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PRICE FLUCTUATIONS ON PERFORMANCE OF FOOD AND BEVERAGE MANUFACTURING FIRMS IN KENYA

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ABSTRACT

Food and beverage supply chain (SC) is one of the complex food supply chains. Owing to the perishability characteristics of these products, successful distribution channel, strategy selection, implementation, and management is important so as to provide downstream value through timely delivery to the end users otherwise it is likely to face numerous customer complaints. Compared to the other sectors the manufacturing sector, which is dominated by food and beverage manufacturing firms lagged behind in output growth. Kenya Association of Manufacturers reiterates that the declining performance is disturbing for business and indicates eroded competitiveness and compromises the government's aspirations of 20% growth that will enable Kenya to become prosperous. If this problem is not addressed it will cause low economic development leading to lack of achievement of the vision 2030.Despite the benefit effective management of bullwhip effect has on performance of companies, little research has been done on the same. This study therefore sought to establish the effect of price fluctuations on performance of food and beverage manufacturing firms in Kenya. The study also sought to assess the moderating effect of customer response on the relationship between price fluctuations and performance of food and beverage manufacturing firms in Kenya. This study was based on Transaction Cost Economics Theory and resource-based view theory. This study used descriptive research design to collect both qualitative and quantitative data. This study adopted constructive epistemology and specifically post positivism approach. The target population was 217 food and beverage manufacturing firms in Kenya. The food and beverage companies formed the unit of analysis while logistics/ procurement managers and their assistants formed the unit of observation. Hence a total of 434 respondents were targeted. The sample size of 208 respondents was determined using Yamane's Formula. The sample was selected using simple random sampling. The researcher used structured and unstructured questionnaires. In the pilot study 14 participants were invited to participate in filling the questionnaires- representing 10% of study sample. Qualitative data was analyzed using content analysis and presented in prose form. Quantitative data collected was analysed using descriptive statistics techniques. Pearson R correlation was used to measure the strength and direction of linear relationship between variables. Regression models were fitted to the data in order to determine how the independent variables (price fluctuations) influence the dependent variable (performance of food and beverage manufacturing firms in Kenya). From the findings, this study concludes that price fluctuation is statistically significant in explaining performance of food and beverage manufacturing firms in Kenya. The study also concludes that customer response has significant moderating effect on the relationship between price fluctuations and performance of food and beverage manufacturing firms in Kenya.

Key Words: Price Fluctuations, Performance of Manufacturing Firms, Food and Beverage Industry, Customer Response

Background of the Study

A key ingredient especially in the developing nations is successful organizations since they play an important role in the daily lives of its citizens hence the focus of any organization is continuous positive improvement of performance as it is only through this performance that organizations are capable of growing and progressing (Agrawal, Sengupta & Shanker, 2019). In order to successfully compete in the global market and networked economies, companies find that they must rely on effective supply chains as a result of this concept of firm performance (Bray & Mendelson, 2016). Therefore, bullwhip within the supply chain can have a significant impact on performance and therefore it is important that they are identified since performance is a crucial determinant of an organization's survival in today's highly competitive environment and globalization of markets (Erkan et al., 2018).

Food and beverage manufacturing firms employ make-to-stock production systems where the production plan and activities are based on demand forecasting so as to position inventory to prevent excess stocks or opportunity loss due to stock outs since customer response is rarely perfectly stable (Trapero & Fildes, 2016). However, by the nature of demand forecasting, forecast errors are inevitable, thus greater need for safety stock in each stage. As a result, these implications give rise to the need of good coordination and Price fluctuations among all the participants' otherwise individual forecasts for each stage will continue to cause numerous problems along the supply chain and as a result, weakens the effectiveness of the entire chain (Chopra & Meindl, 2017).

In the food manufacturing industry, unlike other supply chains, specific characteristics of food products require that participants in the food chain should ensure that the quality of the products is maintained otherwise it will be likely to face customer complaints (Disney, 2018). As a result, managers have the responsibility to make a decisive decision on where they want to position themselves in the trade-off between responsiveness and efficiency hence this necessitates the need for inventory management which involves matching existing demand with the supply of products and materials overtime to achieve specified costs and service level objectives, while observing product, operation and demand characteristics (Chen & Lee, 2016).

