed that, in measuring firm's operational performance, delivery, flexibility, cost, efficiency, inventory and responsiveness are commonly used as optimal strategies (Gaiardelli, Saccani, & Songini, 2007). Better and efficient operational performance increases customer satisfaction through effective delivering and supply of high-quality products as well as services (Kumar & Motwani, 1995).

Generally, there are no commonly agreed firm operations performance measurement indicators. Nevertheless, Theodosiou, Kehagias & Katsikea (2012) state that, some multidimensional variables encompassing both financial and non-financial indicators are often adopted in assessing firm's operations performance. Studies that generally assessed how variables impact the firm's

operations performance normally adopt some financial indicators including ratios, earning per share, return on equity, return on assets and profit margin among other indicators (McMahon, 2007).

Non-financial measures of firm's operations performance such as flexibility, productivity customer satisfaction, product reliability, employee satisfaction and quality have also been employed to assess performance in literature. In Imran, Arif, Cheema and Azeem (2014) observation, firm performance is affected by efficiency in production, quality, turnover, lead time, effective relationship with key stakeholders, improvement of processes, innovations and new approaches.

Organisations are therefore expected to offer quality products and maintain a well-coordinated retail operation to achieve a competitive edge (Leat & Revoredo-Giha, 2013) through minimised cost and organisational efficiency. In this respect, Ross, Weston and Stephen (2010) claim that, in an attempt to meet customer's demands in this highly competitive, dynamic and environmental uncertainties, more emphases should be paid to retail supply chain strategies such as leanness, agility and leagile.

To be responsive and efficient as part of achieving outmost retail operations performance and competitive edge, retail firms must be adaptive, flexible and cost conscious by adopting appropriate retail supply chain strategies (Kumar & Nigmatullin, 2011). Bourlakis and Matopoulos (2010) maintain that, understanding the impacts of leanness and agility on retail operations performance (responsiveness and efficiency) helps organisations to remain relevant in this highly competitive market environment.

From the aforementioned literature, the importance of leanness, agility and leagile in retail supply chains cannot be underestimated. Lean refers to a supply chain strategy which produces exactly the quantity that is demanded by the customer at the right time and at the right place (Stavrulaki & Davis, 2010). Cohen and Roussel (2013) advises that, the lean supply chain strategy should not only be based on reducing waste in the supply chain system, but it must be a value-added activity. There is the need therefore, to understand activities which create value and those which create wastes.

In lean supply chain, the speed and responsiveness to customer demands, reduction in inventories and cost, enhanced customer satisfactions are key competitive weapons that can be tapped by the retailer (Azevedo, Carvalho, & Cruz-Machado, 2011). Again, the lean strategy assists organisations to identify and eliminate activities which are not adding values such as excess times, labour, equipment, spaces, and inventories across the supply chain (Qrunfleh & Tarafdar, 2013). This strategy helps firms to improve quality, reduce costs, and enhance service delivery to customers (Stavrulaki & Davis, 2010).

The overall essence of the lean supply chain strategy is to reduce waste and maximise output at the least cost possible while meeting exactly the requirements of the end user (Carvalho, Duarte, & Machado, 2011). According to the Japanese concept of production management, lean targets the reduction of types of waste (inventory, unused capacity, poor quality, obsolete items, etc.) in order to minimize costs.

Notwithstanding the numerous benefits of lean supply chain strategies, the practice is becoming continuously difficult to implement and sustain as retail supply chain and logistics management are becoming complex due to challenges such as unreliable power supply, instability in

production, and increased in supply chain linkages. Another challenge with the lean supply chain is the inability of the system to continuously satisfy customer demands at the least cost possible at all times ( Kumar & Nigmatullin, 2011)

An alternative retail supply chain strategy relevant to the F&B industry is agility. The agility concept is a competitive supply chain strategy which emphasizes more on the availability of goods and services at the right place and at the right time with competitive prices (Basu & Wright, 2010). The Agility Forum at the Iacocca Institute defined agility as "the ability of an organization to thrive in the competitive environment of continuous and unanticipated change and to respond quickly to rapidly changing markets driven by customer-based valuing of products and services" (Mena & Stevens, 2010, P. 1-15).

This definition encompasses "four principal dimensions of agility thus; enriching customers with total solution products, mastering change and uncertainty, cooperating to enhance competitiveness and developing the knowledge-driven enterprise. Agile systems are built around flexibility, emphasizing flexible lot sizes, quick changeovers, and/or manufacturing products to specific customer orders. Agile systems are often deployed in companies where there are very short product life cycles (such as electronics, foods and beverages) or very erratic customer's demand" (Kimani, 2013, P.137-143).

An agile capability enables a firm to cost effectively and rapidly "respond to, and create new windows of opportunity in a turbulent market environment driven by individualized customer requirements. These requirements must be met at the right price, with the right quality and at the right time" (Al-Aomar & Hussain, 2018, P. 553-565). A third strategic option for retail supply chain strategies is the concept of leagile strategy.

leagile supply chain strategy combines the lean and agile strategies by seeking to reduce waste and maximise output whilst emphasizing more on the availability of goods and services at the right place and at the right time at competitive prices (Mor, Singh, & Bhardwaj, 2015). This paradigm involves both lean and agile supply chain strategies which create a virtually brand-new management framework.

The leagile framework allows firms and networks to shape an appropriate profile to face successfully the volatility of markets and fight to gain competitive advantages (Christopher, Lowson, & Peck, 2004). This strategy is particularly important in the cases of firms exploiting markets in terms of cost, quality, response time and service level where the client seeks for better responsiveness to meet their demands and for optimizing the management of the supply chain (Mikkola & Larsen, 2004).

The typical logistics goals of a leagile supply chain are to realize short response, feasible deadlines, ability to change the volume and production mix (Hobelsberger, 2021). "Being leagile means using market knowledge and a virtual corporation to exploit profitable opportunities in a volatile market" (Kisperska-Moron & Swierczek, 2009, P. 217-224). The supply chain needs to be flexible and focus not only in the efficiency but also in the effectiveness. The ultimate measure of retail supply chain success rests on the ability of the system to be responsive and efficient in optimizing business value (Mikkola & Larsen, 2004).

Tillman (2020) asserts however that, most of the literatures dealing with operations planning problems in manufacturing operations are emerging while nothing is done on integrated retail operations performance and capacity management among retail firms in the F&B industry. There

is the need therefore to examine the appropriate supply chain strategies which contribute better to the responsiveness and efficiency in retail operations.

Again, based on the general lack of research on the operations performance of retail supply chains particularly in the F&B industry, this study attempts to contribute to the operations management literature by enhancing understanding of the operations performance of retailers in the food and beverage industry.

**1.1 Problem Statement**

Managing retail supply chains in the F&B industry is extremely a daunting task. This is because, most of the products in the food and beverage industry have shorter life span (Saha, Gregar, & Sáha, 2017). Again, with the emergence of e-commence, the industry is under upsurge with influx of unregistered goods which are fragmented and difficult to regulate (Abideen & Mohamad, 2019). These create grave concerns to retail firms within the F&B industry and pose extra cost and reliability issues to organisations in a quest to be responsive and efficient to customer demand (Saha et al., 2017).

Again, as organisations struggle to adopt better supply chain strategy, it creates fluctuations in demand, order quantities, shelf space, and elusion in pricing decisions (Orheim & Utvær, 2021). Retail firms in the F&B industry need to choose appropriate supply chain strategies to maximise operations efficiency and responsiveness to customer needs in order to remain competitive in this turbulent environment.

Johnson (2016) indicates that responsiveness and efficiency are the primary variables which determine the success or otherwise of retail operations performance. It appears however, that literature in retail supply chains focuses on storage and order picking while research on

responsiveness and efficiency in managing an integrated and holistic retail operations performance in the beverage industry appears to be lacking. The deficiency of current reviews with respect to the gaps in literature on leanness, agility and leagile and their impacts on responsiveness and efficiency and design in the F&B industry has also been accentuated in the literature (Orheim & Utvær, 2021).

Christopher, Lowson and Peck (2004) claim that, demand fluctuations tend to have a stronger impact on retail supply chain management which include delivery and capacity utilization. A bigger challenge for retail operations is to be responsive to customers' demand and still be able to meet both quantity and quality requirements in order deliveries in a way that is cost efficient (Almahamid, Awwad, & McAdams, 2010).

These issues are more wobbling where the supply chain linkages are not properly coordinated and integrated with the aim of achieving a competitive advantage in a wake of this global competition (Mor et al., 2015). This makes the current study useful as it attempts to identify appropriate supply chain strategies that are responsive and efficient in meeting customer demand just in time to enhance profitability of the retailers.

The key strategies for managing the supply chain are lean, agile and leagile. These strategies have received some attention in the literature but largely in manufacturing operations. For instance, on lean strategy, a lot of work has been done on green supply chain and the need to minimise the negative impacts of firms on the natural environment (Saha et al., 2017). Also, on agility, there have been extensive works on sustainable competitive strategies of firms to remain resilient in the manufacturing operations (Bhasin, 2015).

The leagile supply chain strategy has always been discussed as an interface of both lean and agile strategies which seek to reduce waste to make firms remain competitive and responsive to customer's demand (Christopher et al., 2004). The contribution of supply chain strategies in enhancing retail operations performance cannot be underrated. However, literature seems to be silent on the usefulness of these strategies to retail supply chains thereby creating a knowledge gap especially on how each of these strategies affect the retail operations performance in the F&B industry (Palevich, 2011).

Also, Ambe (2009) posits that, literature remains silent on whether the financial position or size of the firm mediate between the supply chain strategy adopted and the firm's retail operations performance. Consequently, it is of interest in this study to examine whether the financial position of the firm is a mediator between supply chain strategies and operations performance of retail firms.

Research on retail supply chains have largely focused on storage and order picking in the general framework of supply chain management while study on responsiveness and efficiency in managing an integrated and holistic retail logistics in the beverage industry is lacking (Palevich, 2011). For instance, in F&B industry, price discrimination and order management and the appropriate supply chain strategy that the industry uses remain elusive. Abideen and Mohamad (2019) claim that, most of the literature dealing with individual operations planning problems are emerging while there is still a lack of research focusing on integrated retail logistics operations and capacity management in food and beverage industry. These events make the current study relevant and timely.

In F&B industry for example, there are no clear timelines for order deliveries, price stabilisation, and responsiveness to customer demands although, some of the companies in the industry like Accra Brewery Limited (ABL) try to maintain the same prices across their regional depots despite differences in distance and geographical locations of suppliers. This practice is at variant with the assertion by Al-Aomar and Hussain (2018) that, the cost of delivering orders, warehousing, and transportation must differ depending on the channel and distance in terms of mileage covered in a typical retail supply chain management system. These aforementioned gaps are relevant to the current study as they impact on determining the appropriate supply chain strategies for the retail operations performance.

### 1.2 Purpose of the Study

The overall purpose of this research is to determine the impact of lean, agile and leagile supply chains strategies on retail operations performance of retailer in the Ghanaian Food and Beverage Industry.

### 1.3 Objectives of the Study

The specific objectives of the study are to:

1. Examining operational challenges of the food and beverage supply chains in Ghana;
2. Examining the impact of lean, agile and leagile supply chain strategies on the efficiency and responsiveness of the food and beverage supply chains
3. Determine if the financial position of the firms mediate the impact of supply chain strategies on operations performance of retailers

### 1.4 Research Questions

In response to the above-mentioned objectives, the research sought to answer the following questions:

1. What are the operational challenges of food and beverage retail supply chains in Ghana?
2. To what extent does lean, agile and leagile supply chain strategies impact on the responsiveness and efficiency of retail supply chains in Ghana?
3. To what extent does the financial position of firms mediate the impact of supply chain strategies on the operations performance of retailers in Ghana?

## 1.5 Significance of the Study

The study sought to provide empirical evidence on the impact of supply chain strategies (lean, agile and leagile) on retail operations performance of retail firms in the F&B industry in Ghana. The study further sought to examine whether the financial position of a firm mediates its supply chain strategies and its operations performance. The research outcomes therefore contributed to theory, policy and practice.

### 1.5.1 Contribute to Theory

The outcome of this study contributed to theory by examining the usefulness of supply chain strategies in promoting retail operations performance thereby closing a knowledge gap on how lean, agile and leagile supply chain strategies affect the retail operations performance of retail firms in the F&B industry (Bhasin, 2015). Also, the study contributed to theory by conducting a mediation analysis to examine whether the financial position of the firm mediate between the supply chain strategy adopted and the firm's operations performance in the F&B industry (Almahamid et al., 2010).

### 1.5.2 Contribution to Policy

The study sought to inform the policy decisions on the development of sustainable supply chains strategies to minimize price discrimination across wholesale depots, ensure strict adherence to order timelines and improve on the efficiency and responsiveness to customer demands among

retailers in the retail industry. Again, it provided real time information on parameters to ensure proper integration and coordination of supply chain operations performance to government and other policy makers in the retail industry.

The study is useful to stakeholders in the F&B industry to implement pragmatic policy decisions to mitigate complexity and fragmentation of retail supply chains in the food and beverage sector to enhance global competition. Again, the direction of supply chain has evolved especially with the advent of e-commence and other on-line services. This needs coherent policy frameworks and deliberate attempt by the policy makers to enhance efficiency and responsiveness of retail operations performance.

### 1.5.3 Contribution to Practice

This contributed to practice by guiding the stakeholders in the food and beverage industry such as managers and practitioners to select appropriate supply chain strategies that enhance operations performance of retailers in the industry. The study also sought to equip and strengthen the stakeholders in the F&B industry with adequate knowledge on retail supply chain integration and coordination to attain competitive edge.

The study provided insights to guide practitioners on the better roadmap in retail supply chain management for improved performance. The study also contributed to practice by helping the stakeholders in the industry to identify strategic options to address challenges and ensure sustainable alternative options to improve retail operations performance in the F&B industry of the manufacturing sector.

## 1.6 Scope of the Study

The study sought to examine the impact of lean, agile and leagile supply chain strategies on the operations performance of retailers in the Ghanaian food and beverage industry. Specifically, the study examined 363 firms out of 3,913 registered F&B firms across the sixteen (16) regions in Ghana as reported by (GSS, 2006). These firms are into the production and distribution of different kind of foods and beverages. A minimum of 23 F&B firms were considered in each region. These firms include Accra Brewery Limited, Guinness Ghana Limited, Kasserpreko Limited among others.

## 1.7 Structure of the Research

The study is organized into six chapters. Chapter one considered the background of the study, problem statement, purpose of the study, research objectives, research questions, significance of the study, scope of the study and ended with the structure of the research work. Chapter Two looked at the context of the study with major considerations on brief overview of the study area, historical background of F&B industry, challenges of F&B industry, contributions of F&B industry to the economy, opportunities of F&B industry in Ghana, and evaluate policy supports and other supports by Ghana Standard Authority (GSA) in the F&B industry of the manufacturing sector.

Chapter Three covered the review of related literature. This is done in three dimensional approaches which include theoretical framework, empirical studies and the conceptual framework. Chapter Four covered the methodology employed for the study and examined the approach for the study, research design, population of the research, sampling size determination, instruments for sample selection, procedure for sample selection, ethical consideration and data analysis tools. Chapter Five considered data presentation and analysis, and discussion of the

research findings. Chapter Six detailed the summary of research findings, conclusions and key contributions of the study.

# CHAPTER TWO

# CONTEXT OF THE STUDY

## 2.0 Introduction

The context of the study encapsulates brief overview of the study, historical background of F&B industry, examines the challenges of F&B industry, contributions of F&B industry to the economy, opportunities of F&B industry in Ghana, and evaluate policy and other supports initiatives by the Ghana Standard Authority (GSA) in the F&B industry.

## 2.1 Overview of the Study Area

The study is conducted in Ghana which is among the few African continent to become a sovereign country around 1957. Ghana is bordered with Burkina Faso to the North, Togo to the East and Côte D'Ivoire to the West. Ghana has approximately 239 thousand square kilometres of the total land space with a population of 30.8 billion people (GSS,2021). Ghana is currently described as a middle-income economy with a lot of prospects both in service and manufacturing sector of the economy.

The country is rapidly becoming industrialized with much focus on manufacturing, service and commerce. However, the country is faced with issues of rapid urbanization and housing deficits as a result of rapid population growth and migration (GSS, 2010). The country has most of its people engage in petty trading, manufacturing, foods processing, agricultural productions, and service provisions.

## 2.2 Historical Background of F&B Industry in Ghana

The historical antecedent of F&B industry appears to be as old as the existence of man. The contribution of F&B to GDP in Ghana has been varied across several decades. For instance,

recent estimates show that the manufacturing sector contributes 4.6 percent of GDP (GSS, 2017) and employs 9.1 percent of the labour force (GSS 2014). The F&B processing subsector added US$812 million to the national economy and constitute the largest share of manufacturing sector to GDP at 30 percent in 2013 (Frazer, 2015) .

However, it is observed that since the 1957s, F&B industry has remained a key indicator for the Ghana's development and transformation (Ackah & Aryeetey, 2012). The F&B industry together with the manufacturing sector historically were state-owned and depended largely on state partnership and government control in their production and daily operational processes (Owusu & Oteng-Ababio, 2015).

In the early 1970s, significant increase and growth in outputs was experienced by the F&B industry (Oteng-Ababio & Grant, 2019). Nevertheless, within few years, diverse realities arose which resulted to a significant decline in the growth and productivity of the food and beverage sector. Rodrik (2015) observed that external factors coupled with unsuitable internal policies between the period 1970s and early 1980s drastically affected the F&B industry.

This negatively impacted the export earnings and financial stability of the sector. The F&B industry in Ghana, encompass both global, local, private, public corporations and multi-national firms that are into one or both products for the domestic market and exportation. Economic uncertainty and constant decline in the F&B industry as well as decline in the manufacturing sector performance resulted in the development of some industrial policies such as the Structural Adjustment Programme (SAP) around 1983. In the opinion of Tetteh-Ossom (2013), the SAP initiative constituted the deregulation and privatization of domestic market and the restructuring of government-owned firms.

Tetteh-Ossom (2013) emphasized that other initiatives like the Economic Recovery Programme (ERP) were also adopted in 1983. The objective of this initiative was to complement the SAP in restoring the ruined productive and social infrastructure to boost performance in all sectors of the economy. Tetteh-Ossom (2013) postulated that, the F&B sector started displaying positive and strong up-trends as a result of the novel reform initiatives that were adopted.

However, this positive up-trends within the F&B industry was not sustainable in the long-run. The economy began to experience depreciation of the domestic currency, severe high-interest rates and rivalry from external markets which affected the F&B industry (Boateng & Ganu, 2012). Bamfo (2012) states that, as a measure to overcome those challenges, several policy interventions were implemented. An example was the Ghana Investment Promotion Centre (GIPC), Act 2013 (Act 865).

Before GIPC was promulgated, there was Ghana Investment Centre (GIC) which was established under the Ghana Investment Code 1985 (PNDC Law 116) and mandated to formulate policies to assist both production and manufacturing organizations that were seriously struggling for survival to the prevailing economic developments (Frazer, 2005). Several other policies and initiatives including the Trade and Investment Program (TIP) were adopted to offer the desired funds to enhance industrial production.

The declaration of the new investment code (GIPC Act of 1994 to PNDC Law 116) together with the creation of the Ghana Investment Centre institutional and regulatory reforms were implemented (Ministry of Trade and Industry, 2016). Another area of relevance which projected the F&B industry into the limelight was the advent of hospitality industry and e-commerce as people attempted to explore the industry for the purposes of trade (Luther & Debrah, 2012). The

traditional view of F&B was seen as a necessity to satisfy basic human needs as espoused by Abraham Maslow's Hierarchy of needs. Buatsi (2002) posits that, with the commercialization of F&B industry as a niche of manufacturing sector, F&B industry now contribute significantly to the Gross Domestic Product (GDP).

Buatsi (2020) observed that F&B industry contributed approximately US$125m to the GDP of Ghana in 2014 and plays a critical role in the economy by providing several thousand direct and indirect employment opportunities across the value chain. Alternative area worth mentioning is the upsurge in demand for carbonated soft drinks, energy and sports drinks, bottled and sachet water and branded alcoholic beverages which is being driven by population growth, rising urbanisation, the growth of the Ghanaian middle-class and tourism (Blankson, Owusu-Frempong & Mbah, 2004).

These factors as aforementioned have gained value as a result of explosion in trade (Odonkor & Odonkor, 2020) contrary to the traditional understanding of the production of food and beverages for mere consumption by peasant farmers. The contemporary view on F&B industry is that, it is one of the few growing industries in consumption-oriented economies like Ghana (Nordhagen, 2020).