This necessitates enhanced coordination among buyers and sellers including continuous innovation especially in developing countries which are becoming more integrated in the global market due to the increased trend on global sourcing and increase of consumer demand for food products all year round. Hence it is essential for producers/processors to make contractual agreements with suppliers to guarantee supply of raw material with the right quantity, right quality, right place, right time and right cost (Jack et al., 2018). This study therefore seeks to assess the moderating effect of customer response on the relationship between price fluctuations and performance of food and beverage manufacturing firms in Kenya.

Statement of the Problem

Food and beverage supply chain (SC) is one of the complex food supply chains due to some uncertainties in every stage of the chain which causes inefficiencies in operations and inadequate cold chain which leads to high wastage levels being experienced (Atieno & Karuti, 2019). Owing to the perishability characteristics of these products, successful distribution channel, strategy selection, implementation, and management is important so as to provide downstream value through timely delivery to the end users otherwise it is likely to face numerous customer complaints (Saremi & Zadeh, 2019). Food and beverage manufacturing firms are also characterized by the relative largeness of inventories being maintained in order to accommodate demand uncertainty and therefore the longer the lead time, the larger the inventory the firm must carry and also small changes in consumer demand in a supply chain can lead to large variations in supply orders and all this is related to Bullwhip Effect (BWE) (Yigitbasioglu, 2019). Effective management of bullwhip effect and hence inventory

management can lead to a reduction in cost, resulting in a significant saving. A potential 6% saving on total cost through effective inventory management is achievable (Barratt, 2020).

Inventory in Food and beverage manufacturing firms constitutes the most significant part of current assets (Songet, 2020). They attain significant savings from effective inventory management which amounts between 50% - 60% of total costs while a potential saving of 6% on total cost through effective inventory management is achievable (Chen, 2019). The Vision 2030 stipulates that the manufacturing sector should account for 20 per cent of GDP by 2030, achieving this ambitious goal largely depends on a competitive manufacturing sector (RoK, 2015). However the sector's contribution to the GDP has stagnated at an average of 10 percent for more than ten years with a growth of 3.1 percent, significantly lower than the overall economic growth of 5.0 percent (World Bank, 2021). Compared to the other sectors the manufacturing sector, which is dominated by food and beverage manufacturing firms lagged behind in output growth. These negative trends reflect structural issues such as structural inefficiencies in the supply chains as suggested by firm-level analysis based on data from the Census of Industrial Production and the (World Bank's Enterprise Survey, 2021). KAM (2020) reiterates that the declining performance is disturbing for business and indicates eroded competitiveness and compromises the government's aspirations of 20% growth that will enable Kenya to become prosperous. If this problem is not addressed it will cause low economic development leading to lack of achievement of the vision 2030.

Despite the benefit effective management of bullwhip effect has on performance of companies, little research has been done on the same. Thus, this study sought to fill the gap by focusing on the bullwhip effect specifically Price fluctuations on performance of food and beverage manufacturing firms in Kenya.

Objective of the Study

The study was guided by the following specific objectives;

i. To establish the effect of Price fluctuations on performance of food and beverage manufacturing firms in Kenya
ii. To assess the moderating effect of customer response on the relationship between price fluctuations and performance of food and beverage manufacturing firms in Kenya

Research Hypothesis

The study sought to test the following research hypothesis;

H_{01}: Price fluctuations do not affect performance of food and beverage manufacturing firms in Kenya

H_{02}: Customer response has no moderating effect on the relationship between price fluctuations and performance of food and beverage manufacturing firms in Kenya

LITERATURE REVIEW

Theoretical Review

Transaction Cost Economics Theory

Economists Ronald Coase and Oliver Williamson are credited for introducing and popularizing the concept of Transaction Cost Economics (TCE). The TCE theory explains the need for companies in a market (Williamson, 1979). Transaction Cost Economics (TCE) theory has been an established theory which suggests that a firm organize its cross-organizational activities by selecting governance structures that minimizes its production costs within the firm and transaction costs within the markets hence the critical dimensions for describing transactions are: uncertainty, frequency and asset specificity (Williamson, 1979).

TCE is one of the most influential theories on inter-organizational system (IOS) use and inter-firm collaboration hence the link between TCE and SCM where TCE thinks IOS use can reduce transaction costs by increasing asset specificity and reducing uncertainty (caused by market dynamics, environmental complexities, technology uncertainty etc.) (Bakos, 2009). Transaction costs can be divided into coordination costs and opportunity costs (transaction risks) where uncertainty and asset specificity are two factors which increase coordination costs and opportunity costs respectively.