It is observed that, every year, $120bn to $150bn in value are realized through the use of big data in food consumption although, there is dearth of empirical research on effects of data-specific capabilities on firm performance (Irfan & Wang, 2019). Odonkor and Odonkor (2020) also revealed that, F&B industry until the explosion of e-commerce, did not receive much attention on innovation with regards to proper packaging and coordinated supply chain linkages in the past. Most of these firms only limited their product innovations to internal practices,

technologies, and processes that offered them sustainable competitive returns (Blankson, Owusu-Frempong & Mbah, 2004).

These limitations exclusively based on internal activities made a lot of firms in the F&B industry become redundant in knowledge and technological expertise outside their boundaries (Nordhagen, 2020). The F&B industry have been regarded as basic, conservative and poor innovative sector (Bigliardi & Galati, 2013) which are susceptible to global technological advancement, altering and face with unstable market environment which are solely dependent on the production processes with uncontrollable factors such as perishability of products and raw materials.

The industry has recently received much attention and innovations which are characterised by vertical integration along the industry value chain and relatively better coordinated supply chain linkages in different areas with variety of networks, and fast-paced industrial changes which favour collaboration and expansion in the industry (Bigliardi & Galati, 2013). In this regard, Bigliardi and Galati (2016) indicate that F&B companies are trying to improve their innovation capacity by pursuing an open approach to innovation by exploiting external knowledge paths to market. The F&B sector has become more prominent when we consider its traditional role and contribution to the development of rural areas within the local economies (Bigliardi & Galati, 2013).

Again, the F&B industry has the capacity to overcome shocks relative to other productive sectors. In Ghana, F&B industry is a fragmented industry with more than 280,000 firms with research and development investment of 0.53 per cent in terms of turnover (OECD, 2009). In this sense, Forth, Bewley and Bryson (2006) indicate that, the F&B industry is a mature and relatively low-technology sector subjugated by small enterprises.

### 2.3 Contributions of F&B Industry in Ghana

The F&B industry in Ghana is noted for its significant contribution to job creation in the country. The majority of lucrative jobs for both skilled and unskilled workforces are deemed to emanate from the food and beverage industry (Grant, Oteng-ababio, & Sivilien, 2019). The F&B industry has over the years addressed Ghana's poverty challenges and offered new areas of opportunities for the majority of job seekers in Ghana (Buatsi,2002). Buatsi (2002) argues that the F&B industry through its supply chain which links suppliers, distributors, customers and business service providers provides job opportunities to many Ghanaians.

Food Drink Europe, 2013-2014 report avers that, although, F&B industry is fragmented, it is the largest manufacturing sector across several continents in terms of turnover (14.9%) and value added (12.9%). Furthermore, this sector specifically accounts for the top manufacturing activity in terms of turnover in several countries (Wambugu, 2016). In Spain, it accounts for 9.6 per cent of total manufacturing turnover. In terms of structure, it is heavily weighted towards micro-firms (78%). Small companies represent 18 per cent and the remaining 4 per cent are medium and large ones (Forth, Bewley, & Bryson, 2006).

The F&B industry provides opportunities for employment and supports a large labour force (Buatsi, 2002). The support provided by the food and beverage industry takes the form of poverty alleviation as those employed by this sector are able to sustain their livelihood. Domie (2013) claims that, Ghana is regarded as being an industrial center where consumer products and industrial activities are carried out within West African sub-regions. Thus, the F&B sector among other sectors constitutes the vast majority of businesses and has over the years expanded to become major contributor to economic growth and development (GSS, 2019).

The Ghana Statistical Service (2018) reported that in the year 2019, the manufacturing sector contributed about one-third of total industry revenue generation (GH¢128.4 billion) which represents about (GH₵45.0 billion). Apart from other sectors such as the mining and quarrying sector, the F&B industry is the largest sub-sector in terms of its contribution to Ghana's economic growth (GSS, 2019). Again, the Institute of Statistical Social and Economic Research (ISSER, 2017) stated that, the F&B industry through the production of quality goods and services and the payment of taxes remain a key contributor to government revenue in Ghana.

Mose et al. (2013) emphasized that notwithstanding the size of the food and beverage industry, the industry has gradually become the number one agent of economic growth, job creation and export income expansion in Ghana. Mose et al. (2013, P375-401) avers that F&B industry has the capacity to "produce for both the local and international markets, as such it constitutes a significant sector of the Ghanaian economy by adding to foreign exchange and sustainable development dimension". The industry also enhances the "productivity of local markets and effectively utilize productive resources, thereby improving long-term development and economic growth" (Mose et al., 2013 P. 375-401).

The majority of the F&B firms are found in the urban-towns (Korankye et al., 2016). These firms with the benefits of the existence of already developed infrastructures and ready market accessibility give them competitive edge. Most of the retailers who easily transform into larger scale firms in Ghana are usually located in the regional and industrial areas such as in Accra, Tema, Kumasi, Sunyani, Techiman, Wenchi, Berekum and Tamale (Korankye et al., 2016). These firm as they expand in size, employ more labour which contribute greatly to the economy.

### 2.4 Challenges of F&B Industry in Ghana

The continuous rise in the input costs and further depreciation of the cedi against almost all major currencies as well as the fragmentation in the F&B industry appears to have a heavy toll on the sector.  avers that inputs such as glass, plastic and ethanol are all imported and the duties on these commodities are calculated in foreign currencies, which affect the cost of production. The depreciation of the cedi has impacted particularly heavily on sachet water producers whose margins are very low (Anyidoho & Steel, 2016).

Another issue of grave concern appears to be the erratic power supply. Odotei (2016) claim that erratic power supply negatively affects productivity among players in the F&B industry who have to rely on diesel generators to operate. Again, the number of illicit products and unregulated home brews still dwarfs the legal beverages market and although stakeholders reiterate the importance of regulation, enforcement and financial difficulties perhaps are the major challenges. These affect the profitability levels of the industry and sometimes cause stagnation in the growth trajectory of the F&B industry.

F&B processing industry is also confronted with issues related to knowledge management, information integration, operational coordination from farm to market, sustainability, leanness and agility (Anyidoho & Steel, 2016).  To harness the full potential, the industry needs a high level of integration from farm to market at all levels and layers. Firms that are large-sized are making significant investments in green production, packaging, design and quality to cope with domestic and international standards.

Big data are making significant impacts on logistics and supply chain management through automatic food processing like cleansing, packing and storage (Anyidoho & Steel, 2016). Odotei

(2016) observed that despite the contributions of the F&B industry to accelerated growth, job creation and economic development in Ghana, several factors continue to hinder its progress. Ghana's business environment remains tough for majority of F&B firms as well as manufacturing firms (Odotei, 2016). The author identified five key obstacles that limits F&B firms as: high competition from imported products, insufficient funding and higher interest rates, lack of government commitment and support, extreme levies, and taxes and high utility pricing.

Ackah et al. (2014) states that a fundamental challenge that the food and beverage industry encounters "is the lack of adequate access to funds and capital". These inadequate capital and funding opportunities adversely limit the growth and expansion of the industry. Similarly, Mose et al. (2013) identify a number of factors that endanger the food and beverage industry as erratic power supply, high lending rates, constant increase in fuel prices which repeatedly compel firms to reduce their production capacity. The liberalization of external trade has also introduced some kind of unfair competition from imported goods which always makes the F&B sector less attractive to potential investors.

Oppong, Owiredu and Churchill (2014) observed that the scarcity of potential investors due to high levels of the cedi depreciation has constrained most businesses in Ghana including the F&B enterprises. The author argues that most manufacturing firms and other businesses always struggle with the high depreciation level of the Ghanaian cedi. This predicament denies majority of businesses the potential investors they require to expand their operations and has ultimately contributed to their collapse. In Ghana for instance, about 75% of firms in the F&B industry are continually constrained by the high depreciation level of the cedi (Oppong et al., 2014).

## 2.5 Opportunities in F&B Industry in Ghana

The F&B industry in Ghana now has more opportunities and prospects for growth and expansion than before. Several initiatives and policies now exist to support firms in Ghana. Sutton and Jenkins (2007) observed that the Financial Sector Adjustment Program (FSAP) which was established in 1987 by the Government of Ghana has provided more accessibility to financial support to firms.

The food and beverage sector have equal opportunities to assess such financial opportunities that offer adequate insurance facilities and credit (Apanga, Addah & Sey, 2014). Several multifaceted initiatives have been initiated to expand the industrial output and capacity in the F&B industry within the manufacturing sector. Examples include special interventions by the Ministry of Finance and Economic Planning (MOFEP), Bank of Ghana, Financial Sector Support Project (FSSP) and the Ministry of Trade and Industry (MOTI) support programs (Apanga, Addah & Sey, 2014).

The industrial development fund has also been established to reinforce the investment of firms into manufacturing subsector such as food and beverage industry in Ghana. These development funds are accessible by firms through financial institutions in the form of medium/long-term credit facilities to support in the expansion and growth agenda of the manufacturing and other economic sectors of the economy (Pissarides, 1999).

## 2.6 Policies Implemented to Support F&B Industry in Ghana

Several industrial policies and measures have been used by the Ministry of Trade and Industry (MOTI) to enhance efficiency, high productivity, competitiveness and to effectively manage scarce production resources within the food and beverage industry in Ghana. While some of the

industrial policies were meant to expand production capacity of firms within the F&B sector, others were intended to expand technological capacity within the industry. For instance, the Industrial Sector Support Program (ISSP) was established in 2010 to help provide some fair-pricing, quality products and services with the aim of boosting competitiveness in both the international and domestic markets (Pokuaa-Duah & Nadarajah, 2020).

As part of the efforts of the Ghana government to achieve higher levels of growth in GDP, job creation, expand domestic production capacity and international trade, government of Ghana established the Industrial Sector Support Program (ISSP). This policy was introduced to help revive and drive an active industrial economy that has the capability to offer sustainable growth, increase job opportunities and reduce poverty (Kaplinsky,2000).

The Industrial Sector Support Program (ISSP) was effective for some considerable period of time and was primarily driven by the Ministry of Trade and Industry (MOTI) and other supporting bodies. The reports by ISSP showed an overall industrial sector growth, increased the contribution of the food and beverage industry to GDP, increased in the volume and value of exports as well as increased in the flow in foreign and direct investment into the food and beverage industry (Ministry of Trade & Industry, 2016)

Another area of support is the establishment of the Ghana Standard Authority (GSA) by government and charged with the duty of promoting industrial standards. Odonkor and Odonkor (2020) claim that since the establishment of GSA in 1963, the institution has contributed greatly to quality standards in Ghana and has greatly enhanced the certification of most local industries. Among the fundamental functions of the GSA is to put in place key standards that are vital for

ensuring quality products in the manufacturing sector. Other roles of the authority include inspection, certification and testing (Ghana Standard Authority, 2018).

The GSA also continues to set quality standards and quality practices to regulate the activities of firms. The institution has over the years ensure that approved practices and quality standards practices are effectively adhered to by firms. Similarly, it has provided guidance to firms and sanctioned firms that fail to adhere to the set standards by the GSA (Ghana Standard Authority, 2018). In order to boost the development of improved industry standards, GSA adopted the project known as improved standards for industrial development in 2001 as part of private sector-led accelerated industrial development strategy.

Other initiative worth mentioning is the introduction of National Quality Awards (NQA) in 2017 by the GSA in collaboration with the Association of Ghana Industry to educate citizenry on standardization products (Ghana Standard Authority, 2018). This initiative recognized and awarded domestic firms that effectively implemented and adhere to quality standards in their daily operations. Among some of the objective of NQA scheme was to show the effect of quality on the performance of firms both domestically and internationally. The NQA also intended to promote reliability of products through quality management strategies

## 2.7 Major Players in the F&B Industry

The Ghanaian food and beverage industry is made up of a network consisting of manufacturers, producers, wholesalers, distributors, retailers and consumers. Kaplinsky (2000) observed that each of these players has a specific impact on supply and demand throughout the value chain. Thus, understanding the similarities and differences between these players and their roles can

improve knowledge into the supply chain and economic dynamics between the various players in the industry.

According to Pokuaa-Duah and Nadarajah (2020), manufacturers are predominant players in the Ghanaian food and beverage industry. These manufacturers combine produce and raw materials from producers with a range of chemical and nutritional additives to create packaged food products or beverages. Such processed foods and beverages have significantly longer shelf life because of added preservatives, and are generally frozen, dehydrated and canned to further preserve freshness by the manufacturers.

The Ghanaian food and beverage industry is made up of several state owned and private manufacturing companies with the leading manufacturers encompassing Guinness Ghana Breweries Limited (GBL) which has about 60% indigenous alcoholic beverage manufacturer, Kasapreko Company Limited (KCL), Accra Brewery Ltd and Voltic Ghana, the market leader in bottled water (Odonkor & Odonkor, 2020a). Among the commonly manufactured food and beverages are minerals, carbonated soft drinks, alcoholic drinks, energy and sports drinks, and processed foods.

In Ghana, as food and beverage manufacturers become more demand driven, there is a shift towards more frequent changes in production runs. Thus, manufacturers are faced with the challenge of having an optimal supply plan while simultaneously considering all constraints, cost and capacities across the supply chain. Manufacturers in the Ghanaian food and beverage industry are under pressure to be more agile and flexible in building a supply chain foundation that can help automate daily activities in a way that creates superior competitive advantage (Pokuaa-Duah & Nadarajah, 2020).

Wholesalers are another group of key players in the Ghanaian F&B industry. The wholesalers buy the products in bulk from the manufacturers and then sell the products to the retailers. In F&B industry, wholesalers have served as extended warehouses for distributors, granting access to numerous retail firms in the F&B industry in Ghana (Aovare, 2017). The wholesalers have acted as aggregators of demand, buffering manufacturing from small orders and logistics complexities. The wholesalers serve customers who purchase in large quantities, such as restaurants and institutions.

However, a key challenge facing wholesalers in the F&B industry in Ghana especially in this current pandemic is inventory optimization (Addo-Tham, Appiah-Brempong, Vampere, Acquah-Gyan, & Gyimah-Akwasi, 2020). The authors argue that while the majority of wholesalers in the F&B industry suffer obsolescence by stocking too much supplies, others have lost competitiveness by stocking little supplies. Odonkor and Odonkor, (2020) posit that the wholesalers in the F&B industry by selling to retailers, have always leverage their economies of scale, and generated profit along the F&B supply chain in Ghana.

Kaplinsky (2000) posit that retailers are another group of key stakeholders in the food and beverage industry. These retailers, having received supplies from the wholesalers in the value chain then sell directly to consumers. Kaplinsky (2000) observed that majority of such sales are carried out in local stores and super markets in Ghana. The predominant food and beverages retail outlets remain traditional markets in Ghana. The retail firm's stock these products and sell in smaller quantities to customers usually in commodity specialized areas where majority of petty traders are concentrated.

In Ghana's F&B industry, retail firms closely track the preferences and demands of their customers and uses combination of price, product selection, service, convenience among other strategies to draw customers to their products (Aovare, 2017). It is observed that as a final link in the supply chain from the manufacturer to the consumer, retail firms drive demand for various F&B products in different regions in Ghana, based on consumers demand (Dzeagu-Kudjodji, Adjibolosoo, & Otoo-Arthur, 2019). Dzeagu-Kudjodji, Adjibolosoo, & Otoo-Arthur (2019) argued that in the F&B industry, retail firms undertake several activities including storage, transportation and marketing of products.

The finale group of players in the F&B industry are customers. In Ghana's F&B industry, customers are either a purchasing organization that buys the products and incorporates them into another products to sell to other customers or a final end user of the product who buys solely for consumption (Abankwah, 2018). Several factors such as prices and quality affect consumers' behaviour in the F&B supply chain. Customers within the food and beverage industry place significant emphasis on product quality.

Apanga, Addah and Sey (2014) emphasize that in Ghana, consumers prefer to have quality of any product they purchase. However, a notable challenge facing Ghanaian manufacturing as well as the F&B industry is the perception of poor quality customers have about their products. Consumers in general understand quality to mean the overall features of a product that results in full satisfaction. Majority of products manufactured in Ghana fails to adequately meet customer expectations, which has in effect resulted in higher customer dissatisfaction levels (Odonkor, Adom, Boatin, Bansa, & Odonkor, 2011).

# CHAPTER THREE

# REVIEW OF RELATED LITERATURE

## 3.0 Introduction

This chapter considered the review of relevant literature. These include reviewed of related theories, the conceptual framework and empirical review. The theoretical review sought to examine related theories which draw relationships between the independent variables and the dependent variables.

The conceptual framework modelled the structural relationships of the supply chain strategies, firm's performance and the firm's financial position as the mediation variable. The empirical review examined experiential evidence of related works on supply chain strategies and the impact on firms' performance in the F&B industry.

## 3.1 Theoretical Foundations of the Study

The theoretical review examined two major theories; the Resources-Based View (RBV) Theory and the Dynamic Capabilities Theory. The two theories are useful in examining the relationships that exist between supply chain strategies and their impact on the operations performance of retailers in the F&B industry.

### 3.1.1 Resource-Based View (RBV)

The Resource-Based View (RBV) is a managerial framework which advocates that firms identify and exploit their strategic resources for the purpose of achieving sustainable business and competitive advantage (Ganesh, Murugaiyan & Madanmohan, 2017). The RBV, propounded by Barney in 1991 claims that firms exploit their internal capabilities rather than external factors to achieve and maintain sustainable competitive edge. Resources refer to "all assets, capabilities,

organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness" (Barney,1991, P. 99–120.).

Wernerfelt (1984, P. 171–180) posits that capabilities as quoted in Barney's book are "a special type of resource, specifically an organizational-embedded non-transferable firm-specific resource whose purpose is to improve the productivity of the other resources possessed by the firm". Competitive advantage is achieved when a firm succeed in implementing value creating strategies that have not been implemented by potential or current competitors (Rugman & Verbeke, 2002). Barney in 1991 indicated that, resources are classified into tangible and intangible. The tangible resources are resources which are physically seen such as land, building, vehicles. The intangible resources are those resources which cannot be seen physically such as patent, know-how, capabilities, skills and trademarks (Wernerfelt,1984).

RBV is built around the assumptions that firm's resources are both heterogeneous and immobile. The heterogeneity assumption indicates that both tangible and intangible resources of a firm such as the skills, capabilities, know-how, raw materials differ from one organization to another (Peteraf & Barney, 2003). The heterogeneity assumption presumes that a firm must possess unique and different resources, brands and capabilities from its competitors to be able to achieve sustainable competitive advantage (Hoopes, Madsen, & Walker, 2003). This implies that firms need to develop requisite capabilities with anticipation that once developed, its expected effect of improving operations performance will generate competitive edge through superior operations performance.

The second assumption is that, resources are immobile thus, resources do not move from one business firm to other business firms, especially within the short term. The assumption of immobility presumes that; resources such as intangible resources should be difficult if not impossible to be replicated by a competitor at least within a short run. The assumption further asserts that intangible resources, including brand equity, knowledge, processes, intellectual property and patent are usually immovable (Rugman & Verbeke, 2002) relative to tangible resources like machinery, equipment and capital which can easily be replicated by rival firms.

Again, incorporated in the RBV is VRIN framework which represents Valuable, Rare, Inimitability and Non-substitutability (VRIN) of firm's resources. Valuable resources are unique and when exploited judiciously reduces production costs and increases the value offered to the customers (Devi & Kamyabi, 2012). The rarity view assumes that firm's resources should be scarce and can only be obtained by one or few firms over a period of time (Taylor & Murphy ,2004). The firm's resources are inimitable when the resources are expensive to imitate by rival companies. The non-substitutability of resources refers to resources which cannot be easily substituted (Winter, 2003).

Many authors argue however that, the RBV is vague with plethora of ambiguities in its assumptions and that, firms do not really operate in a perfect competitive market and the assumption of heterogeneity and immobility of resources in a long run is impossible (Devi & Kamyabi, 2012). Barney (1991) nevertheless claims that firms that are able to exploit valuable, scarce and inimitable resources can enjoy a sustainable competitive and business advantage in the short run.

This theory is therefore relevant to this study since firms need to remain valuable by developing inimitable, rare and non-substitutable resources to ensure that there is a competitive supply chain linkage to enhance effective operational performance among retailers. Again, resources are scarce and must be managed judiciously by organisations to increase efficiency and responsiveness to rapidly changing demands.

### 3.1.2 Dynamic Capabilities Theory

The dynamic capabilities defines the "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece, Pisano & Shuen 1997). This theory claims that a firm's ability and readiness to react effectively and timeously to external challenges needs a good combination of diverse capabilities such as skills, competences and resources (Cepeda & Vera, 2007). The theory further asserts that firms must be able to develop their resources and competencies to responsively and efficiently change their operations performance (Peteraf, 1993).

The ultimate assumption and argument of this theory is that organization's core competencies must be utilize in creating competitive positions which can be built into longer-term business and competitive advantage (Cepeda & Vera, 2007). To keep competitive business advantage within a highly volatile market, firms must constantly reconfigure and develop their core resources as a way of creating various avenues for long-term competitive advantage (Zott, 2003). The strategic objective of business firms has moved from only managing unique resources to encompass the efficient ways of rapidly modifying the resources in fast changing environments (Danneels, 2002).

Thus, to stay competitive within the marketplace, firms must continuously build and develop new capabilities in response to the changing market requirements with the skills/routines/processes that are purely unique and tough to replicate by competitors (Chen, Paulraj & Lado, 2004). Therefore, dynamic capability is intended to build novel competitive business advantage that responds the changing market requirements in a more timely manner (Peteraf, 1993). Incorporated in this theory is the view that technology evolves over time. Technological capabilities are recognized as part of the dynamic capabilities which are vital in deciding the firm's ultimate success particularly for the technological intense business industries and within the environment of swiftly technological changes (Teece et al., 1997).

Dynamic capabilities also assert that dynamic capabilities impacts firm performance positively as they always seek to match resource base of the firm with changes in the environments (Danneels, 2002), create market change (Prashantham & Zahra, 2006); support both the resource-picking as well as capability-building rent-generating mechanisms (Devi & Kamyabi, 2012); and enhance inter-firm operations and performance (Teece et al., 1997). Dynamic capabilities enhances the efficiency, effectiveness and speed of organizational responsiveness to environmental and markets turbulence (Peteraf, 1993), which ultimately strengthens the firm's performance.

Dynamic capabilities allow "the firm to take advantage of revenue enhancing opportunities and adjust its operations to reduce costs" (Cepeda & Vera, 2007). Through reconfiguration and modification, dynamic capabilities afford the firm a new collection of decision opportunities, which possess the capability to enhance firm performance (Prashantham & Zahra, 2006). Another important view of the dynamic capabilities is that firm's survival and growth indicate

whether a business firm is capable of adapting and adjusting to its external business environment and the firm's capacity to achieve its performance goals such as increase efficiency, sales growth and financial solvency (Taylor & Murphy, 2004). This theory is very useful to this study as firms will need to exploit both their internal and external resources and remain proactive to environmental variabilities and turbulences if the firm must remain relevant in its operations.

Again, firms must begin to develop their human resource base with adequate knowledge for achieving sustainable competitive business advantage. The DC theory also guides firms to realise three key objectives: supply products with several configurations (options, colours, sizes and features) in diverse quantities (Stevenson & Spring, 2007); swiftly respond to the changes in customer needs (Huang et al., 2002; Qi et al., 2011); and remains adaptable (Devi & Kamyabi, 2012).

### 3.1.3 Theoretical Implications on Supply Chain Strategies and Firm's Performance

The ability of business firms to effectively compete within the market is replicated by extent of capability they at their disposal (Magutu, 2013). This determines the way manner firms utilize their assets, knowledge and resources (Magutu, Aduda & Nyaoga, 2015) to convert raw materials, transport and create value along the supply chain. Supply chain management and efficient retail operations performance involves the use of resources and value creation which require competencies and capabilities which must be heterogeneous and non-transferable (Routroy, 2009) to achieve sustainable competitive advantage. These capabilities however, may not last in a long run as it keep changing over time through the basic process of depletion and accumulation (D. Li & O'Brien, 2001).

Another important area of emphasis is the technological dynamic capabilities which seeks to apply know-how, learning process, business secret, and organizational goodwill to generate advantage for the firms since these capabilities are tough to be attained from external business and markets environments. The application of these technological capabilities in transforming and incorporating supply chain linkages to enhance supply chain values and improve on retail operations performance is imperative (Magutu, 2013). Supply chain management involves the use of competencies which are intangible resources which are valuable, rare, inimitable and non-substitutable (Qrunfleh & Tarafdar, 2013).

Firm's capabilities create competitive advantage Hines and McGowan, (2005) and frequent introduction of the new product and service to the market (Stank, Esper, Goldsby, Zinn, & Autry, 2019). The dynamic supply chain linkages that create a series of short-term competitive advantage and enhance retail operations performance. The current global competitive trend makes it imperative for firms to provide their customers with services and products which are reliable with full bundle of benefits at relatively lower price at the right time and place (Qrunfleh & Tarafdar, 2013). Again, firms that provide differential performance and efficiently manage the supply chain as a strategic resource that drives market value are sustainable (Routroy, 2009).

The resource-based view of the firm emphasizes on sustainable and long-term competitive advantage whiles the dynamic capabilities view focuses on developing core capabilities to response effectively to changing business conditions. The dynamic capabilities theory advocates the building of relevant strategies by firms so as to adjust to essential discontinuous modification, while keeping minimum capability standards as a way of ensuring competitive survival (Hines & McGowan, 2005). Firms must therefore develop competitive and flexible

supply chain practices to make changes inexpensive while ensuring transformation and reconfiguration ahead of the competition (Stank et al., 2019).

Both theories emphasized on distinctive competencies as a form of competitive superiority, appropriability, inimitability of resources to create sustainable competitive edge. The resources must also be durable with a longer lifespan and non-substitutability to create a network of distinctive channels (Stank et al., 2019). The application of these theories in this study is suitable since supply chain must be sustainable, efficient, and responsive to ensure coordination and linkages across firms (Qrunfleh & Tarafdar, 2013) .

### 3.2 Conceptual Framework

Conceptual framework is explained as assumptions and concepts that direct and support research (Robson & McCartan, 2016). The framework generally is a pictorial presentation of the main variables of the study. The objective of the study is to investigate the influence of supply chain strategies on the operations performance of organizations. Thus, supply chain strategies are the independent variables while operations performance formed the independent variable. This study additionally sought to know the mediating effect of firms' financial position of firms on the relationship between supply chain strategies and operations performance. Thus, financial position is adopted as the mediating variable.

The study adopts agile supply chain, lean supply chain and leagile supply chain as the dimensions of supply chain strategies. Similarly, the study adopts efficiency and responsiveness as the dimensions for measuring operations performance. Financial position of the firm is measured using liquidity ratio, profitability ratio, solvency ratio and management efficiency ratio. Figure 3.1 displays the relationship between supply chain strategies and firm performance.

The diagram further displays that financial position mediate between supply chain strategies and firm performance.

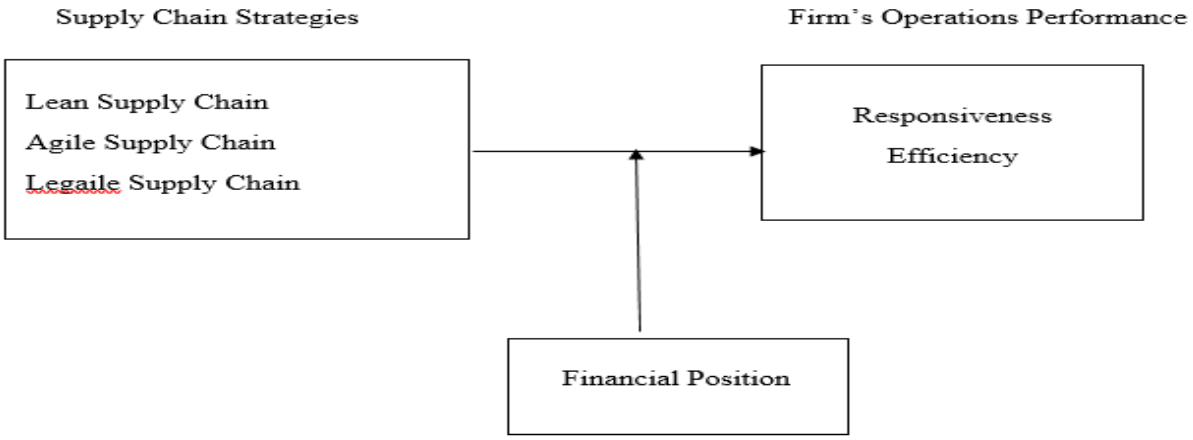


**Figure 3.1: Conceptual Framework**

### 3.2.1 Supply Chain Strategies

Supply chain strategies specify the key supply chain goals; they define the main focus of supply chains in relation to cost, responsiveness efficiency and quality. The key supply chain processes and activities encompassing inventory management, procurement, customer service and logistics are greatly affected by the choice of supply chain strategy (Qi et al., 2011). Relying on the idea that supply chain strategy is effectively executed through diverse unique set of activities or processes, Day (1994) observed that supply chain strategy, when effectively executed can result in superior performance. This idea is firmly backed by the notion of complementarity which advocates a good match between firms' strategy, practices and processes.

An effective supply chain strategy is a basic requirement for achieving the desired firm performance such as profit. Thus, supply chain strategies should be adopted alongside and in complement with other specific supply chain practices (Zhang, Wang, & Wu, 2012).

Specifically, this study identified and adopted three key supply chain strategies which encompassed lean supply chain strategy, agile supply chain strategy and leagile supply chain strategy.

### 3.2.2 Lean Supply Chain

Organizations in recent times are working hard to adopt and implement the philosophy of waste elimination in their operations. Thus, lean supply chain strategy is now fundamental in the product development and innovative processes of organizations (Naim & Gosling, 2011). Lean supply chain strategy unlike the agile supply chain supply chain strategy focuses on minimizing cost.

Ellinger (2000) observed that a fundamental principle of lean strategy is that every stage in the production process must add value for customers and that every source of waste must be removed. Though the principles of lean supply chain strategy were developed purposely for production and manufacturing organizations, numerous studies have demonstrated that lean principles are equally utilized in service organizations and have resulted in enhanced firm performance (Agarwal, Shankar, & Tiwari, 2006).

Similarly, McIvor (2001) argues that lean principles of supply chain strategy can equally be utilized in the food and beverage industry. The notion of waste in the production processes and practices is far-reaching and comprises needless inventory, mistakes, unplanned orders and inappropriate processes and procedures (Zareia, Fakhrzad, & Paghaleh, 2011). The authors observed that lean strategy helps to effectively marry the two key conflicting objectives of quality and cost of production.

According to Fearne and Fowler (2006), implementing lean supply chain principles improves value for customers by removing wasteful activities through the optimization of processes. The authors argue that organizations that implement lean strategy enjoy higher quality, less mistakes, efficient resources utilization and therefore enhanced performance. Typically, the majority of production processes are designed to minimize waste. The consequence is that inefficient inventory management and production processes lead to ineffective resources utilization and dissatisfied customers (Erridge & Murray, 1998).

The usage of lean supply chain strategy through continuous improvement in manufacturing and production organizations can be achieved through the utilization of three main process management strategies; process automation and optimization, process standardization and data visualization. The standardizing of manufacturing processes helps in the elimination of bottlenecks and focus on quality products through effective processes and efficient resources utilization (Zareia, Fakhrzad, & Paghaleh, 2011). Similarly, while process visualization visually present the methods, processes, elements and means that should be clearly known by all players in the supply chain, process standardization defines key processes in order to make sure that such key processes are understood and well standardized across the whole firm (Pearson, Masson, & Swain, 2010).

Fundamentally, the lean thinking strategy focuses on improving efficiency within firms and along the whole value chain of products. Since production activities and innovative processes are intended to increase efficiency in organizational processes as well as products, lean thinking organizations should concentrate on continuously improving activities. Lean supply chain strategy implementation results in improving efficiency within organizations that leads to more

availability of resources for maximum production (Zareia et al., 2011). Hence, it is hypothesized that;

$H_1$: Lean supply chain strategy positively influences food and beverage firm's efficiency.

$H_2$: Lean supply chain strategy positively influences food and beverage firm's responsiveness.

### 3.2.3 Agile Supply Chain

Supply chain agility is considered crucial for firms to produce products in accordance with changing and dynamic customer needs as well as requirements. In order for firms to effectively manufacture products that sufficiently respond to customers' requirements, the firms supply chain must remain agile, meaning, responding speedily to the volatile customer demands and shorter life cycles of products (Gligor, Esmark, & Holcomb, 2015).

The concept of supply chain agility is very essential for introducing novel products as a way of responding to the dynamic needs of customers (Qi et al., 2011) and effectively reacting to variations in the delivery needs of both time and quantity (Yusuf, Gunasekaran, Adeleye & Sivayoganathan, 2004). The agile supply chain strategy is considered as one key supply chain strategy with an overall intention of timely and quick response by the whole supply chain to customer varying needs (Huang et al., 2002). Unlike the lean supply chain strategy, the agile supply chain strategy uses customers' service satisfaction as market winning strategy. The agile supply chain strategy is generally intended to achieve the following three key objectives: supply products with several configurations (options, colours, sizes and features) in diverse quantities (Stevenson & Spring, 2007); swiftly respond to the changes in customer needs (Huang et al., 2002; Qi et al., 2011); and to cope effectively with unexpected changes in product life cycles which means adaptability (Lin, Chiu, & Chu, 2006).

Lin, Chiu, & Chu (2006) further argue that the ensuing two supply chain practices: Strategic customer relationship management and supplier partnership are required to achieve the key objectives. Supply chain agility, which encompasses firm's capacity to speedily adjust its operations as well as tactics, helps the firm to manufacture and produce in adaptation to product variety, unexpected changes in product volumes and to sense changes in market and customer requirements (Huang et al., 2002; Qi et al., 2011). Understanding the effects off supply chain agility on firm performance is therefore an essential concept considering how contemporary firms can effectively produce and supply amidst the dynamic markets, volatile demand and products with short life cycles.

The agile supply chain strategy transmits its impacts on the performance of firms through diverse practices. Firstly, firms initiate strategic and effective supplier partnerships thus they are able to implement process integration linkages and relationships with their key suppliers. This enables them undertake initiatives including sharing ideas, new market opportunities identification, building greater knowledge and insights of raw materials and practicing the approach of continuous improvement with their key suppliers (Saeed, Malhotra, & Grover, 2011). Given the wider range and in-depth interactions with suppliers, firms can be more flexible in order to innovatively manage the fluctuating competitive opportunities and pressure.

Lee (2004) observed that agile strategy points to two essential information requirements. The first relates to on time access to key information about market trends, preferences of customers and competitive actions needed in order to respond quickly to changing demands through new products introduction. Secondly, key information that enhances co-ordination and collaboration with supply chain players such as on time schedules exchanges, inventory and lead times are

required for easily designing and supplying those products and efficiently executing inter-firm dealings and other processes (Saraf, Langdon, & Gosain, 2007). Hence, it is hypothesized that;

$H_3$: Agile supply chain strategy positively influences food and beverage firm's efficiency.

$H_4$: Agile supply chain strategy positively influences food and beverage firm's responsiveness.

### 3.2.4 Leagile Supply Chain

The leagile supply chain concept has been applied in both the services and manufacturing contexts (Riberio, Barata, & Colombo, 2009). The leagile supply chain concept is commonly accepted by many researchers as an agile supply chain concept which employs various principles of lean in managing the supply chain (Zhang et al., 2012). The leagile supply chain has both agile and lean characteristics. It seeks to combine both low cost that governs lean principles with flexibility offered by the agile capability.

Leagile strategy is mostly achieved through effective supply chain visibility by building an information driven supply chain. Supply chain players can effectively access operational information and undertake their daily business decisions after seeing the exact happenings. In the view of Naim and Gosling, (2011), leagile strategy is considered the enhancement of supply chain performance which is related to supply chains ability to quickly react to volatile and dynamic market changes whilst maintaining low costs. It is aimed at overcoming the challenge of quickly responding to customer requirements with the lowest possible cost in a volatile market. The widely discussed leagile methodology in existing literature is called Decoupling Point Approach (DPA).

This DPA refereed to the level at which the firm strategic inventory is kept to cater for downstream variation in demand; between product variety, order fluctuation and smooth product output (Rahimnia, Moghadasian, & Castka, 2009). The DP level serves as strategic buffer stock, upstream at which level lean principles are applied, and downstream where agility is enhanced. This is also referred to as the decoupling point of materials. Leagile supply chains win the market by focusing on how to combine both lean and agile strategies in a more balanced manner within a single supply chain (Rahimnia et al., 2009).

Again, there are occasions where the application of both lean and agile supply chain strategies are concurrently applied to achieve optimal organisational goals (Soni & Kodali, 2012 & Christopher, 2000). By using DPA, Christopher (2000) identified the following characteristics of lean, agile and leagile depending on the product, supply chain strategy and market situation. Figure 3.2 shows the different characteristics based on the DPA.


**Figure 3.2: Characteristics of Lean, Agile and Leagile**

Hence, it is hypothesized that;

$H_5$: Leagile supply chain strategy positively influences food and beverage firm's efficiency.

$H_6$: Leagile supply chain strategy positively influences food and beverage firm's responsiveness.

### 3.3 Firm's Operations Performance

Malina and Selto (2004) explained performance as the efficiency and effectiveness with which a firm achieves both its financial and market related objectives. Also, Pandey and Dutta (2013) argue that firm performance refers to a firm or an organization's ability to accomplish its objectives and that of its key stakeholders. Theodosiou, Kehagias and Katsikea (2012) posit that, there is much difference between firm's performance and operational performance (Sánchez & Pérez, 2005). Sánchez & Pérez (2005) defined operational performance as the unique and strategic dimensions employed by competing firms and comprises of operational indicators like flexibility, efficiency, responsiveness and delivery.

Many studies revealed that, in measuring firm's operational performance, delivery, flexibility, cost, efficiency, inventory and responsiveness are commonly used as optimal strategies (Gaiardelli, Saccani, & Songini, 2007). Better and efficient operational performance increases customer satisfaction through effective delivering and supply of high-quality products as well as services (Kumar & Motwani, 1995). Delivery refers to a performance measurement of a firm's ability to deliver its products to all customers (Kumar & Motwani, 1995).

Flexibility is "a measure of a firm's ability to respond to market demands by switching from one product to another through coordinated policies and actions"(Nemetz & Fry, 1988 P. 627-639).The operational cost, which is constantly allied with operational efficiency, advocates cost savings as well as increasing profits (Gaiardelli et al., 2007). Effective inventory and stock management position firms to efficiently decrease inventory cost. Hence, products can be made available to customers within the short-time, resulting in higher benefits (Chopra & Sodhi,

2004).

Generally, no commonly agreed firm operational performance measurement indicators exist. Nevertheless, Theodosiou, Kehagias & Katsikea (2012) state that, some multidimensional variables encompassing both financial and non-financial indicators are often adopted in assessing firm's operations performance. Studies that generally assessed how variables impact the firm's operations performance normally adopt some financial indicators including ratios, earning per share, return on equity, return on assets and profit margin among other indicators (McMahon ,2007).

Non-financial measures of firm's operations performance such as flexibility, productivity customer satisfaction, product reliability, employee satisfaction and quality have also been employed to assess performance in literature. In Imran, Arif, Cheema and Azeem (2014) observation, firm performance is affected by efficiency in production, quality, effective relationship with key stakeholders, improvement of processes, innovations and new approaches.

Inconsistency regarding firm's operations performance measurement indicators still exist (Hassan, Imran, Amjad, & Hussain, 2014). In this regard, financial position is adopted to measure firm's operations performance. The decision to use financial position is based on the notion that when food and beverage firms have good financial position, they can enhance competitive position and also expand their scale of operations in order to influence their overall growth and development.

### 3.3.1 Supply Chain Responsiveness

Rudberg and Olhager (2003) observed that firms are said to be responsive only when they have the ability to promptly address and sufficiently respond to fluctuations in customer demands and

requirements on time. In a frequently changing and competitive business environment, it is highly essential to build supply chains and organizations that are very responsive and flexible. Firms must speedily respond to the varying customer needs and preferences so as to thrive in today's dynamic and complicated environment as well as survive supply chain disruptions (Christopher & Peck, 2004).

It is argued by most scholars that responsiveness comprises speed and flexibility. This argument is strongly reinforced in previous literature (Banfield, 1999). Ernst and Kamrad (2000) emphasized further that as the firm's speed level and more essentially flexibility increases, the firm's level of responsiveness increases. Responsiveness is accepted as a strategic competitive tool for firms due to the ability it has to aid firms cope with uncertainties in turbulent markets and customer needs.

According to Harris (2005), responsiveness is capable of offering firms the capacity to change production volumes, so as to frequently and rapidly develop new and innovative products, and also respond better to competition. The authors identified logistics process responsiveness, supplier network responsiveness and operations system responsiveness as three key areas firms must develop in order to be responsive to customer needs both in quantity and on timely basis.

Naim and Gosling (2011) posits that while operations system responsiveness basically looks at the firm's ability to strategize its manufacturing and production system to handle customers demand variations, logistics process responsiveness focus on the firm's distribution, warehousing system and outbound transportation to address variations in customers' demand. Similarly, supplier network responsiveness concentrates on the firm's major suppliers' ability to address the changes and requirements in the firm's demand. Christopher and Peck (2004) stressed the need for firms to remain responsive so as to enjoy competitive advantage.