Price fluctuations can be viewed as an asset specific investment to enable transactions where the benefits of Price fluctuationswill be equal to or greater than the Net Profit Value (NPV) of future losses due to opportunism (Yigitbasioglu, 2019). Hence an advantage of inter-firm collaboration facilitated by Price fluctuationsthrough use of Information and Communication Technology (ICT) tools is that it permits parties in the SC to deal with uncertainty and complexity in the markets through coordination mechanisms such as market mechanisms, contracts, partnership arrangements, which lead to the increasing efficiency of all partners (Artz & Brush, 2018). TCE focuses on uncertainty where it is suggested that it exists in the market and more specifically in manufacturing, where it is caused by uncertainty of demand, supply, New Product Development and technology and in other cases from social, natural and political social uncertainties which may have a significant effect on the performance of a firm (Koh & Tan, 2016).

Demand uncertainty which relates to unpredictable events in the downstream part of the SC consisting of retailers and consumers can result from seasonality, volatility of fads and change of consumer preferences due to availability of new products or short lifecycle of products. Supply uncertainties which relates to unpredictable events that occur in upstream part of the SC is caused by material shortages and late delivery which can lead to disruption of production therefore in the long run adversely affecting sales as well as the distributors and retailers in the downstream (Bakos, 20119).

The concept of uncertainty from the TCE point of view assume that there is a probability that partners behaves rationally and opportunistically by ordering more inventory in addition to buffer stock to cushion again possible shortages which increases costs (stockholding costs, ordering costs, carrying costs) hence it provides further insight into the value of Price fluctuations between organizations to reduce firm's exposure to uncertainty otherwise this results to BWE (Jones & Simons, 2020). The theory is therefore applicable in this study in establish the effect of Price fluctuations on performance of food and beverage manufacturing firms in Kenya.

TCE is however not without criticism. The theory is static in that it is restricted to the efficiency rationale or SC collaboration where the organizational contexts (e.g. culture, power, dependence and trust) are assumed away (Barringer & Harrison, 2020). Transaction Cost Economics (TCE) Theory assume that there is a probability that partners behaves rationally and opportunistically by ordering more inventory in addition to buffer stock to cushion again possible shortages which increases costs (stockholding costs, ordering costs, carrying costs) hence it provides further insight into the value of Price fluctuations between organizations to reduce firm's exposure to uncertainty otherwise this results to BWE (Jones & Simons, 2020).

Resource-Based View (RBV) Theory

The Resource-Based View (RBV) of the firm is a strategic management theory that has significantly influenced how companies understand and achieve competitive advantage. This theory was primarily developed by Jay Barney in (1991). The RBV theory posits that a firm's performance and competitive advantage are largely determined by its internal resources and capabilities. According to RBV, for a firm to achieve and sustain a competitive advantage, its

resources must be valuable, rare, inimitable, and non-substitutable (VRIN). These resources can be tangible, such as machinery and technology, or intangible, such as brand reputation, patents, and organizational culture. The theory emphasizes that it is not just the possession of these resources that matters, but how effectively they are utilized and integrated within the firm's strategic processes.

The primary assumptions of the RBV are that firms within an industry may be heterogeneous in terms of the resources they control, and that resource heterogeneity can persist over time because the resources used to implement firms' strategies are not perfectly mobile across firms. This immobility can be due to the unique history, causal ambiguity, and social complexity of these resources, making them difficult for competitors to replicate or acquire. Despite its widespread acceptance and application, the RBV has faced several critiques. One of the main criticisms is that it can be overly static and deterministic, focusing heavily on existing resources without adequately considering how firms can develop new resources and adapt to dynamic market environments. Additionally, some critics argue that the RBV lacks specificity and practical guidance for managers, particularly regarding how to identify and nurture VRIN resources. Another critique is that the theory often assumes that resource advantages are sustainable, which may not always be the case in rapidly changing industries.