### 3.3.2 Supply Chain Efficiency

Winter (2003) argue that the operations performance of a firm highly depends purely on the level of efficiency as well as the effectiveness of the activities the firm undertakes. The author additionally explains that unlike effectiveness which denotes the extent to which customer needs and requirements are met, however efficiency defines how economically the firm uses its resources to produce goods and services that satisfy its customers. Efficiency is a key indicator that underpins the daily organizational performance. Measuring firm efficiency is very critical in ascertaining the level of effectiveness and satisfaction achieved and can help the firm ascertain gaps that are needed for improvements and to cope with the changing business environment (Winter, 2003).

Arend and Wisner (2005) observe that high quality and efficient operations have become crucially relevant to the success of manufacturing firms because efficiency is a fundamental factor that affects customer satisfaction attainment. Thus, most firms may select being efficient along others in order to remain unique in the business environment. Acknowledging the significance of efficiency as being a key performance objective, Ramsey (2001) argues that efficiency is a generally an attractive objective. Thus, it is not a surprise that majority of studies that measure operations performance (see Prajogo & Olhager, 2012) identified efficiency as one elementary business operations performance objective.

Efficiency as an operations performance objective seems to basically underlie some other firm performance objectives; profitability, quality, cost among others. This is mainly because efficiency affects every other performance objective as such firms that do compete on efficiency enjoys enviable market position. With an ever-increasing global revolution in competition especially in the global space, efficiency has remained a major area that concerns many F&B

firms. This is because as competition level intensifies, efficiency in daily production and marketing becomes an essential requirement for business success and survival.

### 3.4 Firm's Financial Position

A firm's financial position is determined by its balance sheet which reveals the resilient and financial stability of the firm's performance (Hernando & Martínez-Carrascal, 2008). A balance sheet is a statement which shows the liabilities, assets and capital of a firm (Penman, 2009). A balance sheet therefore reveals the firm's financial position for a defined given period of time. Many authors assess that, a statement of a balance sheet is a proper financial measurement instrument of a firm's financial position (Barlev, & Haddad, 2003). Although, balance sheet is based on historical data and does not give a representation of the current market value of an entity, it remains the most effective tool for measuring firm's financial position in a given period of time since it helps to assess firm's future cash flows, liquidity and long-term solvency (Niresh & Thirunavukkarasu, 2014).

Bushman and Smith (2003) defines assets as firm's resources which are fixed or current and are owned by the firm or business. Fixed assets are either tangible, intangible or long-term investment such as building, goodwill or securities which are of long term and permanent in nature relative to current assets such as stock or inventory which can easily be converted into cash or consumed within an accounting period (Barlev, & Haddad, 2003). Liabilities are obligations of the business such as capital, long-term liabilities or current liabilities which the business owes to its creditors unlike capital which refers to the amount of resources or value of money introduced into the business by the owner of the business (Penman, 2009).

In measuring the financial position of a firm especially where two variables are involved, ratio is useful in drawing relationship between variables that share common characteristics (Bushman &

Smith, 2003). From the aforementioned conceptual framework, the firm's financial position serves as a mediation variable between the supply chain strategies (independent variable) and the firm's operations performance (dependent variable). In using the balance sheet to determine a firm's financial position, many authors recommend the application of ratios like liquidity/solvency ratio, profitability ratio, leverage/capital ratio, investment ratio and management efficiency ratio (MacKay & Phillips, 2005).

Gunardi, Febrian and Herwany (2016) observes that, liquidity/solvency ratio reveals the ability of firms to meet their financial obligations when they are due. This encapsulates current ratio, liquidity ratio as well as acid test or quick ratio. Profitability ratio measures firms ability to make profits on its available resources (Gunardi et al., 2016). This encapsulates return on capital employed, net-profit margin, gross profit margin and capital turnover ratio. Leverage/capital ratio measures the degree of indebtedness of the firm against owner's equity (Agyei-Mensah, 2011). This includes debt equity ratio, debt asset ratio, equity asset ratio, gearing ratio and interest cover ratio.

Investment ratio provides information to investors to judge the profitability of their investment (Agyei-Mensah, 2011). This entails return on owner's equity (earning per share), dividend per share, earning yield, dividend yield, dividend cover and price earning per share. Management efficiency ratio reveals the efficiency of management in the usage of the assets of the business. This includes rate of stock turnover, average collection period, and creditor's payment period (Adebayo & Adebiyi, 2016). Again, the relationship between the firm's financial position and the firm's performance could be direct (positive) or inverse (negative) depending on the management style, customer loyalty, quality product (MacKay & Phillips, 2005).

## 3.5 Empirical Review

### 3.5.1 Lean Supply Chain Versus Responsiveness and Efficiency

Carvalho et al. (2011) studied the relationship between the green and lean supply chains establish that, lean supply chain strategies focus on waste reduction with the core aim of increasing efficiency and enhancing responsiveness to customer's demand. Similarly, Engin, Martens and Paksoy (2019) discovered that lean supply chain strategy assists businesses to exterminate non-value yielding activities and processes related to surplus time, equipment, labour, space as well as inventory across supply chains.

Another study conducted by Al-Aomar and Hussain (2018) indicates that lean supply chain strategy empowers firms to eliminate the outdated batch and mass production in order to reduce costs, improve quality and services to customers. The authors however, revealed that implementing and sustaining lean supply chain practices is difficult. Abideen and Mohamad (2019) found in their study that, lean supply chain practice efficiency by eliminating "waste" and are responsive by anticipating demand. However, empirical evidence on lean strategy revealed that, the lean strategy sometimes encourages production of goods not yet ordered where there are uncertainties in procuring raw material, erratic power supply and machines breakdown (Palevich, 2011).

Kimani (2013) revealed that firms that have not been able to properly integrate their supply chain linkages to promote efficiency and responsiveness cannot achieve sustainable competitive advantages. Bhasin (2015) advocated that lean strategy must focus on ensuring product flow with adequate dissemination of information to meet customer demands to drive customer/supplier linkages within the supply chain. Lean supply chain must seek to reduce inventory cost, improve

responsiveness to demand fluctuations, broadened market share and projects higher customer satisfaction levels (Kimani, 2013).

Biddle (2005) indicated that the focal value of a lean strategy is to ensure unrelenting pressure to upgrade operational performance; increase efficiency and dramatically improve services; and profits. Invariably, Mor, Singh and Bhardwaj (2015) opines that in a quest to heighten value creation, every specific activity related with the supply chain must have a closer alignment with firm's objectives and strategies to help firms sustain their competitive advantage.

### 3.5.2 Agile Supply Chain Versus Responsiveness and Efficiency

A study conducted by Orheim and Utvær (2021) uncovered that often, agile systems are utilize in companies and businesses where very short product life cycles exist (such as electronics and F&B) or with very irregular demand. The author further indicated that, agile systems usually, are built on flexibility, highlighting flexible lot sizes, rapid changeovers, and ensuring that manufacturing goods or products meet customer specific orders (Orheim & Utvær, 2021). Turbulence remains a principal driver for agile supply chains and highlights the notions of unceasing, uncertain and possibly disruptive changes in various factors found within the operational environment of firms (Johnson, 2016).

Christopher, Lowson and Peck (2004) in a related study discovered that, agile supply chains have the capacity to react to, and produce new window of opportunities within turbulent markets environment influenced by individualized customer requirements, effective costs management and promote rapid response to customer demands. These requirements should be satisfied at the appropriate price, with the desired quality and at the appropriate time. Almahamid, Awwad and McAdams (2010) also found that, the agile strategy focuses on flexible, competent response to

distinctive customer demands and adopts a make-to-order practices for manufacturing as well as order fulfilment.

Kisperska-Moron and Swierczek (2009) in exploring the agile supply chain linkages indicated that, an agile supply chain has the capability to detect and react swiftly, certainly, and with high quality, effortlessly adapting to variations in customer's demands instead of being reliant on speculative notion of what might be demanded. This is further emphasized by Ambe (2009) who revealed that, agile supply chain predicts demand as well as location of that demand, and usually utilize a "wait-and-see" tactic to demand and not committing solely to products till demands become known.

Responsiveness is the fundamental function of agility although, agility equally drives effectively on efficiency (Saha et al., 2017). The current supply chain infrastructure empowers the retailers within the downstream with the power to demand quality and timely services or products if the firm must remain relevant in this global competitive environment (Tillman, 2020). The distinct position of many retailers within supply chains in confronting key suppliers, within the context of extreme dynamic environments, calls for re-examining conventional supply chain management slants (Hobelsberger, 2021).

### 3.5.3 Leagile Supply Chain Versus Responsiveness and Efficiency

Myerson (2012) claim that supply chain strategy is recognize as one that emphasizes on cost reduction or minimization (lean strategy) and one that emphasizes on quick response (leagile strategy) or a blend of both strategies (leagile strategy). Stavrulaki and Davis (2010) revealed that, both lean and agile supply chain strategies are not mutually exclusive and have a lot of benefits and if a firm properly applies both strategies, can increase its efficiency and become responsive to customer demands within the milieu of unpredictable and turbulent environment.

There are numerous examples that demonstrate the need to build hybrid strategies encompassing benefits of both lean as well as agile supply chain strategies (Bhatnagar & Sohal, 2005).

Again, Christopher, Peck and Towill (2006) in his study revealed that leagile supply chain strategy is suitable for competitive markets and is capable of been responsive to volatile markets. A study by Mose et al. (2013) discovered that lean supply chain is identical with commodity-type products which aims to reduce wastes, maximize utilization and drive continuous improvements. In contrast, agile strategy is applied when the supply chain needs to be rapidly responsive to unstable demands, ensure first-class quality and manage products that have shorter life span. Christopher, Peck and Towill (2006) aptly concluded that firms that combine and integrate both strategies in a coordinated manner create a unique supply chain value.

A study conducted by Bruce, Daly and Towers (2004) on creating flex-lean-agile value chain through outsourcing discovered that lean and agile paradigm is distinctly dichotomous. The authors claim that, with the lean supply chain, the market winner is "cost," while in agile supply chain, the market winner is "availability." Oke (2005) however found that, the distinction between the two strategies is overly simplistic and indicated that firms that want to enjoy competitiveness and produce value to their customers and remain sustainably relevant in this global market environment must adopt leagile supply chain strategy.

Mikkola and Larsen (2004) again claims that leagile supply chain strategy is an effective strategy for managing the echelon inventory and reducing the bull-whip effects since it introduces a greater degree of integration between partners. Mikkola and Larsen (2004) further argues that leagile strategy positions the decoupling point so as to best suit the need for responding to a

volatile demand downstream yet providing level scheduling upstream from the marketplace by applying the agile supply chain strategy to remain efficient in the market.

Oke (2005) found that, although, lean as well as agile strategies are regularly pitched as opposite paradigms, both strategies exhibits common characteristics and objectives; meeting customer needs at the lowest cost possible. Oke (2005) argues that time has remain a critical factor in competitiveness purely on the basis of customers unwillingness to accept products with long lead-times. The need for speed as well as responsiveness in current markets settings have blurred the limits of interrelated concepts not excluding agility and lean (Johnson, 2016). The author argue that Leagile appears better supply chain strategy relative to lean alone or agile alone counting on the combine benefit. Leagile supply chain strategies have brought about revolution regarding firms management of supplies as these concepts, are making business purely competitive and highly profitable (Mikkola & Larsen, 2004).

### 3.6 Conclusion

This chapter basically reviewed relevant literature on supply chain strategies and firm performance. Both the resource based-view and the dynamic capabilities view formed the theoretical underpinning of the study. Both theories emphasized on the need to develop unique resources and consider both internal and external environment to be able to remain competitive in the market. The literature reviewed proved that supply chain strategies are critical and highly necessary for firm's operation performance. Thus, supply chain strategies are valuable and non-substitutable.

The synthesis of supply chain strategies literature showed that the main supply chain strategies employed by firms are lean, agile and leagile supply chain strategies. Also, the literature review on performance proved that there is no generally accepted indicator to measure performance.

Unlike some researchers who used financial indicators to measure performance, others employed non-financial measures such as reliability, responsiveness, speed and quality. Efficiency and responsiveness are thus used in this study to measure firm performance.

Literature is emphatic on the need for firms to increase efficiency and responsiveness to customer demands to sustain their competitive advantages. Again, literature reviewed showed the importance of firm's financial position on its performance. Most of the literature reviewed indicated that, firm financial position positively impacts on its operations performance. Therefore, it is concluded on the basis of previous researches that firm's financial position and firm performance are related positively. The outcome of this study is therefore, anticipated to yield similar results.

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# CHAPTER FOUR

# METHODOLOGY

## 4.0 Introduction

This chapter describes the research approach, techniques and the procedures used to obtain the relevant data for the study. The chapter explains the research design and approach adopted by the researcher, the population selected for the study, the sample size and sampling techniques employed, instrument used for data collection, the data collection procedure and how the collected data was analyzed.

## 4.1 Research Design

Research design explains the approaches that researchers adopt to acquire and analyze data that is required for a particular study (Creswell & Poth, 2016). Therefore, the choice of a good research design is relevant as that can influence the quality of a research (Noble & Smith, 2015). This study adopted the quantitative approach to research. The use of quantitative approach was informed by the need to conduct impact analysis and also to examine relationships existing between the research variables. The cross-sectional survey design was employed for the data collection.

The cross-sectional design involves collecting data for the purpose of making inference about a particular population of interest at a specific point in time (Fisher, 2010). The author further indicates that, cross-sectional design analyses data from a population or representative subset at a specific point in time.

A survey as a technique employed in collecting data deals with soliciting information from people usually in the form of either verbal or written questions (Noble & Smith, 2015). The authors posit that such people usually have gone through a certain situation or possess some key information that the researcher is curious about and thus satisfy the research objectives. The survey approach is also appropriate as it provides an accurate, fast and efficient means of getting data from a large sample size especially when the researcher cannot reach all the individuals who constitute the population of the study ( Fisher, 2010).

## 4.2 Research Population

Generally, the population in a research is defined as a collection of individuals or objects that have a common, binding characteristics or traits (Yin, 2005). Lune and Berg (2016) argue that

generally populations are huge as such several realities including time makes it impossible for the researcher to study every member of the population (Lune & Berg , 2016) .

The population for this study is the registered F&B firms that are operating in Ghana as identified by 2003 National Industrial Census Report conducted by Ghana Statistical Services (GSS). According to GSS (2006), 3,913 registered F&B firms in Ghana were recorded. Hence the registered food and beverage firms constituted the population for this study, with the sample being chosen from the list of firms that are registered with the GSS across the 16 regions of Ghana for the study.

The study therefore, focused on food and beverage industry constituting the population for this study. This is because, such firms have greater impact on influencing supply chain value especially when there is a variance between demand and supply. Again, the study sought to examine operational challenges of retailers within the F&B industry such as erratic supply, price distortions, perishability, breakages and shorter life span and its effects on supply chain strategies (Veitch, 2015).

### 4.3 Sample Size

A sample represents a subset or group that is selected from an entire population to support the researcher to arrive at a conclusion regarding the entire population (Emmel, 2013). In selecting the sample size, Emmel (2013) indicates that it must be representative of the population and founded on various factors such as the resources, researcher's budget and based on specific objectives of the study. Yamane (1967) recommended a mathematical approach in selecting a sample size that sufficiently represents the entire population of the study, and proposed the formula for determining the appropriate sample size as $n = \frac{N}{1+N(e)^2}$ .

Where n represents the sample size, N representing population size, and the precision level being represented by *e*. The precision level is kept at 5% signifying 95% confidence level. In this study 3,913 F&B firms constituted the population of the study. This formula was employed to choose the sample size for the study.

Therefore, $n = \frac{3913}{1+3913(0.05)^2} = 363$

Therefore, 363 food and beverage firms constituted the sample size.

### 4.4 Sampling Procedure

Simple random sampling and purposive sampling techniques were used by the researcher to select the participating organisations and the respondents respectively. Simple random sampling technique gives equal chance to each member of the population of being chosen for the study (Yin, 2005). The author highlighted that with simple random sampling, selecting the respondents is basically random and based purely on chance. The simple random sampling resolves the challenge of bias and so appropriate for studies that usually involves inferential statistics (Sekaran & Bougie, 2009).

Therefore, as the study aimed to know how supply chain strategies affect the performance of F&B firms, simple random sampling was used to choose firms in the F&B industry for the study. This approach was used to ensure fairness and overcome possible bias. A purposive sampling as part of non-probability sampling technique was also used. Creswell and Poth (2016) argued that in situations where the researcher intends to select respondents with specific knowledge with limited resources, the purposive sampling method appears very appropriate. Thus, the purposive sampling technique was used to select the owners and managers in the F&B industry possessing the knowledge and relevant experience to answer the questionnaire.

### 4.5 Data Collection Tool

Structured questionnaire was administered to collect primary data. The questionnaire was designed with various sections that allowed the respondents to express their views on some statements given on a 5-point Likert scale ranging from "strongly disagree" (1) to strongly agree" (5). The first section of the questionnaire comprised of questions soliciting demographic and general information about the retailers and the firms. The second section of the questionnaire examined the challenges facing the F&B industry and the third section used the Likert Scale Items to measure the constructs of each of the supply chain strategies identified.

the fourth section measured the financial position of the firms as mediation variable between each of the supply chain strategies and the retail operations performance. The three supply chain strategies adopted for the study were lean, agile and leagile. These strategies are the independent variables and responsiveness and efficiency are the dependent variables. Each independent and dependent variable were separately measured using five (5) to eight (8) items. The items were selected following a careful review of supply chain strategies in literature. Table 4.1 showed different variables and the sources from which the items were adapted

**Table 4.1: Variables and Measurement Items Sources**

| Variables | Sources |
|---|---|
| Agile Supply Chain Strategy | Huang et al. (2002); Lin et al. (2006); Stevenson and Spring (2007) |
| Lean Supply Chain Strategy | Chen et al. (2013); Fearne and Fowler (2006) |
| Leagile Supply Chain Strategy | Rahimnia et al. (2009); Bruce et al. (2004); Soni and Kodali, 2012 |
| Responsiveness | Anderson and Lee (2000); Jordan and Michel (2000); Duclos et al. (2003) |
| Efficiency | Prajogo and Olhager (2012); Tomislav et al. (2012) |
| Financial position | Asiedu (2019); Boshara and Emmons (2013); Balezentis and Vijeikis (2010) |

### 4.6 Pilot Study

A pilot study is considered a technique that requires the researcher to collect data mostly from a small sample in order to evaluate how appropriate as well as any potential weakness in the research design and instrumentation (Sreejesh, Mohapatra & Anusree, 2014). Pilot study aids researchers to uncover and potentially reduce fundamental errors that may show when the real field work, especially data collection is being undertaken (Mugenda & Mugenda, 2011). It is recommended by Sekaran and Bougie (2009) that a pilot study sample should not exceed 10% of the study's actual sample size.

Therefore, a pilot test was conducted on 18 randomly selected F&B firms constituting of 5% of the actual sample size. The test revealed a few deficiencies in the Likert scale leading to some revisions. Thus, the pilot study results were used to appropriately adjust the questionnaire before

the actual data collection exercise. The F&B firms used for the pilot study were not included in the final analysis.

### 4.7 Data Collection

The study used primary data. According to Mugenda and Mugenda (2011), primary data is described as data the researcher obtain from respondents in order to solve a prevalent research problem. To be able to achieve the objectives of this study, the retail firms selected in the F&B industry were visited by the researcher in order to identify, choose and administer the questionnaire.

The researcher personally visited the respondents and issued the questionnaires to each of them. A time period of a week was allowed each respondent to respond to the questionnaires. The duration of one week was intended to give the respondents enough time to appropriately provide their responses. In order to get a good response rate, phone calls were made on every respondent by the researcher. All the questionnaires that were completed were recovered from the respondents. The data collection exercise lasted over a period of three weeks.

#### 4.7.1 Reliability

Reliability in research is seen as the degree to which the same or similar results is produced by a research instrument every time the instrument is utilized (Tavakol & Dennick, 2011). Reliability is mostly affected by the degree of error. When random error increases, it results in a decrease in reliability. Mugenda (2013) argues that several methods including test-retest reliability, inter-rater reliability and internal consistency are employed to test the reliability of any given research instrument.

Therefore, with this study, the Cronbach Alpha was adopted to measure the questionnaire internal consistency so as to achieve reliability. Cronbach Alpha seeks to measure a scale consistency and shows how well a given set of items correctly and appropriately measure a given construct (Noble & Smith, 2015). It is argued by the authors that a 0.7 and above Cronbach Alpha indicates a good internal reliability. To this end, Cronbach Alpha of 0.7 is considered acceptable in this study.

### 4.7.2 Validity

Both content and convergent and validity were used in this study in order to ensure that the study achieves its result with minimal deviation. Convergent validity seeks to determine the degree to which a set of items that measure a particular variable converges compared to items that seek to measure different variables (Csikszentmihalyi & Larson, 2014). The convergent validity was assessed using the Average Variance Extracted (AVE).

The AVE threshold adopted was 0.5 which means that more than 50% of the variance in items is explained by the latent construct hence shows adequate convergent variability (Sekaran & Bougie, 2009). Csikszentmihalyi and Larson (2014) also argued that a group of professionals and experts who are familiar with the variables and items in the study can be used to achieve content validity. These professionals can evaluate each item and determine exactly what each of the items can appropriately measure. To that extent, my supervisors expressed their opinions on the validity of the questionnaire before they were administered to the respondents.

## 4.8 Data Analysis

The IBM Statistical Package for Social Sciences (SPSS) version 25 was used to quantitatively analyze the data. The beginning section of the analysis adopted descriptive univariate analysis. Descriptive statistical tools encompassing mean scores, bar graphs, tables, standard deviations

and pie chart were employed. The study further employed inferential statistics with the aid of Partial Least Squares Structural Equation Modelling (PLS-SEM).

The SmartPLS software is used to test the hypothesis and draw conclusions regarding the population. SEM is a multivariate analysis method which combines factor analysis and multiple regression in examining structural relationships. Most researchers prefer SEM due to its ability in modelling numerous exogenous latent constructs together with several endogenous variables in the form of path analysis model. SEM establish mediating and causality effects of variables as compared to OLS, which only models linear relationship existing between variables (Monecke and Leisch, 2012).

The study specifically employed the partial least squares (PLS) structural equation modelling (SEM) to assess the structural model. One key PLS-SEM approach advantage includes its ability to use sample sizes that are smaller, even if the model is highly complex (Urbach & Ahlemann, 2010). Six variables were added to the model: Agile supply chain (ASC), Lean supply chain (LSC), Leagile supply chain (LASC), Responsiveness (R), Efficiency (E) and Financial position (FP).

### 4.9 Ethical Issues

Ethics in research is seen very relevant, particularly if human beings are the main participants in the study (Drew, Hardman, & Hosp, 2007). Ethics are acceptable code of conduct when carrying out research (Israel & Hay, 2006). Several ethical codes are available to give guidance when a research is being carried. Some examples of research ethics are respecting the respondents' rights, fairly selecting the respondents, protecting the respondents from potential harm and ensuring confidentiality of the respondents' responses (Sales & Folkman, 2000).

The researcher must be able to keep confidential the responses given by the respondents so as to ensure the dignity as well as privacy of the respondents. The first ethical issue that was considered in this study was to inform the participants about the overall purpose of the study. Therefore, an introductory letter that contained the purpose and importance of the study was given out to the organizations and retailers in the F&B industry who were the respondents for the study.

The respondents were further given assurance that their responses and other information they provide would be aggregately analyzed in order that it would be impossible to trace individual responses. Finally, the participants were told that their participation was voluntary as such they could opt out from the study at any given point in time that they are no longer interested.

# CHAPTER FIVE

# DATA ANALYSIS AND DISCUSSION OF FINDINGS

## 5.0 Introduction

This chapter presents the analysis of the data collected and the discussion of findings. The chapter starts with the analysis of the demographic characteristics of the respondents followed by the analysis of the relationships between the research variables. The Partial Least Squares Structural Equation Modelling (PLS-SEM) was the main tool employed to analyze the structural relationships that exists among the research variables.

## 5.1 Response Rate

The data used for the analysis in this study was intended to be collected from 363 retail firms in the F&B industry in Ghana. However, few of the respondents failed to return the questionnaire administered to them. In this regard, 300 respondents completed and returned the questionnaire adequately completed. The response rate obtained was therefore 83 percent as reported in Table 5.1. This response rate is deemed reasonably good as Garg and Kothari (2014) argue that, a response rate of more than 50 percent is deemed good for data analysis.

**Table 5.1: Response Rate**

| Response | Frequency | Percentage (%) |
|---|---|---|
| Returned | 300 | 82.64 |
| Unreturned | 63 | 17.36 |
| **Total** | **363** | **100** |

### 5.2 Demographic Characteristics of the Retail Firms

This section covers the analysis of demographic data of the respondents such as gender, age, level of education, number of employees and number of years in business. This is based on the fact that respondents' demographic features are relevant and can affect the findings of the study. The results are reported in Table 5.2.

**Table 5.2: Respondents Demographics**

| Gender | Frequency | Percentage (%) | Cumulative Percentage (%) |
|---|---|---|---|
| Male | 130 | 43 | 43 |
| Female | 170 | 57 | 100 |
| **Age** | | | |
| 19 -29 | 39 | 13 | 13 |
| 30 - 39 | 100 | 33 | 46 |
| 40 - 49 | 95 | 32 | 78 |
| 49 Above | 66 | 22 | 100 |
| **Educational Level** | | | |
| Primary | 39 | 13 | 13 |
| Secondary | 69 | 23 | 36 |
| Certificate/Diploma | 94 | 31 | 67 |
| Degree and above | 98 | 33 | 100 |
| **Number of Employees** | | | |
| 0 – 10 | 210 | 70 | 70 |
| 11– 50 | 85 | 28 | 98 |
| 51–300 | 5 | 2 | 100 |
| **Years in Business** | | | |
| 1-5 | 99 | 33 | 45 |
| 6–10 | 66 | 22 | 78 |
| 10 above | 135 | 45 | 100 |

The classification of the respondents according to their gender revealed that 130 (43%) of them were males whiles 170 (57%), constituting the majority were females as reported in Table 5.2. This means that female respondents dominated the firms that were sampled. Also, Table 5.2

revealed that about 33 percent of the respondents were within the age cohort of 30 – 39 years whilst 32 percent were within the age cohort of 40-49 years. 22 percent were within 49 years and above with 17 percent falling within the age bracket of 19 – 29 years.

In determining the respondents' level of education, Table 5.2 reports that 33 percent of the respondents had first degree and above relative to 31 percent who either had a diploma or certificate. Again, 23 percent had secondary education relative to 13 percent who had primary education. Table 5.2 further shows that most of the firms participating in this study (70%) had 0-10 employees. Similarly, 28 percent of the firms had 11-50 employees compared to only 2 percent of the firms which had 51-300. Lastly, Table 5.2 shows that 45 percent of the firms have been operating beyond 10 years. Similarly, 33 percent of the firms had operated between 0–5 years, whilst 26 percent indicated that they had operated between 1-5 years.

### 5.3 Analysis of Operational Challenges of Retail Performance in F&B industry in Ghana

The objective one sought to examine the operational challenges affecting the retail supply chain performance within the F&B industry in Ghana. Percentages which were obtained from the descriptive analysis in SPSS were used to achieve this objective. The study revealed that 70 percent, 65 percent and 56 percent considered stiff competition, stock out and longer lead time in supplies as the major operational challenges affecting the retail operations performance in the F&B industry.

Again, 13 percent indicated that continuous changes in the preferences of customers were the major challenges facing retail operations performance in the Ghanaian F&B industry relative to 12 percent who claimed that, logistical constraints were the major challenges confronting retail operations performance in the F&B industry. Only 7 percent indicated that, poor communication was a challenge whilst 3 percent viewed fluctuating supplier prices as a challenge. However, 1

percent of the respondents claimed inadequate supplies was a challenge which affected the operational performance of retailers in the F&B industry. Figure 5.1 displays the summary of responses of the operational challenges confronting retail operations in the F & B industry.

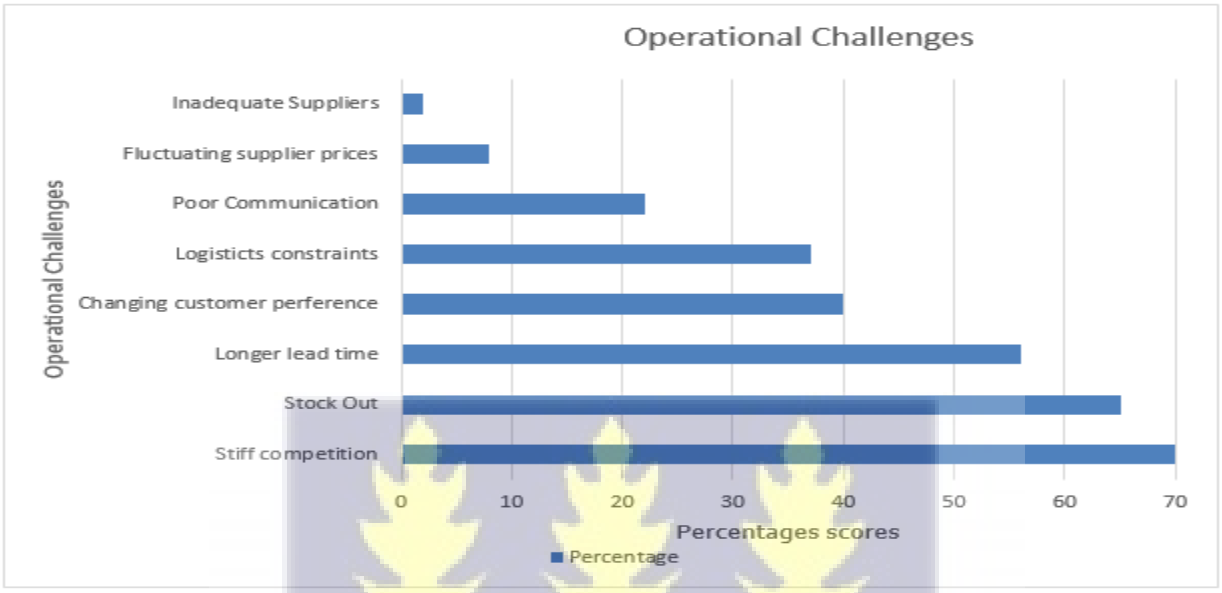


**Figure 5.1: Operational Challenges**

Figure 5.1 shows that stiff competition and stock out are recognized as the biggest operational challenges facing retail supply chains. Longer lead time and logistical constraints then follows as the next biggest operational challenges. Changing customer preferences and poor communication with suppliers, inadequate suppliers and fluctuating suppliers' prices and inadequate supplies appear to be the least in terms of the challenges. Fluctuating prices and inadequate suppliers are considered to be the least challenges which affect the operational performance of retailers in the F&B industry.

## 5.4 Assessment of PLS-SEM Model

### 5.4.1 Measurement Model Assessment

In using PLS-SEM for statistical analysis**,** the initial step is to examine the measurement model. This helps to know how fit the variables in the model are. Examining the measurement model is crucial and has the ability to reveal how reliable and valid the research instrument is especially in measuring the research variables. Assessment of the measurement model includes, carrying out indicator reliability test, examining the convergent validity of the variables, discriminant validity assessment and lastly internal consistency test.

#### 5.4.1.1 Indicator Reliability

The indicator reliability reveals how a set or group of items consistently measure a particular variable. Scholars such as Nitzl (2016) argue that 0.7 outer loadings is required by each indicator in order to be considered as being reliable. This implies that any indicator that produces outer loadings below 0.7 must be deleted from the model. The indicator reliability outcomes are reported in Table 5.3.

**Table 5.3: Indicator Reliability**

| | Agile supply chain strategy | Responsiveness | Efficiency | Financial Position | Leagile supply chain strategy | Lean supply chain strategy |
|---|---|---|---|---|---|---|
| ASC1 | 0.870 | | | | | |
| ASC2 | 0.896 | | | | | |
| ASC3 | 0.909 | | | | | |
| ASC4 | 0.850 | | | | | |
| CR1 | | 0.702 | | | | |
| CR3 | | 0.864 | | | | |
| CR4 | | 0.792 | | | | |
| CR5 | | 0.820 | | | | |
| EF4 | | | 0.761 | | | |
| EF5 | | | 0.809 | | | |
| EF6 | | | 0.892 | | | |
| FP1 | | | | 0.842 | | |
| FP2 | | | | 0.830 | | |

| | | | |
|---|---|---|---|
| FP4 | 0.749 | | |
| FP5 | 0.719 | | |
| FP6 | 0.840 | | |
| LASC1 | | 0.885 | |
| LASC2 | | 0.906 | |
| LSC1 | | | 0.848 |
| LSC2 | | | 0.885 |
| LSC3 | | | 0.894 |

As reported in the table above, all the indicators that loaded well (0.7 and above) were retained in the model, however the indicators that failed to meet the 0.7 threshold were deleted from the model. Agile supply chain (ASC) was measured using seven items, However ASC5, ASC6 and ASC7 were deleted. Also, Lean supply chain (LSC) was measured using six items but LSC4, LSC5 and LSC6 were deleted. Similarly, Leagile supply chain (LASC) was measured using six items but had LASC3, LASC4, LASC5 and LASC6. While responsiveness (CR) was measured using six items, only CR6 was deleted. Out of the seven items that measured financial position (FP), only FP3 and FP7 were deleted. Lastly, efficiency (EF) was measured using six items but EF1, EF2 and EF3 were deleted. Figure 5.2 below further shows the outer loadings for the indicators that were retained.

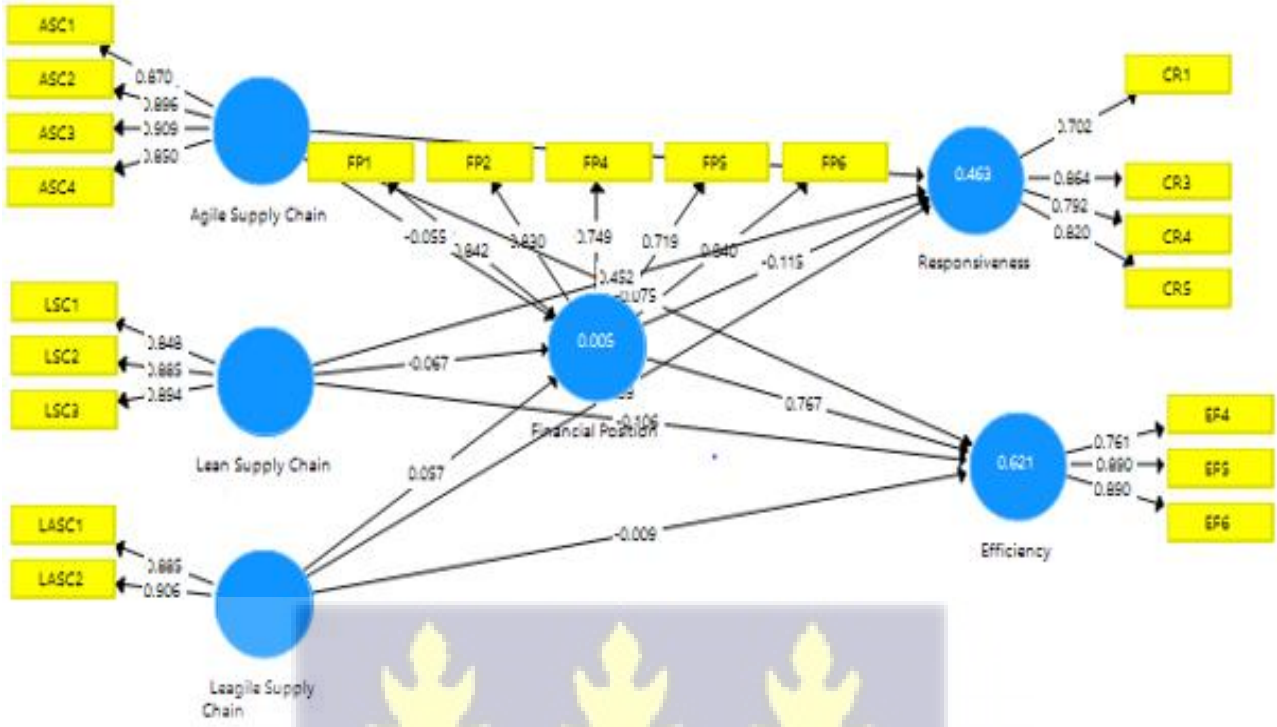


**Figure 5.2: Indicator outer loadings**

### 5.4.1.2 Internal Consistency

The study further tested the composite reliability of the constructs. This test was carried out to know the level of internal consistency demonstrated by the constructs. A composite reliability of 0.7 or more means good internal consistency as observed by Voorhees *et al.*, (2016). The internal consistency results are displayed in the Table 5.4.

**Table 5.4: Reliability Tests**

| Constructs | Cronbach's Alpha | rho_A | Composite Reliability | Average Variance Extracted (AVE) |
|---|---|---|---|---|
| Agile Supply Chain Strategy | 0.906 | 0.955 | 0.933 | 0.777 |
| Efficiency | 0.808 | 0.849 | 0.885 | 0.721 |
| Financial Position | 0.864 | 0.898 | 0.897 | 0.637 |
| Leagile Supply Chain Strategy | 0.753 | 0.758 | 0.890 | 0.802 |

| | | | | |
|---|---|---|---|---|
| Lean Supply Chain Strategy | 0.850 | 0.864 | 0.908 | 0.768 |
| Responsiveness | 0.806 | 0.819 | 0.874 | 0.635 |

From the above Table, all the constructs have their composite reliabilities and Cronbach alpha being greater than 0.7. This shows that the internal reliability demonstrated by the constructs is good.

#### 5.4.1.3 Convergent Validity

Also, convergent validity of the constructs was tested. Convergent validity is good in ensuring that items adopted in measuring a construct actually measures the construct (Amaro, Abrantes, & Seabra, 2015). The study used Average Variance Extracted (AVE) in examining the constructs' convergent validity as Hair-Jr *et al.*(2017) suggested. The authors recommended 0.50 AVE threshold which is adopted in this study. It is observed from the results in Table 5.4 above that the AVE of each of the constructs is greater than 0.50 showing adequate convergent reliability.

#### 5.4.1.4 Discriminant Validity

Similarly, the discriminant validity assessment was undertaken with the objective of knowing the uniqueness of all the constructs in the structural model. An adequate discriminant validity level is exhibited by the model provided the constructs' heterotrait-monotrait exogenous construct (HTMT) values do not exceed 0.9 (Nitzl, 2016). Reported in the Table 5.5 are the results of the discriminant validity test.

**Table 5.5: Discriminant Validity**

| Constructs | Agile supply chain strategy | Efficiency | Financial Position | Leagile supply chain strategy | Lean supply chain strategy | Responsiveness |
|---|---|---|---|---|---|---|
| Agile Supply Chain Strategy | | | | | | |
| Efficiency | 0.152 | | | | | |
| Financial Position | 0.391 | 0.855 | | | | |
| Leagile Supply Chain Strategy | 0.597 | 0.330 | 0.882 | | | |
| Lean Supply Chain Strategy | 0.770 | 0.813 | 0.432 | 0.794 | | |
| Responsiveness | 0.561 | 0.692 | 0.275 | 0.725 | 0.746 | |

All the constructs have their HTMT values being less than 0.9 hence, the constructs demonstrate adequate discriminant validity.

### 5.4.2 Structural Model Assessment

#### 5.4.2.1 Multicollinearity Assessment

In assessing the structural mode, the first step was to conduct a multicollinearity test. The purpose of the multicollinearity test is to make sure that the variables are not correlated. Multicollinearity helps overcome the challenge of improper estimations of coefficients (Hair-Jr *et al.*, 2017). The authors argue that the Variance Inflation Factor (VIF) is used in assessing multicollinearity. VIF values of less than 5 show that no multicollinearity exist (Gefen & Straub, 2005). The multicollinearity assessment results are submitted in the Table 5.6.

**Table 5.6: Multicollinearity Test**

| | Efficiency | Financial Position | Responsiveness |
|---|---|---|---|
| Agile Supply Chain Strategy | 2.133 | 2.753 | 1.332 |
| Efficiency | | | |

| | | | |
|---|---|---|---|
| Financial Position | 1.405 | | 2.315 |
| Leagile Supply Chain Strategy | 4.848 | 1.844 | 3.248 |
| Lean Supply Chain Strategy | 1.488 | 3.683 | 2.618 |
| Responsiveness | | | |

The results above demonstrate that the VIF values for all the constructs are less than 5 as required, therefore no multicollinearity issue is found to be present.

### 5.4.2.2 Direct Relationships

The hypothesised relationships were tested by employing the PLS bootstrapping approach in order to know the variables level of significance. Being a non-parametric technique, bootstrapping generally produces P values which make the testing of relationships among variables possible (Janadari, Sri Ramalu, & Wei, 2016).

Boos and Stefanski (2011) advocated that 5000 iterations should be employed in running bootstrapping and the P values (0.05) of variables considered in determining their significant levels. P values less or equal to 0.05 means that the relationship between those variables are significant (Hair, Ringle, & Sarstedt, 2013). Reported in Table 5.7 are the results for the direct relationships test.