The Resource-Based View (RBV) theory provides a valuable framework for understanding the performance of food and beverage manufacturing firms in Kenya. By leveraging valuable, rare, inimitable, and non-substitutable resources, these firms can achieve and sustain competitive advantages. Whether through innovation, efficient supply chain management, or market expansion, Kenyan food and beverage firms can enhance their performance by strategically utilizing their unique resources and capabilities in line with the principles of the RBV theory. This study therefore used Resource-Based View (RBV) Theory to assess performance of food and beverage manufacturing firms in Kenya

Conceptual Framework

Conceptual frameworks are visual representations of the relationships between the various building blocks of a study and its arguments (Mugenda & Mugenda, 2018). The dependent variable is performance of food and beverage manufacturing firms. The model that forms the theoretical framework of the study is presented in Figure 2.1.

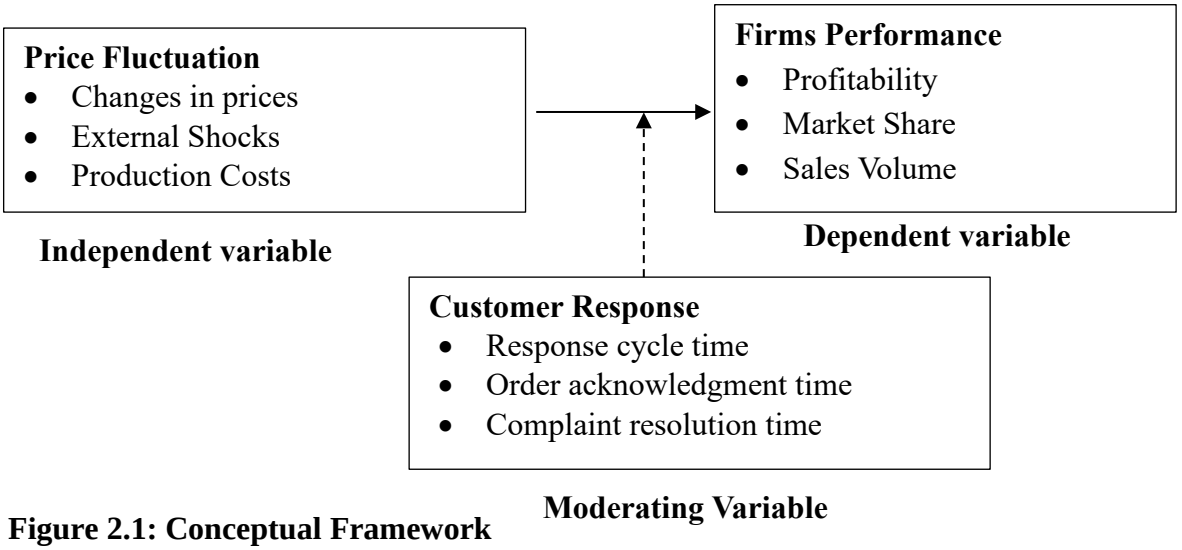

Figure 2.1: Conceptual Framework

Price Fluctuations

Price fluctuations refer to the variations in the prices of goods, services, and financial instruments due to internal and external factors affecting supply and demand (Bilal, Mohammed & Ali, 2021). These fluctuations are prevalent across multiple sectors, including stock markets, energy, manufacturing, and construction. In the stock market, price movements are often driven by changes in company performance, investor sentiment, and macroeconomic indicators (Meuskens & Ogundare, 2023). Similarly, industry shifts—such as technological advancements, regulatory changes, and market consolidation—play a crucial role in influencing price variations by affecting production costs and market competition (Ifeonyematalu & Ogu, 2020).

Exchange rate volatility has been identified as a key factor influencing economic growth and inflation. Persistent exchange rate fluctuations negatively impact economic stability by increasing uncertainty in trade and investment (Iheanachor & Ozegbe, 2021). A study published in the Journal of Risk and Financial Management (2023) highlights how currency depreciation leads to higher production costs, ultimately translating into increased consumer prices. In Nigeria, excessive exchange rate volatility has been linked to slower economic growth, emphasizing the need for policies aimed at stabilizing the currency and fostering export diversification (Iheanachor & Ozegbe, 2021).

Oil price fluctuations have a particularly strong influence on inflation and economic stability, especially in oil-dependent economies like Nigeria. Empirical studies show that changes in oil prices directly impact inflation rates both in the short and long term (Abatcha, 2021). Crude oil price volatility also affects stock market performance, with the banking and oil & gas sectors experiencing significant volatility transmission (Kumeka, Adeniyi, & Orekoya, 2018). Similarly, South African research indicates that rising energy costs increase production expenses, thereby affecting economic growth (Mudiriza & Edwards, 2020). Further analysis of the South African oil market reveals that monetary policies, such as interest rate adjustments, play a role in oil price stability (Mofema & Mah, 2021).