**Table 5.7: Hypothesis Testing**

| Relationships | Std. beta | Std. error | Path coefficients | P Values | Decision |
|---|---|---|---|---|---|
| **$H_1$** Lean Supply Chain Strategy ->Efficiency | 0.455 | 0.098 | 0.611 | 0.000 | Supported |

| | | | | | |
|---|---|---|---|---|---|
| **$H_2$** Lean Supply Chain Strategy - > Responsiveness | -0.168 | 0.144 | 0.452 | 0.231 | Not Supported |
| **$H_3$** Agile Supply Chain Strategy – > Efficiency | -0.051 | 0.060 | -0.075 | 0.413 | Not Supported |
| **$H_4$** Agile Supply Chain Strategy-> Responsiveness | 0.081 | 0.032 | 0.272 | 0.013 | Supported |
| **$H_5$** Leagile Supply Chain Strategy -> Efficiency | -0.017 | 0.146 | -0.009 | 0.005 | Supported |
| **$H_6$** Leagile Supply Chain Strategy ->Responsiveness | 0.251 | 0.119 | 0.268 | 0.035 | Supported |

From the above table, four out of the six hypothesized relationships in the model were well supported at a significant level of $p<0.05$. However, the hypothesized relationship between agile supply chain strategy and efficiency was not supported (P-value = 0.413). Similarly, the hypothesized relationship between lean supply chain strategy and responsiveness was not supported (P-value = 0.231).

### 5.4.2.3 Coefficient of Determination ($R^2$)

The study further used the coefficient of determination ($R^2$) as suggested by Nitzl, Roldan and Cepeda (2016) to examine the predictive ability of the structural model predictive. $R^2$ reveals the combined impact the exogenous latent variables have on the endogenous construct. The results of the coefficient of determination is reported in the Table 5.8.

**Table 5.8: $R^2$ and $R^2$ Adjusted Results**

| Endogenous Constructs | R Square | R Square Adjusted |
|---|---|---|
| Efficiency | 0.621 | 0.619 |
| Responsiveness | 0.463 | 0.462 |

From the table above, Efficiency has an $R^2$ of 0.621. This reveals that agile supply chain strategy, lean supply chain strategy and leagile supply chain strategy accounts for about 62% of the variance in efficiency. Similarly, responsiveness has $R^2$ value of 0.463. This means that agile supply chain strategy, lean supply chain strategy and leagile supply chain strategy explains about 46 % of the variance in responsiveness. The $R^2$ values as shown in Table 5.8 highlights the need to build supply chain strategies in firms.

#### 5.4.2.4 Mediation Analysis

This study further conducted mediation analysis with the objective of determining whether financial position of the firm mediates the relationship between supply chain strategies, efficiency and responsiveness. According to Zhao, Lynch Jr and Chen (2010), when doing mediation analysis, a third variable known as a mediator is included in the PLS model to examine how it affects the relationship between the endogenous and exogenous variables. The authors posit that the initial approach in doing mediation analysis is to first assess the exogenous variables direct effect on the endogenous variable.

This direct effect of the exogenous variables on the endogenous variable must prove significant without the mediating variable (Zhao et al., 2010). In this regard, the direct effects outcomes between the exogenous and endogenous variables were examined at a significance level of $p<0.05$ as reported in Table 5.7 above.

The next step after examining the direct paths significance is to add the mediating variable to the PLS model and examine the significance of the indirect paths. The bootstrapping algorithm is again run to examine the indirect path significance. The indirect path if found to be significant ($p<0.05$), the conclusion that mediation effect exists is reached (Hair, Sarstedt, Hopkins, &

Kuppelwieser, 2014). The indirect paths significance results are reported in Table 5.9 and subsequently supported by Figure 5.4.

**Table 5.9: Indirect Paths Significance Test**

| Relationships | Std. beta | Std. Error | Significance (p<0.05) | Decision |
|---|---|---|---|---|
| Agile Supply Chain Strategy -> Financial position -> Efficiency | -0.035 | 0.127 | 0.539 | Not Supported |
| Leagile Supply Chain Strategy -> Financial position -> Efficiency | 0.026 | 0.102 | 0.469 | Not Supported |
| Lean Supply Chain Strategy -> Financial position -> Efficiency | -0.045 | 0.099 | 0.604 | Not Supported |
| Agile Supply Chain Strategy -> Financial position -> Responsiveness | 0.005 | 0.025 | 0.399 | Not Supported |
| Leagile Supply Chain Strategy -> Financial position -> Responsiveness | -0.004 | 0.019 | 0.425 | Not Supported |
| Lean Supply Chain Strategy -> Financial position -> Responsiveness | 0.007 | 0.018 | 0.264 | Not Supported |

The results reported in the above table shows that the indirect effect of all the variables are not significant at p>0.05. Hence, it can be concluded that supply chain strategies have effect on the efficiency and responsiveness of the firm without any mediating role of the financial position of the firm. This therefore suggests that adopting supply chain strategies is an essential and fundamental determinant of firm performance irrespective of the financial position of the firm.

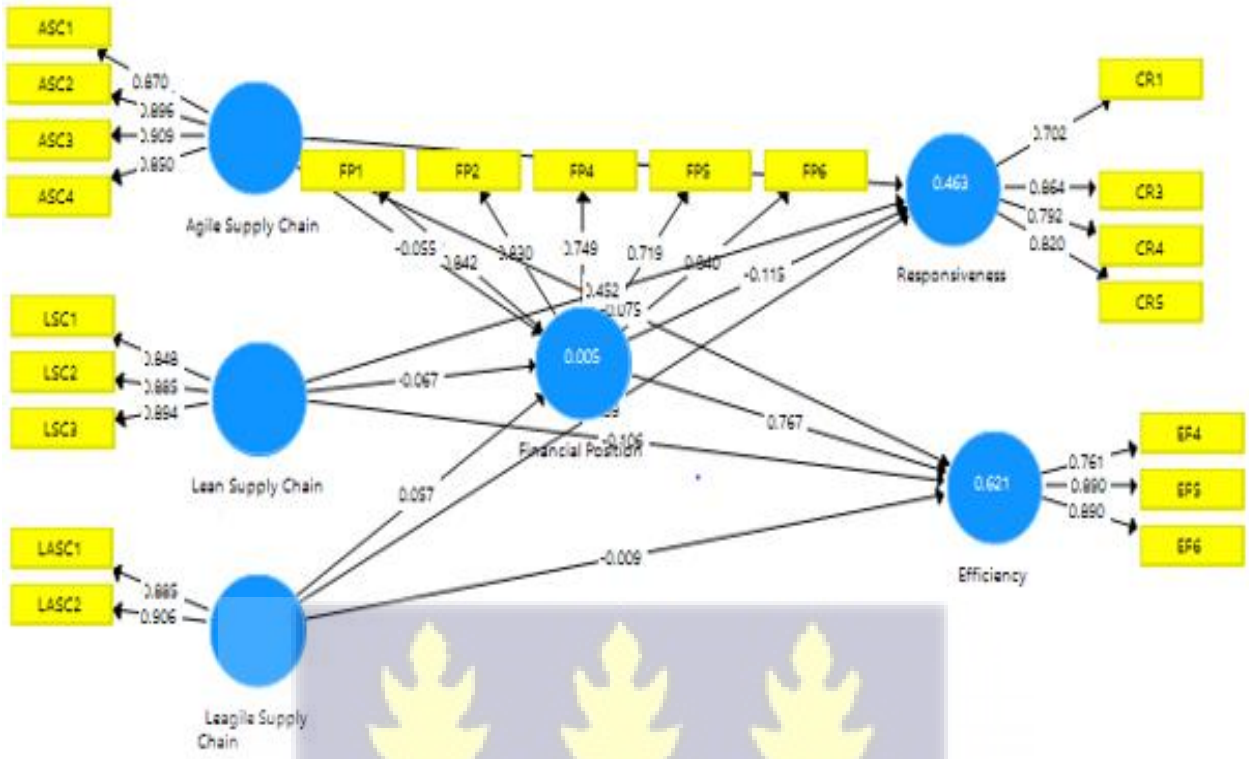


**Figure 5.3: Bootstrapping Output with Mediator**

### 5.4.2.5 Model Predictive Relevance

The model's predictive relevance was examined with the use of the Stone-Geisser's $Q^2$ value assessment by way of a blindfolding procedure as recommended by (Boos & Stefanski, 2011) . The model is said to possess substantial predictive power if the endogenous constructs Q Square value is greater than zero (Hair et al., 2013). The predictive relevance results are displayed in Table 5.10.

**Table 5.10: Results of Q2 Values**

| Endogenous Constructs | $Q^2$ (=1-SSE/SSO) |
|---|---|
| Efficiency | 0.400 |
| Responsiveness | 0.255 |
| Financial Position | 0.132 |

The Q Square values for the constructs (endogenous) as shown above are all greater than 0 hence, the model possess good predictive power.

#### 5.4.2.6 Model Fitness

The model fitness was examined using Standardized Root Mean Square Residuals (SRMR). Literature indicates that SRMR helps in knowing the average differences between the hypothesized and observed covariance matrices (Henseler, Ringle, & Sarstedt, 2015). The authors posit that the model shows a good fit if the value for the SRMR is not more than 0.08 as shown in Table 5.11.

**Table 5.11: Model Fit Results**

| | Estimated Model |
|---|---|
| SRMR | 0.068 |
| d_ULS | 1.794 |
| d_G | 0.946 |
| Chi-Square | 547.052 |

The above model is well fitted since the SRMR value of 0.068 is below the 0.08 threshold as observed in Table 5.11.

### 5.4.3 Discussions of findings

#### 5.4.3.1 Operational Challenges affecting Retail Supply Chains in F&B Industry in Ghana

The first objective of this study was to examine the operational challenges faced by firms in the food and beverage industry. The findings as presented in Figure 5.1 suggest that stiff competition and stock outs are considered by the majority of the respondents to be the biggest challenge

faced by retail supply chains. According to Negi and Anand (2015), stock is fairly the backbone of every supply chain especially in retail operations performance.

Therefore, stock out has the potential of locking up operational capital and stalling proper system of operations, which could lead to loss of sales and customers as well. Negi and Anand (2015) argument come as affirmation to fact that stock out is a key operational challenge of retailers in most developing countries.

Adebanjo (2009) claims that a highly volatile competition leads to less collaboration among the retail partners. Sheu, Yen and Chea (2006) mentioned that stiff competition deters supplier-retailer collaboration which in effect affect retail operations performance. These arguments share similarity with the current study outcome, in that stiff competition is a major operational challenge affecting retail operations performance in the Ghanaian F&B industry. The findings further share similarity with Le-roy, Mafini and Chinomona (2020) who discovered that inadequate suppliers and logistics constraints are common challenges that jeopardize the successful operations and performance of most firms in the F & B industry.

Further, the study confirm Viswanadham and Gaonkar (2009) assertion that the changing customer preferences coupled with longer lead times and poor communication are fundamental factors that affects F&B firms ability to be highly responsive. The authors noted that while poor communication results in poor supply visibility and in most cases late deliveries, rapid changes in the preferences of customers stimulate inefficiencies and disrupts the ability of firms to meet the changing demands of consumers on time. Lastly, fluctuating supplier prices was agreed by the respondents as a challenge in the F&B industry. This supports Sarkar and Kumar (2015)

observation that the majority of retailers are not able to place accurate orders because of fluctuating supplier prices.

#### 5.5.3.1 Relationships between Supply Chain Strategies, Efficiency and Responsiveness

The second objective of this study was to examine the relationships between supply chain strategies, efficiency and responsiveness. This objective resulted in the formulation of six hypotheses after a comprehensive literature review. The PLS bootstrapping method was employed to achieve this objective. The significance of the relationships between the variables were determined at $p<0.05$ as recommended by (Hair, Ringle & Sarstedt, 2013). The discussion with regards to each hyiothesis is presented below.

#### 5.5.3.2 Lean Supply Chain Strategy and F&B Firms Efficiency

To examine the relationship between lean supply chain strategy and efficiency, the study hypothesized that:

$H_1$: Lean supply chain strategy positively influences F&B firms' efficiency.The findings reported in Table 5.7 show that the relationship between lean supply chain strategy and efficiency was statistically significant (P = 0.000).This findings agrees with Fearne and Fowler (2006) who discovered that a strong positive relationship exist between lean supply chain strategy and a firm's efficiency.

The finding further confirms Fisher (1997) general model for selecting a supply chain strategy which advocates that firms that seek to be efficient must adopt a lean strategy. In this regard, organizations that implement lean strategy enjoy higher quality, less wastage, efficient resources utilization and enhanced performance. Also, the findings confirm Corbett and Klassen (2006)

findings that lean supply chain strategy assists businesses to exterminate non-value adding activities related to excess time, labour, equipment, space, and inventories.

#### 5.5.3.3: Lean Supply Chain Strategy and F&B Firms Responsiveness

To examine the relationship lean supply chain strategy and responsiveness, the study hypothesized that:

$H_2$: Lean supply chain strategy positively influences F&B firms' responsiveness. the findings reported in Table 4.7 show that the relationship between lean supply chain strategy and responsiveness was not statistically significant (P = 0.231). Again, this finding is in line with Fisher (1997) model of choosing a supply chain strategy. The model advocates that, leanness ensures efficiency whereas agility yields responsiveness.

Therefore, the insignificance of the relationship between lean supply chain strategy and responsiveness can be attributed to the fact that firms that adopt leanness focus more on cost minimization, and short lead time as far as it does not increase cost. This finding confirms Besbes et al. (2012) claim that the focal value of a lean strategy is to ensure continued pressure to improve operational performance; increase efficiency and dramatically improve services; and profits.

#### 5.5.3.4: Agile Supply Chain Strategy and F&B Firms' Efficiency

To examine the relationship between agile supply chain strategy and efficiency, the study hypothesized that:

$H_3$: Agile supply chain strategy positively influences F&B firms' Efficiency.

The findings reported in Table 5.7 show that the relationship between agile supply chain strategy and efficiency was not statistically significant (P = 0.413). This results agrees with fisher's model that unlike the lean strategy that seeks to achieve efficiency, agile supply chain strategy

seeks to achieve responsiveness. Thus, the finding can be attributed to the fact that in responsive supply chain strategy, firms adopt aggressive approaches towards flexibility and speed, with some level of disregard for cost increases Tatoglu et al., (2015). The result however, agrees with Arend & Wisner (2005) who discovered that a weak positive relationship exist between agile supply chain strategies and a firm's efficiency.

**5.5.3.5: Agile Supply Chain Strategy and F&B Firms' Responsiveness**

To examine the relationship between agile supply chain strategy and responsiveness, the study hypothesized that:

$H_4$: Agile supply chain strategy positively influences F&B firms' responsiveness

Again, the findings reported in Table 5.7 show that a statistically significant relationship exists between agile supply chain strategy and responsiveness (P = 0.013). This suggests that agile supply chain strategy and responsiveness are positively correlated. This finding agrees with Namusonge (2017) who discovered that a positive relationship exist between agile supply chain strategy and responsiveness. Thus, most firms may select being responsive in order to remain unique in the business environment.

Further, the finding confirms Gligor, Esmark, and Holcomb (2015) findings that supply chain agility is considered critical for firms to produce products in accordance with changing customer needs and requirements. This implies that the concept of supply chain agility is very essential for frequently introducing novel products as a way of responding to the dynamic needs of customers and effectively reacting to variations in the delivery requirements of both time and quantity.

### 5.5.3.6: Leagile Supply Chain Strategy and F&B Firms' Efficiency

To examine the relationship between leagile supply chain strategy and efficiency, the study hypothesized that:

$H_5$: Leagile supply chain strategy positively influences F&B firms' efficiency.

Again, the findings reported in Table 5.7 show that the relationship between leagile supply chain strategy was statistically supported (P = value of 0.005). This finding agrees with Abimbola (2013) who discovered that a positive relationship exist between leagile supply chain strategy and efficiency.

Both lean and agile supply chain strategies are not mutually exclusive and has a lot of benefits. Thus, if a firm properly applies both strategies, it can increase its efficiency and become responsive to customer demands within the milieu of unpredictable and turbulent environment. Further, the finding confirms Rabah (2015) findings that, although, lean and agile strategies are often pitched as opposing paradigms, both strategies share common characteristics and objectives; meeting customer demands at the least cost possible.

### 5.5.3.7 $H_6$: Leagile Supply Chain Strategy and F&B Firms' Responsiveness

To examine the relationship between leagile supply chain strategy and responsiveness, the study hypothesized that:

$H_6$: Leagile supply chain strategy positively influences F&B firms' responsiveness.

The findings reported in Table 5.7 show that the relationship between leagile supply chain strategy and responsiveness was statistically significant (P value of 0.035). This finding agrees with Naim and Gosling, (2011) who discovered that a positive relationship exists between leagile supply chain strategy, efficiency and responsiveness.

Thus, leagile strategy enhances retail operations performance which shows supply chains ability to quickly react to volatile and dynamic market changes whilst maintaining lower costs possible. The finding further confirms Soni and Kodali (2012) observation that leagile strategy helps to quickly respond to customer requirements with the lowest possible cost in a volatile market. To this end, leagile gives firms the opportunity to enjoy both the benefits of speed, flexibility, shorter lead times and minimum cost.

**5.5.3.8: Mediation Analysis**

Lastly, this study further intended to discover whether the financial position of a firm mediates the relationship between supply chain strategies, efficiency and responsiveness.

The finding suggests that financial position does not mediate supply chain strategies, efficiency and responsiveness. This finding agrees with the observation by Halabi, Barrett and Dyt (2010) that, although, financial position is very essential as it truly indicates the real performance of the firm, it does not ultimately leads to greater performance in itself. Thus, it helps stakeholders to appropriately evaluate and undertake suitable decisions in order to predict future growth and performance of the firm as it is a key indicator of firm's future cash flows, liquidity and long-term solvency (Mahrani & Soewarno, 2018). The present finding may be attributed to the reason that most food and beverage firms within developing economies are operated and managed in a highly informal manner without proper regard for supply chain strategies as observed by Ambe (2012).

# CHAPTER SIX

# SUMMARY OF FINDINGS, CONCLUSIONS AND CONTIBUTIONS OF THE STUDY

## 6.0 Introduction

The main findings as well as conclusions reached in this study are summarized in this final chapter. Recommendations that are worth considering, particularly by policy makers and practitioners have also been made in this chapter. The chapter concludes with the limitations of the study and proposes directions for future studies.

## 6.1 Summary of Findings

### 6.1.1 Operational Challenges affecting Retail Supply Chain Performance in the F&B Industry in Ghana

The objective one sought to examine the operational challenges affecting the retail supply chain performance within the food and beverages industry in Ghana. By way of achieving this objective, percentages are used. These were obtained from the descriptive analysis in SPSS. The findings reveal that stiff competition and stock out are recognized as the biggest operational challenges facing retail supply chains.

Longer lead time and changing customer preference then followed as the next biggest operational challenges. From the descriptive statistics, fluctuating supplier prices, poor communication with suppliers, inadequate suppliers and logistics constraints, appear to be the least challenges affecting the performance of retail supply chains.

### 6.1.2 Supply Chain Strategies and Firm's Responsiveness and Efficiency

The objective two of the study sought to examine the relationships between supply chain strategies, efficiency and responsiveness of food and beverage firms. In view of this, six hypotheses were formulated and tested. The hypothesis that were formulated included $H_1$: Lean supply chain strategy positively influences F&B firms' efficiency, $H_2$: Lean supply chain strategy positively influences F&B firms' responsiveness, $H_3$: Agile supply chain strategy positively influences F&B firms' Efficiency, $H_4$: Agile supply chain strategy positively influences F&B firms' responsiveness, $H_5$: Leagile supply chain strategy positively influences F&B firms' efficiency and $H_6$: Leagile supply chain strategy positively influences F&B firms' responsiveness.

However, while four hypotheses ($H_1$, $H_4$, $H_5$ and $H_6$) were accepted, only two of the hypotheses ($H_2$ and $H_3$) were rejected. The outcomes of the study proved that these supply chain strategies are crucial predictors of firms' efficiency and responsiveness.

### 6.1.3 Mediating Effect of Financial Position on Supply Chain Strategies, Responsiveness and Efficiency

Objective three of the study examined the mediating effect of financial position on the relationships between supply chain strategies, responsiveness and efficiency. To achieve this objective, the study first run bootstrapping algorithm without adding the mediating variable (financial position) to the model. The next step was to run the bootstrapping algorithm with financial position being the mediating variable added to the model. Surprisingly, the findings demonstrated that the relationship between supply chain strategies and responsiveness and between supply chain strategies and efficiency were not mediated by a firm's financial position.

This outcome suggests that supply chain strategies do influence responsiveness and efficiency regardless of a firm's financial position.

## 6.2 Conclusions

### 6.2.1 Operational Challenges with Retail Supply Chain Performance in F&B Industry in Ghana

The study findings suggest that retail operations in the F&B industry are affected by all the challenges examined but the profound challenges were stiff competition, stock outs, longer lead times changing customer preferences and logistics constraints.

### 6.2.2 Supply Chain Strategies, Responsiveness and Efficiency

Agile supply chain strategy was discovered to have a positive influence on responsiveness. To this end, the study concludes that food and beverage firms' ability to quickly and effectively respond to changing customer needs and also use reliable suppliers who are able to meet delivery schedules, make rapid product mix changes among others are critical determinants for firm responsiveness. However, agile supply chain strategy was found not to have the capacity to influence the efficiency of the firm though efficiency is a critical component of firms' performance. Thus, the study concludes that within the food and beverage retail operations, the agile supply chain strategy influences the responsiveness but does not influence efficiency of such firms.

Similarly, the lean supply chain strategy was discovered to have a positive influence on efficiency. With this result, the study concludes that lean supply chain strategy enables firms to minimize production and distribution cost, manage and control inventory levels, eliminate waste in their production processes, optimize their production processes among others to be efficient. Thus, the study concludes that within the food and beverage retail operations, the lean supply chain strategy does influence the efficiency but not the responsiveness of such firms.

Finally, leagile supply chain strategy was found to have a positive influence on both responsiveness and efficiency. Hence the study concludes that the leagile supply chain strategy which combines the principles of both lean and agile strategies is a good predictor of efficiency and responsiveness within the food and beverage industry. The leagile strategy enables such firms to demonstrate the ability to be swift in responding to customer needs whiles at the same time minimizing cost.

### 6.2.3 The Mediating Effect of Financial Position on Supply Chain Strategies, Responsiveness and Efficiency

In relation to financial position serving as a mediating variable, no mediating effect of financial position of the firm was established. Therefore, the study concludes that supply chain strategies have influence on firm's efficiency and responsiveness notwithstanding the firms' financial position. Firms must thus be serious in adopting supply chain strategies that can help them offset business threats as well as take full advantage of business opportunities.

## 6.3 Contributions of the Study

### 6.3.1 Contributions of the Study to Theory

The understanding that supply chain strategies can determine food and beverage firms' efficiency and responsiveness is the first theoretical contribution that the study has made. Supply chain strategies are recognized as being critical for firm performance due to the fact that uncertainty, customer unpredictability and technology are now major drivers of the business environment.

Therefore, knowledge concerning the relationships found in this present study denotes that adopting supply chain strategies is relevant in F&B firms' survival. Besides, the types of supply chain strategies explored in this study and the emerging findings may serve as a source of

reference in the future, especially for those intending to investigate supply chain strategies in F&B industry of the manufacturing sector.

### 6.3.2 Contribution of the Study to Practice

The insights and discoveries produced by the study have substantial managerial implications. Both owners and managers of businesses have keen interest in how well their business performs. Thus, judging from the substantial effect of supply chain strategies on both efficiency and responsiveness of retail firms in the F&B industry, it is important that these firms invest in building relevant supply chain strategies. Therefore, business owners and other practitioners who are zealous about improved firm performance and survival may focus on developing supply chain strategies as part of the effort.

### 6.3.3 Contribution of the Study to Policy

The knowledge produced by the study has good policy implications that can be beneficial to firms. Following the results produced by this research, government and its agencies as well as other stakeholders such as the Association of Ghana Industries (AGI) together with other policy making bodies that have the responsibility for managing and regulating firm's operations will appreciate the role of entrepreneurship workshops and education, particularly on supply chain strategies that are critically needed to enhance performance. Programs organized for training entrepreneurs should concentrate on supply chain strategies that determine the outmost retail operations performance of firms.

## 6.4 Limitations of the Study

The main limitation of this study was the refusal of some respondents to take part in the study. As a result, 300 responses instead of 363 were gotten from the data collection exercise. Even though this rate of response did not affect the analysis, nevertheless, if all the questionnaires

were retrieved, this would have enhanced the research outcomes and probably could have enhanced the generalizability of the results. Also, this study focused on food and beverage firms only. Thus, the results may not be generalizable to cover other industries.

### 6.5 Directions for Future Research

Retail supply chain performance in the food and beverage industry was the focused of the study. However, the study can be expanded to include other industries in order to give a broader view on the impact of supply chain strategies on firm performance. Thus, future researchers can take note.

Besides, in order to obtain in-depth understanding and contextual knowledge about firm performance and supply chain strategies, it is suggested that a different methodology for example mixed method must be applied in further studies to see if the results will be different.

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**APPENDIX**

**PROSPER BIAKA KONLAN**

**UNIVERSITY OF GHANA BUSINESS SCHOOL**

**QUESTIONNAIRE**

I am a student of University of Ghana Business School currently pursuing MPhil in Operations Management. As part of the requirement for the award of this degree, I am undertaking a research on the topic: *The impact of supply chain strategies on the operations performance of retailers in the Ghanaian Food and Beverage Industry*. I kindly seek your assistance and cooperation in completing this questionnaire. Any information provided will be used for the purpose of this research only. You are assured that all the information provided will be treated with the utmost confidentiality.

**Instructions:** Please tick [√] the appropriate response that applies to you or write out your response as the question may require.

**SECTION A: DEMOGRAPHIC FACTORS (Please tick the appropriate box)**

1.0 Gender Male [ ] Female [ ]

2.0 Age of respondent

4. – 29 years [ ] 30 – 39 years [ ] 40 – 49 years [ ] above 49 years [ ]

3.0 What is your highest level of education?

Primary [ ] Secondary [ ] Certificate or Diploma [ ] Degree and above [ ]

4.0 Number of years in business: 1-5 [ ] 6-10 [ ] Above 10 [ ]

**5.** What is the total number of employees in your organization?

0 – 10 employees [ ] 11 – 50 employees [ ] 51 – 300 employees [ ]

**SECTION B: Agile Supply Chain Strategy**

Using a Likert scale from 1-5, please rate the extent to which you agree or disagree with the following statements.

**Key:** Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, Strongly agree = 5

| Code | Statements | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| SCA1 | Compared to our competitors, our supply chain responds more quickly and effectively to changing customer needs | | | | | |
| SCA2 | Our organization has reliable suppliers who meet delivery schedules. | | | | | |
| SCA3 | Our suppliers are responsive in situations of emergency orders | | | | | |
| SCA4 | We have the ability to develop and introduce new products into the market | | | | | |
| SCA5 | We have the capability to make rapid product mix changes | | | | | |
| SCA6 | Our organization has a logistics network that support flexibility | | | | | |
| SCA7 | Our organization has an integrated system with supply chain partners | | | | | |

**SECTION C: Lean Supply Chain Strategy**

Using a Likert scale from 1-5, please rate the extent to which you agree or disagree with the following statements.

**Key:** Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, Strongly agree = 5

| Code | Statements | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| LSC1 | Our organization is able to minimize production and distribution cost | | | | | |
| LSC2 | Our organization is able to manage and control inventory levels | | | | | |
| LSC3 | We are able to eliminate waste in our production processes | | | | | |
| LSC4 | We have the ability to optimize our production processes | | | | | |
| LSC5 | We have the ability to standardize and automate our processes | | | | | |
| Sc6 | We have the capability to make rapid product mix changes | | | | | |

without significant cost

**SECTION D: Leagile Supply Chain Strategy**

Using a Likert scale from 1-5, please rate the extent to which you agree or disagree with the following statements.

**Key:** Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, Strongly agree = 5

| Code | Statements | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| LASC1 | We have the ability to combine agile and lean supply chain practices | | | | | |
| LASC2 | Our organization is able to respond quickly to customer orders at the lowest cost | | | | | |
| LASC3 | We have the ability to provide products and processes at a desired high level of quality, performance and conformance to specifications at a minimum cost | | | | | |
| LASC4 | Our organization is able to manage and control inventory levels | | | | | |
| LASC5 | We are able to constantly improve our production/ service delivery | | | | | |
| LASC6 | We make products with low overhead costs | | | | | |

**SECTION E: Customer Responsiveness**

Using a Likert scale from 1-5, please rate the extent to which you agree or disagree with the following statements.

**Key:** Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, Strongly agree = 5

| Code | Statements | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| CR1 | We have the ability to anticipate and effectively plan for customer demand | | | | | |
| CR2 | We can easily customise our products and services to meet the demands of our customers | | | | | |
| CR3 | We have the capability to make rapid product mix changes | | | | | |
| CR4 | We have the ability to fulfil customer order within the require lead times | | | | | |

| | |
|---|---|
| CR5 | We have the ability to meet variations in customer demand |
| CR6 | We have the ability to adjust our operations to meet different levels of customer needs |

**SECTION F: Organizational Efficiency**

Using a Likert scale from 1-5, please rate the extent to which you agree or disagree with the following statements.

**Key:** Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, Strongly agree = 5

| Code | Statements | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| EF1 | We have the ability to use our resources efficiently | | | | | |
| EF2 | We are able to achieve the desired productivity levels with minima resources | | | | | |
| EF3 | We do not waste our limited resources | | | | | |
| EF4 | We have the ability to maximize output from least inputs | | | | | |
| EF5 | Our organization has systems that support efficient service delivery | | | | | |
| EF6 | We consider our processes to be free from waste | | | | | |

**SECTION G: Financial Performance**

Using a Likert scale from 1-5, please rate the extent to which you agree or disagree with the following statements.

**Key:** Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, strongly agree = 5

| Code | Statements | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| FP1 | The organization always meet its financial obligations when they are due | | | | | |
| FP2 | Our revenues usually exceed our expenses | | | | | |
| FP3 | Our organization usually makes returns and declares dividends to investors | | | | | |
| FP4 | We are able to pay our suppliers without delay | | | | | |
| FP5 | Our organization is efficient in the usage of its assets | | | | | |

FP6 We have the ability to keep cash reserves for use in difficult times

**SECTION H: Challenges with Retail Operations Performance**

Please tick [√] the challenge (s) that applies to your organization

1. Stock outs [ ]
2. Stiff competition [ ]
3. Inadequate supplies [ ]
4. Changing customer preference [ ]
5. Poor communication with suppliers [ ]
6. Fluctuating supplier pricing [ ]

FDA FOOD AND DRUGS AUTHORITY
Your Well-being, Our Priority.

## LISTS OF FOOD AND BEVERAGE ORGANISATIONS

| NO. | PRODUCT NAME | COMPANY NAME |
|---|---|---|
| 1. | Club Shandy (Bosoe & Bosoe Touch Of Ginger | Accra Brewery Limited |
| 2. | Brukutu Barima Nsuo Ginger Gin | Obibini Blackman Company Limited |
| 3. | Tiger Bitters | SKD Monarch Ltd |
| 4. | Guiness Foreign Extra Stout | Guinness Ghana Breweries Ltd |
| 5. | Golden Drop Pure Vegetable Oil | Anash Industries Ghana Limited |
| 6. | Royal Farmers Easy Cook Long Grain Rice (Premium, Select) | Anash Industries Ghana Limited |
| 7. | CD Lemon Beer And CD Dark Beer | Gentle Gaints Limited |
| 8. | Vitamilk Soyamilk (REGULAR) | Gentle Gaints Limited |
| 9. | Gustav Liquer(Herbs, Tea) | Gentle Gaints Limited |
| 10. | Coca- Cola Zero Sugar(PET) | Coca- Cola Bottling Company Of Ghana |
| 11. | Afresco Cube (Spiga, Shrimp) | Well Connected Enterprise |
| 12. | Johnnie Walker Blended Scotch Whisky | Guinness Ghana Breweries Ltd |
| 13. | Th. Kramers Aromatique Bitters | Gentle Gaints Limited |
| 14. | Royal G4 (Garlic, Ginko, Ginseng)- Ground Royal Cinamon Ginger,Garlic Lemon Powder | Royal Organic Industry |
| 15. | Mr. Chef Shrimp Seasoning | Bayswater Industries Ltd |
| 16. | Tasty Tom Enriched Tomato Mix | Nutrifoods Ghana Limited |
| 17. | Minazen Flavoured Seasoning And Lion Nutmeg Powder | Hamta & Sons Limited |
| 18. | Guiness Foreign Extra Stout | Guinness Ghana Breweries Ltd |
| 19. | Nestle Milo Energy Food Drink(Activ-Go) | Nestle Ghana Limited |
| 20. | Dior & Feliz Familia Rice | Sucryza Distributors Limited |
| 21. | Neat Palmnut Extract | Neat Foods Company Limited |
| 22. | Neat Fufu Plantain, Neat Fufu Yam & Neat Fufu Cocoyam | Neat Foods Company Limited |
| 23. | Faxe Beer (Gold) | Marina Distribution Company Ltd |
| 24. | Fresco Dolait Yoghurt (Nature, Vanilla, Fruit Cocktail,Strawberry | Soticam Ghana Limited |

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| 25. | Guiness Foreign Extra Stout | Guinness Ghana Breweries Ltd |
| 26. | This Way Chocolate Drink | Atona Food Investments |
| 27. | Nestle Chocolim Sweetened Coca Flavoured Mix (Fat Reduced) | Nestle Ghana Limited |
| 29. | Frutelli Fruit Nectar (Mango) | Aquafresh Limited |
| 30. | Frutelli Fruit Nectar (Mango,Pineapple,Cockta il,Multifruit Orange &Tropical Mix) | Aquafresh Limited |
| 31. | Guiness Foreign Extra Stout | Guinness Ghana Breweries Ltd |
| 32. | Coca- Cola Zero Sugar | Coca- Cola Bottling Company Of Ghana |
| 33. | Super Malt Original Malt Non- Alcoholic Drink | Marina Distribution Company Ltd |
| 34. | Faxe Beer (10% Extra Stong Premium Lager) | Marina Distribution Company Ltd |
| 35. | Neat Fufu Plantain, Neat Fufu Yam & Neat Fufu Cocoyam | Neat Foods Company Limited |
| 36. | This Way Chocolate Drink | Atona Food Investments |
| 37. | Ena Pa Range Of Products | Menkish Impex Ltd |
| 38. | Black Rock Honey Whiskey | Kasapreko Company Limited |
| 39. | Johnnie Walker Blended Scotch Whisky (Red Label, Blue,Black Golg Reserve,Platinum) | Guinness Ghana Breweries Ltd |
| 40. | Mama Africa 5% White Premium Rice | Olam Ghana Limited |
| 41. | Royal Feast Jasmine Rice | Olam Ghana Limited |
| 42. | Blowchem Range Of Products | Blowchem Industries Limited |
| 43. | This Way Chocolate Drink | Atona Food Investments |
| 44. | Royal King Cracker Deluxe Biscuits | Nutrifoods Ghana Limited |
| 45. | Maggi Dɛdɛɛdɛ Seasoning | Nestle Ghana Limited |
| 46. | Sun Cola Reshing Drinks | Aquafresh Limited |
| 47. | Auntie Ama Original Zomi | JS Foods |
| 48. | Odo Nsa Atadwe And Ginger Liquor | Victoria Distilleries Limited |
| 49. | Adonko 123 Bitters | Adonko Bitters Ltd |
| 50. | Balona Non- Dairy Tea, Balona Non- Dairy Creamer, Balona 3 In1 Coffee Drink | Dreamsen Ghana Limited |

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| 51. | Lele Thai Jasmine Long Grain Fragrant Rice | Sika Krobea Company Limited |
| 77. | Lele Sunflower Oil (Rebaj) | Rebaj Impex Company Limited |
| 51. | Frytol Vegetable Cooking Oil | Wilmar Africa Limited |
| 52. | Shine Tomato Paste | Grace Hope Company Limited |
| 53. | Mami's Spice Powdered Seeds, Mami's Spice Powder, Mami's Spice | A1 Spices |
| 54. | Shine Tomato Paste | Grace Hope Company Limited |
| 56. | Nestle Ideal Dairy Delight | Nestle Ghana Limited |
| 57. | Coca Cola Zero Sugar(PET) | The Coca Cola Bottling Company Of Ghana |
| 58. | Tasty Tom Enriched Tomato Mix | Nutrifoods Ghana Limited |



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| 59. | Neat Fufu Plantain, Neat Fufu Yam & Neat Fufu Cocoyam | Neat Foods Company Limited |
| 60. | Royal Perk Choco Shortcake Biscuits, Royal Perk Milk Shortcake Biscuit | Nutrifoods Ghana Limited |
| 61. | Club Premium Lager Beer | Accra Brewery Limited |
| 62. | Koko Dairy Free Coconut Milk Original, Koko Dairy Free Cococnut Milk Unsweetened | Dei Yei Enterprise |
| 63. | Gino Viet Fragrant KDM Rice, Gino Thai Jasmine Rice | Conseveria Distributors Ghana Limited |
| 64. | Onaapo Atadwe Ginger Alcoholic Drink | Charger Limited |
| 65. | Coca Cola Zero Sugar(PET) | The Coca Cola Bottling Company Of Ghana |
| 66. | Kasapreko Alomo Bitters (750ml Glass Bottle) | Kasapreko Company Limited |
| 67. | Piccadilly Choco Cookies | Piccadilly Biscuit Lmited |
| | Royal Perk Choco Shortcake Biscuits, Royal Perk Milk Shortcake Biscuit | Nutrifoods Ghana Limited |
| | Sunny Brown Sugar (Gold -LDPE Sachet, Soft – HDPE Jar) | Oxy Industries Limited |
| | Maranatha Jasmine Perfume Rice , Maranathe Thai Hom Mali Rice | Silasdee Enterprise |
| | Quash Ice Mineral Water | Quashrich Limited |
| | Millicent Vietnamese Fragrant Rice | Sika Krobea Company Limited |
| | Wobeti Atadwe Ginger Liquor | Joy Industries Limited |

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| | Nero Natural Mineral Water | Sulu Investments Limited |
| | Arla Dano Coffee Flavoured Milk Powder | Arla Foods Limited |
| | Delay Sardines In Vegetable Oil | Maxgringo Production |
| | Ballantines Finest Blended Scotch Whisky | Pernod Richard Ghana |
| | Cindy Fragrant Jasmine Long Grain Rice | Sika Krobea Company Limited |
| | Texas Star American Long Grain White Rice | Trade Pass Limited |
| | Kalypo Natural Juice Drink | Aquafresh Limited |
| | Arla Dano Coffee Flavoured Milk Powder | Arla Foods Limited |
| | Vitamilk Drink, Energy Black Cereal | Gentle Gaints Limited |
| | Club Premium Lager Beer | Accra Brewery Limited |
| | Heaven Dark Soy Sauce, Heaven Non- Dairy Creamer, Multi- Purpose Margarine | Menkish Impex Ltd |
| | Wobeti Atadwe Ginger Liquor | Joy Industries Limited |
| | Ena Pa Range Of Products | Menkish Impex Ltd |
| | Frutelli Fruit Nectar | Aquafresh Limited |
| | Royal Palm Oil | Rebaj Impex Company Limited |
| | Cindy Fragrant Jasmine Long Grain Rice | Sika Krobea Company Limited |
| | Millicent Vietnamese Fragrant Rice | Sika Krobea Company Limited |
| | Kovi Tiger Nuts Powder, Kovi Ginger Powder, Kovi Chilli Pepper Powder | Kofi Vinyi & Co . Limited |
| | Vitamilk Champ Soy-Milk | Gentle Gaints Limited |
| | Coca Cola Zero Sugar(PET) | The Coca Cola Bottling Company Of Ghana |
| | Koko Dairy Free Coconut Milk Original, Koko Dairy Free Cococnut Milk | Dei Yei Enterprise |
| | Oba Makarni Spaghetti | Westco Investment Limited |
| | Storm Energy Drink | Kasapreko Company Limited |
| | Odeneho Bitters | Ruler Distilleries & Trading Company Ltd |
| | Shloer Non- Alcoholic Sparkling Grape Juice Drink ( Red, Rose, White) | Pure & Refreshing |
| | Frytol Vegetable Cooking Oil | Wilmar Africa Limited |
| | Ounje Milky Tiger Nut Milk | Ounje International Limited |
| | Yoyo Milk Flavoured Drink | Aquafresh Limited |