Manufacturing and trade are also subject to price fluctuations, particularly in response to changing global market conditions and domestic policies. South Africa's share of global exports has been declining due to trade policy inefficiencies and a loss of external competitiveness (South African Reserve Bank, 2021). This decline affects production costs and economic growth, requiring structural reforms to enhance competitiveness. Additionally, the automotive sector faces challenges as the global shift toward battery electric vehicles (BEVs) requires substantial investment in new production technologies (Hausmann et al., 2023).

In the construction industry, price fluctuations in raw materials such as steel and cement significantly impact project budgets and timelines (Ryan, 2017). Unforeseen cost increases can lead to delays or even project cancellations, affecting overall financial planning. External shocks, including geopolitical instability and pandemics, further exacerbate price volatility. The COVID-19 pandemic, for instance, disrupted global supply chains, leading to material shortages and increased costs in the construction sector (Whang et al., 2016). To mitigate these risks, construction managers must adopt flexible procurement strategies and alternative materials (Okoth & Getunu, 2020).

Monetary policy plays a critical role in controlling inflation and mitigating the effects of price fluctuations. Adjustments in interest rates, such as changes in the repo rate, influence inflation and GDP growth (Meyer et al., 2018). In South Africa, inflation trends post-COVID-19 have reflected the impact of supply chain disruptions on food and fuel prices, underscoring the

importance of exchange rate stability in inflation control (South African Reserve Bank, 2023). Similarly, price stability in Kenya has been a focal point of economic policy, with the Kenya National Bureau of Statistics (KNBS) reporting an inflation rate of 3.3% in January 2025, driven primarily by food and transport costs (KNBS, 2025).

Kenya's economy is also affected by exchange rate fluctuations, particularly in the export sector. Research has found that exchange rate volatility reduces international competitiveness, posing challenges for trade performance (Kiptarus et al., 2022). However, economic projections suggest that Kenya's Consumer Price Index (CPI) is expected to stabilize over the next two decades, provided that inflation-targeting measures and sound monetary policies are sustained (Nahabwe & Rwamparagi, 2025). Additionally, policies promoting public health improvements, such as obesity reduction programs, are projected to yield substantial economic and healthcare savings in Kenya (Wanjau et al., 2024).

Financial markets are also highly sensitive to price fluctuations, with stock market volatility affecting investor confidence and corporate performance. Studies analyzing Initial Public Offering (IPO) stocks at the Nairobi Securities Exchange highlight the importance of firm-specific factors such as company size, ownership structure, and automation in influencing IPO performance (Okumu et al., 2021). Beyond stock markets, tariff structures in essential services, such as water and wastewater management, also impact economic efficiency. Research on Nairobi's water tariffs indicates that a uniform volumetric pricing system performs better in terms of cost recovery, consumer welfare, and conservation (Fuente et al., 2019).

In conclusion, price fluctuations are a complex and multifaceted economic phenomenon, influenced by industry shifts, macroeconomic policies, external shocks, and financial market dynamics. While fluctuations can present challenges for economic stability, effective policy interventions—such as exchange rate stabilization, monetary policy adjustments, and trade competitiveness strategies—can help mitigate their adverse effects. Policymakers, businesses, and investors must remain adaptable to changing economic conditions to ensure sustained economic growth and stability.

Customer Response

Response cycle time, quality performance indicator, and productive performance indicators or measurement tools that can be used to efficiently measure customer response (Chen, Murray, & Owen, 2017). Without having the knowledge of how the processes are performing and understanding which functional areas is lagging behind, improvement and enhancement cannot be done (Cox, 2019). Hence, measuring customer response is the best strategy to improve it.

Response cycle time indicator is indicated by Order Processing Time (OPT) (Fransoo & Wouters, 2020). This calculates the time taken for the order; from time it was entered till the time it is delivered. One more important indicator called Order Entry Time (OET) is also installed which calculates the time taken from intimation of order until the order is captured or entered in the CRM system. This shows the time elapsed in the telephonic conversation or internet. By this the overall entry time taken by the executive to enter the details in the systems can be calculated. This is an important factor and can be used for increasing the productivity and for trying to reduce the time taken for order processing (Agus & Noor, 2018). Lesser the time taken to process the orders and entering the relevant information in the system, more are the chances to consume large number of customers in a given specific interval of time.