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| | 10 Over 10 Energy Drink | Kasapreko Company Limited |
| | Blowchem Range Of Products | Blowchem Industries Limited |
| | Fortune Thailand Jasmine Rice | Wilmar Africa Limited |
| | Nestle Carnation Evaporated Dairy Based Creamer With Vegetable Fat | Nestle Ghana Limited |
| | Masafi Fruit Juice | Veraldo Limited |
| | Lan T Soy Drink ( Soy Milk With Groundnut & Cassava) | Lantianyi Company Limited |
| | Papa Nono Non - Dairy Creamer | Lakshay Enterprise |
| | Talisha Non Dairy Creamer | Shailesh Enterprise |
| | Frutelli Fruit Nectar | Aquafresh Limited |
| | Sunny Gold Garimix With Brown Sugar | Oxy Industries Limited |
| | Ounje Milky Tiger Nut Milk | Ounje International Limited |
| | Dafani Orange Mango Cocktail & Mango Nectar | Coly Ghana Limited |
| | Shine Tomato Paste | Grace Hope Company Limited |
| | Black Rock Honey Whiskey | Kasapreko Company Limited |
| | Just Power Energy Drink | Al Mir Company Limited |
| | Golden Drop Pure Vegetable Oil | Avnash Industries Ghana Limited |
| | Kellogg's Coco Pops Bar (Chocolate Flavours, Toasted Rice Cereal & Milk Bar) | Kellogg Tolaram Ghana Private Limited |
| | Royal Farmers Easy Cook Long Grain Rice (Premium, Select) | Avnash Industries Ghana Limited |
| | Nestle Cerelac Infant Cereal With Milk- Iron+ (Wheat, Rice, Fruits) | Nestle Ghana Limited |
| 124. | Nkulenu Palm Soup Base (Original, Spicy) | Nkulenu Industries Limited |
| 125. | Chivas Regal Blended Scotch Whisky | Pernod Ricard Ghana |
| 126. | Koko Dairy Free Coconut Milk (Original, Unsweetened) | De Yei Enterprise |
| 127. | Gino Tomato Mix | Conservaria Distribution Ghana Limited |
| 128. | Omypop Popcorn | Proserve Company Limited |
| 129. | Cowbell Filled Milk Drink | Promasidor Ghana Limited |
| 130. | Haano Supreme Sardine In Vegetable Oil, Haano Non Dairy Creamer | Haano Limited |
| 131. | Niche Milk Flavoured Chocolate | Niche Confectionery Limited |
| 132. | Jarah Seasoning Powder (Chicken, Jollof Rice) | Young Shall Grow Spices Limited |

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| 133. | Ballantines Finest Blended Scotch Whisky | Pernod Ricard Ghana |
| 134. | Kelloggs Rice Krispies/Kelloggs Cornflakes /Kelloggs All Bran Original | Kellogg Tolaram Ghana Private Limited |
| 135. | Club Shandy Light Bosoe Lemony | Accra Brewery Limited |
| 136. | Darling Lemon Flavoured Alcoholic Drink | Gmr Industries Ghana Limited |
| 137. | Anna Perfumed Jasmine Rice | Orkman Limited |
| 138. | Reydrop Natural Mineral Water | Petersfield And Rey Group Limited |
| 139. | No. 8 Exotic Snacks | Foodtech Company Limited |
| 140. | Lele Thai Jasmine Long Grain Fragrant Rice | Sika Krobea Company Limited |
| 141. | Shine Tomato Paste | Gracehope Company Limited |
| 142. | Barmin Seasoning Powder (Beef, Chicken, Jollof) | Tahimara Enterprise |
| 143. | AB Benguy Garimix 4 In 1 | Aisha Bangai Enterprise |
| 144. | Ice Spring Mineral Water | Patasi Spring Water Limited |
| 145. | Royal Palm Oil | Regbright Enterprise |
| 146. | Cadbury Richoco (Energy Food Drink) | Cadbury Ghana Limited |
| 147. | The Laughing Cow Cheese | Transmed Ghana Limited |
| 148. | Cadbury Richoco (Energy Food Drink) | Cadbury Ghana Limited |
| 149. | Herbalife Roasted Soybeans | Herbalife Of Ghana Limited |
| 150. | Miski Instant Filled Milk | Promasidor Ghana Limited |
| 151. | Borges Olive Oil | J. M. Addo And Sons Limited |
| 152. | Sofia Vietnam Rice | Westco Investment Limited |
| 153. | Mr Chef Shrimp Seasoning | Bayswater Industries Limited |
| 154. | Tasty Tom Enriched Tomato Mix | Nutrifoods Ghana Limited |
| 155. | Kimi Fruit, Kimi Milk Drink | Kimi Foods Industry Ghana Limited |
| 156. | Happy Man Bitters | Charger Limited |
| 157. | Bramsco Zero Moringa And Lemon Juice Blend | The Juiceman Limited |
| 158. | Abibrem Bitters | African Herbal And Medicinal Centre |
| 159. | Chivas Regal Blended Scotch Whisky | Pernod Ricard Ghana |
| 160. | Arla Dano Strawberry Flavoured Milk Powder | Arla Foods Limited |
| 161. | Onga Seasoning Powder (Stew, Shrimp, Classic, 3 Mix) | Promasidor Ghana Limited |
| 162. | Frutelli Fruit Nectar | Aquafresh Limited |
| 163. | Kalypo Natural Juice Drink | Aquafresh Limited |
| 164. | Cowbell Filled Milk Drink | Promasidor Ghana Limited |

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| 165. | Royal Perk Milk Shortcake Biscuit | Nutrifoods Ghana Limited |
| 166. | Kasapreko Alomo Bitters (750ml Glass Bottle) | Kasapreko Company Limited |
| 167. | Beta Malt Non Alcoholic Drink | Accra Brewery Limited |
| 168. | Guinness Smooth Stout | Guinness Ghana Breweries Limited |
| 169. | Jameson Irish Whisky | Pernod Richard Ghana |
| 170. | Frischli Uht Milk | Melcom Ghana Limited |
| 171. | Beta Malt Non Alcoholic Drink | Accra Brewery Limited |
| 172. | Club Premium Lager Beer | Accra Brewery Limited |
| 173. | Carel Premium Speghetti, Refined Sunflower Oil | Carel Industries Limited |
| 174. | Gino Max Products | Conservaria Distribution Ghana Limited |
| 175. | Cindy Fragrant Jasmine Long Grain Rice | Sika Krobea Company Limited |
| 176. | Pomo Tomato Mix | Conservaria Distribution Ghana Limited |
| 178. | Aromco Mix Flavours (Lemon/Lime, Mixed Fruit) And Citric Acid Monhydrate | Micrite Group Ghana Limited |
| 179. | 5 Star Energy Drink | Multipac Limited |
| 180. | Royal Perk! Choco Shortcake | Nutrifoods Ghana Limited |
| 181. | Namio Soymilk (Orignal, Choco) | Namio Ghana Limited |
| 182. | Fresco Dolait Youghurt (Nature, Vanilla, Fruit Cocktail, Apricot, Strawberry) | Soticam Ghana Limited |
| 183. | Lele Thai Jasmine Long Grain Rice | Sika Krobea Company Limited |
| 184. | Nestle Cerelac Infant Cereal With Milk- Iron+ (Wheat, Rice, Fruits) | Nestle Ghana Limited |
| 185. | Royal Aroma Fragrant Long Grain Rice | Olam Ghana Limited |
| 186. | Zina Tom Brown Cereal Mix | Rozymanuel Enterprise |
| 187. | Smart Up Energy Drink | K F Trust Point Company Limited |
| 188. | Mr Chef Seasoning | Bayswater Industries |
| 189. | Doweek Chicken Seasoning Cube | H. Lab Ventures Co. Limited |
| 190. | Fresco Dolait Yoghurt (Nature, Vanilla,Fruit Cocktail,Strawberry | Soticam Ghana Limited |
| 191. | Waterchill Natural Mineral Water | Water Chill Enterprise |
| 192. | Lan T Soy Drink ( Soy Milk With Groundnut & Cassava) | Lantianyi Company Limited |
| 193. | Heaven Perfume Ling Grain Rice, Heaven Multi Purpose Margarine, Heaven Non Dairy Creamer | Menkish Impex Ltd |

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| 194. | Gino Max Shrimp + Pepper, Gino Max Shrimp Flavour | Conservaria Distribution Ghana Limited |
| 195. | Ice Spring Mineral Water | Patasi Spring Water Limited |
| 196. | Indomie Instant Noodles | Multipro Private Limited |
| 197. | Nestle Cerelac Infant Cereal With Milk- Iron+ (Wheat, Rice, Fruits) | Nestle Ghana Limited |
| 198. | Danongwon Brown Rice Green Tea | Pishon Dominion Links |
| 199. | Adonko 123 Bitters | Adonko Bitters Ltd |
| 200. | Cindy Fragrant Jasmine Long Grain Rice | Sika Krobea Company Limited |
| 201. | Santa Isabel Drinks, Bikila Bitters, W Shaka Mixer Energy Vodka | West Africa & Gulf Company Limited |
| 202. | Village Honey | Village Honey Enterprise |
| 203. | Zina Tom Brown Cereal Mix | Rozymanuel Enterprise |
| 204. | Indomie Instant Noodles | Mutipro Private Limited |
| 205. | Parlays Malt & Milk Biscuit | Parlays Ghana Limited |
| 206. | Royal Drinks | Kasapreko Company Limited |
| 207. | Club Premium Lager Beer | Accra Brewery Limited |
| 208. | This Way Chocolate Drink | Atona Food Investments |
| 209. | Otafrigya Bitters | Jenaaco Ventures |
| 210. | Mario Menthol Extract Quality Hard Boiled Sweets | Jay Kay Industries And Investment Limited |
| 211. | Cadbury Richoco (Energy Food Drink) | Cadbury Ghana Limited |
| 212. | Royal Perk Choco Shortcake Biscuits, Royal Perk Milk Shortcake Biscuit | Nutrifoods Ghana Limited |
| 213. | Vita Milk Soymilk (Regular) | Gentle Giants Limited |
| 214. | Royal Milky Magic & Malt Biscuit | Nutrifoods Ghana Limited |
| 215. | Indomie Instant Noodles | Multipro Private Limited |
| 216. | Voltic Natural Mineral Water | Voltic Ghana Limited |
| 217. | Gino Max Shrimp + Pepper, Gino Max Shrimp Flavour | Conservaria Distribution Ghana Limited |
| 218. | Nestle Cerelac Infant Cereal With Milk- Iron+ (Wheat, Rice, Fruits) | Nestle Ghana Limited |
| 219. | Club Premium Lager Beer | Accra Brewery Limited |
| 220. | Royal Aroma Fragrant Long Grain Rice | Olam Ghana Limited |
| 221. | Lele Thai Jasmine Long Grain Fragrant Rice | Sika Krobea Company Limited |
| 222. | Frischilli UHT Milk (Full Cream, Skimmed Long Life, Semi Skimmed) | Melom Ghana Limited |

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| 223. | Boss Baker Chocolate Cookie (Original, Hazelnut Filling) | Daily Food Limited |
| 224. | Adonko Bitters | Adonko Bitters Ltd |
| 225. | Cindy Fragrant Jasmine Long Grain Rice | Sika Krobea Company Limited |
| 226. | Doweek Chicken Seasoning Cube | H. Lab Ventures Co. Limited |
| 227. | Twist Nectar(Grape, Orange, Apple, Guava, Mango), Twist Nectar Cocktail | Moreno Trading Limited |
| 228. | Fortune Vietnam Rice | Wilmar Africa Limited |
| 229. | Nestle Milo Energy Food Drink (Activ-Go) | Nestle Ghana Limited |
| 230. | Excella Gold Thai Rice | Wilmar Africa Limited |
| 231. | Mr. Chef Seasoning (Shrimp, Chicken Flavour, Tomato Tablets, Spices Tablets) | Bayswater Industries Limited |

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| 232. | Vita Milk Soymilk (Regular) | Gentle Giants Limited |
| 233 | Guinness Fes, Orijin Spirit Mixed Drink, Abc Golden Lager Beer | Guinness Ghana Breweries Limited |
| 234. | Kpoo Keke Atadwe Ginger Liqueur | Liberty Industries |
| 235. | Anok-Gyes Pig Feed | Anok-Gyes Farms Limited |
| 236. | Kalyppo Natural Juice Drink (Fruitimix Apple) | Aquafresh Limited |
| 237. | Frutelli All Natural Juice (Orange, Tropical Mix, Multifruit, Pineapple) | Aquafresh Limited |
| 238. | Lipton Yellow Label Black Tea | Unilever Ghana Limited |
| 239. | Nestle Ideal Full Cream Milk (Original) | Nestle Ghana Limited |
| 240. | Selekt Shrimp Seasoning Tablet | Bayswater Industries Limited |
| 241. | Johnnie Walker Blended Scotch Whisky (Black Label) | Guinness Ghana Breweries Limited |
| 242. | Apollo Raw Kombucha | Apollo Products Ghana Limited |
| 243. | Kalyppo Natural Juice Drink (Fruitimix, Apple) | Aquafresh Limited |
| 244. | Nestle Ideal Full Cream Milk (Original) | Nestle Ghana Limited |
| 245. | Onga Seasoning Powder (Stew, Shrimp, Classic, 3 Mix) | Promasidor Ghana Limited |
| 246. | Fresco Dolait Yoghurt (Nature, Vanilla,Fruit Cocktail, Strawberry | Soticam Ghana Limited |
| 247. | Cocacola, Fanta Orange, Sprite Lemon Flavour | The Coca Cola Bottling Company Of Ghana |
| 248. | Arise Mackerel & Arise Tomato Paste | Quality First Company Limited |
| 249. | Royal Feast Delight, Royal Feast Jasmine, Royal Aroma, Precious Premium, Wonder Viet | Olam Ghana Limited |
| 250 | Royal Aroma, Royal Feast, Tasty Tom, First | Olam Ghana Limited |

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| | Choice Bread Flavour | |
| 251. | Guinness Smooth Stout | Guinness Ghana Breweries Limited |
| 252. | Dadi Natural Mineral Water | Joy Industries Limited |
| 253. | Papa Non Non Dairy Creamer | Lakshay Company Limited |
| 254. | Fanyogo Flavoured Yoghurt (Strawberry, Mango & Passion, Cocopine) | Fanmilk Limited |
| 255. | Voltic Natural Mineral Water | Voltic Ghana Limited |
| 256. | Jarah Seasoning Powder (Chicken, Jollof Rice) | Young Shall Grow Spices Limited |
| 257. | Nestle Milo Energy Food Drink (Activ-Go) | Nestle Ghana Limited |
| 258. | Abc Golden Lager Beer | Guinness Ghana Breweries Limited |
| 259. | Frytol Vegetable Cooking Oil | Wilmar Africa Limited |
| 260. | Abc Golden Lager Beer | Guinness Ghana Breweries Limited |
| 261. | Fortune Viet Rice (Premium Fragrant, Kdm Jasmine) | Wilmar Africa Limited |
| 262. | Fanta Carbonated Soft Drink (Strawberry, Apple, Pineapple) | The Coca Cola Bottling Company Of Ghana |
| 263. | Royal Aroma Fragrant Long Grain Rice, Tasty Tom Tomato Mix, First Choice Bread | Olam Ghana Limited |
| 264. | Gulder Extra Matured Ultimate Beer | Guinness Ghana Breweries Limited |
| 265. | Herbalife Roasted Soybeans | Herbalife Of Ghana Limited |
| 266. | Lan T Soy Drink ( Soy Milk With Groundnut & Cassava) | Lantianyi Company Limited |
| 267. | Yammi Hurray Crackers | Philio Delio Smile Foods Limited |
| 268. | Frutelli Fruit Nectar | Aquafresh Limited |
| 269. | Atona Non Dairy Creamer | Grantula Enterprise |
| 270. | El Olivereal Spanish Olive Oil (Refine Pomace Olive Oil), El Oliveal Spanish Oil (Extra Virgin Olive Oil) | Ambica Impex Limited |
| 271. | Malta Guinness Malt Drink | Guinness Ghana Breweries Limited |
| 272. | Fanta Carbonated Soft Drink (Strawberry Apple, Pineapple) | Coca- Cola Bottling Company Of Ghana |
| 273. | Nestle Cerelac Infant Cereal With Milk- Iron+ (Maize) | Nestle Ghana Limited |
| 274. | Awake Purified Drinking Water | Kasapreko Company Limited |
| 275. | Nescafe Breakfast 3 In 1 | Nestle Ghana Limited |
| 276. | Wonder Vietnamese 5% Long Grain Fragrance Rice | Olam Ghana Limited |
| 277. | Wonder Vietnamese 5% Long Grain Fragrance Rice | Olam Ghana Limited |
| 278. | Royal Aroma Fragrant Long Grain Rice | Olam Ghana Limited |
| 279. | Seara Frozen Chicken | Melcom Ghana Limited |

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| 280. | Voltic Natural Mineral Water | Voltic Ghana Limited |
| 281. | Lan T Soy Drink ( Soy Milk With Groundnut & Cassava) | Lantianyi Company Limited |
| 282. | Nestle Cerelac Infant Cereal With Milk -Iron+ | Nestle Ghana Limited |
| 283. | Malta Guinness Non Alcoholic Malt Drink | Guinness Ghana Breweries |
| 284. | Kalyppo Natural Juice Drink | Aquafresh Limited |
| 285. | Nestle Milo Energy Food Drink (Activ-Go) | Nestle Ghana Limited |
| 286. | Lan T Soy Drink ( Soy Milk With Groundnut & Cassava) | Lantianyi Company Limited |
| 287. | Yammi Hurray Crackers | Philio Delio Smile Foods Limited |
| 288. | Excella Gold Thai Premium Fragrant Rice | Wilmar Africa Limited |
| 289. | K. Monsi Bitters | K. Monsi Ventures |
| 290. | Frytol Vegetable Cooking Oil | Wilmar Africa Limited |
| 291. | This Way Chocolate Drink | Atona Food Investments |
| 292. | Royal Drinks | Kasapreko Company Limited |
| 293. | My Deer Gold Rice | Westco Investment Limited |
| 294. | Lele Thai Jasmine Rice | Sika Krobea Company Limited |
| 295. | Guinness Foreign Extra Stout,Abc Golden Lager Beer,Orijin Spirit Mixed Drink | Guinness Ghana Breweries Limited |
| 296. | Voltic Natural Mineral Water | Voltic Ghana Limited |
| 297. | Eagle Lager Beer | Accra Brewery Limited |
| 298. | Eagle Extra Stout | Accra Brewery Limited |
| 299. | Guinness Foreign Extra Stout,Abc Golden Lager Beer,Orijin Spirit Mixed Drink | Guinness Ghana Breweries Limited |
| 300. | Lipton Yellow Label Black Tea | Unilever Ghana Limited |
| 301. | This Way Chocolate Drink | Atona Food Investments |
| 302. | Kalyppo Natural Juice Drink | Aquafresh Limited |
| 303. | Gino Max Shrimp + Pepper, Gino Max Shrimp Flavour | Conservaria Distribution Ghana Limited |
| 304. | Nescafe Breakfast 3 In 1 Instant Mix Of Coffee Creamer & Sugar | Nestle Ghana Limited |
| 305. | Guinness Foreign Extra Stout,Abc Golden Lager Beer,Orijin Spirit Mixed Drink | Guinness Ghana Breweries Limited |
| 306. | Lele Thai Jasmine Long Grain Fragrant Rice | Sika Krobea Company Limited |
| 307. | Star Finest Lager Beer | Guinness Ghana Breweries Limited |
| 308. | Guinness Foreign Extra Stout,Abc Golden Lager Beer,Orijin Spirit Mixed Drink | Guinness Ghana Breweries Limited |
| 309. | Agoro Bitters | Herbal Farms And Research Limited |
| 310. | Sofia Vietnam Rice | Westco Investment Limited |
| 344. | Hi5 Choco Malt Drink | Kasapreko Company Limited |

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| 345. | Indomie Instant Noodles | De United Foods Ind Gh Ltd |
| 346. | Club Premium Lager Beer | Accra Brewery Limited |
| 347. | Bel Malt Chocolate Non Alcoholic Malt Drink | Blowchem Industries Limited |
| 348. | Mama's Choice Plantain Fufu Mix | Adco Tyre & Trading Company Limited |
| 349. | Cocacola Zero Sugar (PET) | Coca- Cola Bottling Company Of Ghana |
| 350. | Boss Baker Chocolate Cookie (Original, Hazelnut Filling) | Daily Food Limited |
| 351. | Watson Natural Mineral Water | G. Watson Company Limited |
| 352. | Royal Perk! Strawberry Shortcake Biscuit | Nutrifoods Ghana Limited |
| 353. | Nestle Milo All In One Nutrimix Energy Food Drink | Nestle Ghana Limited |
| 354. | Breakout Energy Drink | Mawujaa Enterprise |
| 355. | Happy Man Bitters | Charger Limited |
| 356. | Adonko Bitters | Adonko Bitters Ltd |
| 357. | Boborebo Ginger Bitters | Osomafo Solo Enterprise |
| 358. | Peak Green Instant Milk Powder With Vegetable Fat | Forewin Ghana Limited |
| 359. | Royal Aroma Fragrant Long Grain Rice | Olam Ghana Limited |
| 360. | Royal Perk! Shortcake Biscuits | Olam Ghana Limited |
| 361. | Boss Baker Chocolate Cookie (Original, Hazelnut Filling) | Daily Food Limited |
| 362. | Adonko Atadwe Ginger Spirit Drink | Adonko Bitters Ltd |
| 363. | Nature's Finest Whole Egg Powder | Nature's Finest Food Products |