The Primary quality performance indicator is *Order Entry Accuracy* (OEA) and *First Time Fill Rate* (FTFR) (Ali & Kapoor, 2018). OEA is formulated as specific orders produced by customers per total order produced. FTFR is calculated by total products delivered per total

products requested. There are many other indicators which help measuring quality performance of customer responses like Invoice Accuracy and Order Status communication accuracy. Invoice accuracy tool keeps a regular check on Invoice automation system and measure the accuracy of them (Brigham & Gapenski, 2017). It is generally formulated as the total invoices with accurate match of items, prices and quantities etc. per total invoices received. More the percentage produced by these tools more is the customer response value. It is necessary to measure quality performance so that the customers receive best services and customer satisfaction index always remain on top (Buzzell, 2017).

The productive performance indicator determines the number of customer orders processed per human-hour (Chent, at, al., 2016). This order processing must be done is such a way that the time taken for processing is minimal to increase the productivity. Strategies used in customer service automation can bring immediate improvements in call center automation, internet ordering, contact management automation, EDI's etc. Web integrated customer response systems cuts off the need to hire more employees as everything is automated (Christopher, 2019).

The responses can be provided through any of the following media: Face to Face Interaction, Telephone Communication, and/or Writing Communication (Post, Fax, Email) (Buzzell, 2017). According to Lee and Liu (2019), bullwhip affects the customer satisfaction and the cost in supply chain. This effect is very costly for the companies in competition. Also it triggers excessive inventories and unclear production planning (Diana & Elena, 2017).

Performance of Food and Beverage Manufacturing Firms

Performance measurement refers to the process of measuring the action's efficiency and effectiveness (Staudt, Alpan, Di Mascolo, & Rodriguez, 2017). In the current business management, performance measurement is considered to be in a more critical role compared to quantification and accounting (Koufopoulos, Zoumbos, Argyropoulou & Motwani, 2018). This is consistent with Franco-Santos, Lucianetti and Bourne (2016) who described performance management as a process wherein the organization manages its performance to match its corporate and functional strategies and objectives. Additionally, the firm's value can be described as the benefits stemming from the firm's shares by the shareholders. The company's performance can be viewed from the financial statement reported by the company. Consequently, a good performing company will reinforce management for quality disclosure (AlMatari et al., 2018).

Performance comprises the actual output or results of an organization as measured against its intended outputs (Staudt et al., 2017). Firm performance includes multiple activities that help in establishing the goals of the organization, and monitor the progress towards the target. However, for any business to be successful, functions must be defined and accomplished. It is important for an organization to develop strategies that are designed around the skills that would enhance its performance. It is used to make adjustments to accomplish goals more efficiently and effectively. Firm performance is what business executives and owners are usually frustrated about (Ostroff & Bowen, 2016).

Measurement of performance can offer significant invaluable information to allow management's monitoring of performance, report progress, improve motivation and communication and pinpoint problems; therefore, it is in the firm's best interest to evaluate its performance. Nevertheless, this is a management area characterized by lack of consistency as to what constitutes firm performance. The countless number of ways has been brought forward to measure financial performance and among them are: measurement of performance as the level of Return on Assets (ROA), Return on Equity (ROE), Tobin-Q, and Profit Margin (PM), Market Share among many other measures (Al-Matari, Al-Swidi & Fadzil, 2018).

In measuring manufacturing firms performance, this study adopted ROA, ROE, sales growth and profit margins ratios. Use of return on asset ratio shows the amount of earnings that have been generated from invested capital assets (Epps & Cereola, 2018). Return on assets allows users to assess how well firms mechanisms are assisting in securing and monitoring the efficiency of the management in utilizing assets to generate profits (Mohamad, et al. 2017). Profit margin is one of the commonly used profitability ratios to gauge profitability of a business activity. It represents how much percentage of sales has turned into profits. Simply put, the percentage figure indicates how many cents of profit the business has generated for each dollar of sale.

Goga (2023) assessed the influence of organizational structure on the performance of state corporations in Kenya. Using an exploratory survey design targeting 187 state corporations, the study established that organizational culture significantly and positively influences performance. The research recommends that leaders adopt effective and flexible organizational structures to promote employee productivity and overall organizational performance.

Empirical Review

Price fluctuations and Organization Performance

Bilal, Mohammed, and Ali (2021) examined the impact of price fluctuations on firm performance in a developing economy, specifically in Oman, using panel data regression. While their study provides valuable insights into the relationship between price fluctuations and firm performance, it is limited in its generalizability to the Kenyan context due to differences in economic structures, market dynamics, and regulatory environments. Additionally, the study focused on multiple sectors listed on the Muscat Securities Market (MSM), whereas the food and beverage manufacturing sector in Kenya operates under unique industry-specific challenges, including supply chain disruptions, raw material dependency, and currency volatility. This creates a research gap, necessitating an investigation into how price fluctuations specifically affect the performance of food and beverage manufacturing firms in Kenya, taking into account local market conditions and policy frameworks.

Meuskens and Ogundare (2023) examined the impact of price fluctuations on the financial performance of major economic sectors in Malaysia, focusing primarily on the oil and gas sector. While their study established a positive relationship between profitability and financial leverage with oil price fluctuations, it did not specifically address the food and beverage manufacturing sector. Additionally, the study was conducted in Malaysia, whose economic and market conditions differ from those in Kenya, limiting its applicability to the Kenyan context. Furthermore, the research employed a positivism paradigm but did not explore how price fluctuations affect operational efficiency and market stability in manufacturing firms. This gap highlights the need for a study examining the effect of price fluctuations on the performance of food and beverage manufacturing firms in Kenya, considering local market dynamics, production costs, and consumer purchasing power.

Israel and Mahuwi (2022) examined the influence of price fluctuations on agricultural products at Mbalizi Market in Mbeya, Tanzania, using a cross-sectional research design and stratified random sampling. While their study provided valuable insights into price volatility in agricultural markets, it primarily focused on market traders and farmers rather than manufacturing firms. Additionally, the study was conducted in Tanzania, limiting its applicability to Kenya's food and beverage manufacturing sector, which operates within a distinct economic and regulatory environment. Moreover, their research did not explore the broader implications of price fluctuations on firm performance, including profitability, production efficiency, and market competitiveness. This gap necessitated further investigation into how price fluctuations specifically impact the performance of food and beverage

manufacturing firms in Kenya, addressing sector-specific challenges and contextual differences.

Okoth and Getunu (2020) examined the effect of price fluctuation on inventory management in Kenya's parastatals, specifically at New Kenya Cooperative Creameries Limited, using a descriptive research design. However, their study focused solely on a single parastatal in the dairy sector, limiting the generalizability of their findings to the broader food and beverage manufacturing industry. Additionally, their research concentrated on inventory management, overlooking other critical performance aspects such as profitability, production efficiency, and market competitiveness. Furthermore, their study targeted employees at the head office, neglecting perspectives from other branches or stakeholders within the supply chain. This creates a research gap on how price fluctuations affect the overall performance of food and beverage manufacturing firms in Kenya, necessitating a more comprehensive investigation across multiple firms and performance indicators.

Customer Response and Organization Performance

Zhang and Lu (2016) researched on the impact of customer response to stock-out on bullwhip effect: under supply chain disruption. In this research, a high-level Petri-net is developed to model a supply network with two brands of product and two stores, and five types of customer stock-out responses from marketing literature are identified. In the first experiment, the responses are incorporated in the model to quantitatively assess the correlation between customer response and bullwhip effect of both the stock-out brand and the competing brand. In the second experiment, the data from a marketing research of P&G Company is applied to analysis the impact of stock-out intensity on bullwhip effect of 5 specific product categories, which presented 5 different customer response compositions. Based on the ANOVA analysis of the experiment results, some managerial relevance statements are provided for both the stock-out brand and competing brand. (1) For the stock-out brand, it's suggested that managers should a) focus on customers who prefer to switch store or delay purchase; and b) work together with their retailers to develop customers' store loyalty and encourage customers to substitute within the same brand in a different size. (2) For the competing brand, the manufacturer and its retailers should make great effort to distinguish the demand switched from the stock-out brand from the real demand and grab the opportunity to develop more loyalty customers. (3) Implication to managers for both the stock-out brand and the competing brand is that the incentive to customer behavior should vary with market share and stock-out duration in order to mitigate the bullwhip effect. Through linking supply chain dynamics to customer purchase behaviors based on simulation technology, the impact of stock-out disruption is quantified from the viewpoint of customer behavior for improving supply chain efficiency. We expect that this paper can provide the foundation for a future stream of research for studying the complex topic of disruption stock-out risk in a supply chain by taking into consideration of customer behaviors from marketing perspective.

Eroglu (2017) researched on the impacts of the bullwhip effect on customer loyalty: an example in automotive industry. Recently in business environment, the competition is not only between the individual firms but also the networks of the companies. Therefore, the supply chain of the firms has a critical role in the success and also it is very important for supply chains to be cost-effective, high quality and be able to response quickly. Supply chain is an umbrella term used for the activities a business undertakes in order to link their supply of goods with customer demand. And the bullwhip effect is the phenomenon of increasing demand variability in the supply chain from downstream echelons (retail) to upstream echelons (manufacturing). Loyalty means the positive trends of consumers towards a store or brand. And this consists after the result of the judgment or assessment from purchasing a particular product or service. The objective of this study is to analyze the impact of bullwhip effect on customer loyalty. Customer

loyalty, supply chain and bullwhip effect in relation to each other contributes to the literature aimed.

Jeruto et al. (2018) deduced that there is a positive relationship between lead time and firm performance where there is increased customer satisfaction, shorter production schedules and reduced obsolescence and surpluses. Wihdat et al (2017) reviewed long distribution channel's problems and concluded that long distribution channels pose complex problems which are variability, bottlenecks such as long lead times, BWE, high transportation and logistics costs. A study by Ongisa et al., (2016) examined the effect of supply base rationalization strategies on the productivity of firms' in foods as well as beverage production in Kenya. Research findings revealed that supplier base risk rationalization approaches influence firm performance in regard to customer satisfaction.

RESEARCH METHODOLOGY

This study used descriptive research design to collect both qualitative and quantitative data. This study adopted constructive epistemology and specifically post positivism approach. This approach puts emphasis on utilising both positivist and interpretivist philosophy and views both of them as continuum rather than contradictions. Neuman (2016) asserts that positivists assume that objective truth exists and advocate for organized methods for handling probabilistic causal laws used to predict patterns in human activity in an empirical way. The target population was 217 food and beverage manufacturing firms in Kenya. The food and beverage companies formed the unit of analysis while logistics/ procurement managers and their assistants formed the unit of observation. Hence a total of 434 respondents were targeted.

The sample size of the study was determined using Yamane's Formula (Yamane, 1997). Therefore, the sample size for the study was 208 respondents. This represented 47.9% of the study target population. The study adopted a simple random sampling because the method is free of sampling error or classification error. The researcher used structured and unstructured questionnaires to elicit appropriate responses for the study (Atieno, Moronge, & Wario, 2019). A pilot study was conducted to test the instrument's reliability, validity, and completeness of responses, and analyse the various measures within the instrument. In the pilot study 21 participants were invited to participate in filling the questionnaires. This was 10% of the study sample size. The selected respondents were excluded from the final study.

The Statistical Package for Social Sciences (SPSS) version 25 software was used to analyze the data. The research used descriptive analysis. Descriptive statistics allow a researcher to explain the distribution of measures and summarize data comprehensibly (Kothari, 2019; Mugenda & Mugenda, 2020). The open-ended component of the questionnaire was coded, and repeated themes (responses) or concepts were recorded until saturation was reached (Jennings, 2019). Quantitative data was analyzed using descriptive statistics such as frequency, percentages, and means and summary graphs, pie charts, and frequency distribution tables to depict the data's sets of categories. This study conducted inferential statistics through correlation analysis. A multiple regression model was used to test the significance of the influence of the independent variables on the dependent variable.

Diagnostic Tests

This study conducted linearity test, multicollinearity test, normality test and homoscedasticity test before regression analysis was conducted.

Homoscedasticity Test

Homoscedasticity was assessed using the Breusch-Pagan test to determine whether the error variances remained constant. The test produced a chi-square (χ^2) value of 0.96 with a probability value of 0.3274 ($p > 0.05$), as shown in Table 1. Since the p-value exceeded the

0.05 significance level, the null hypothesis (constant variance) was not rejected, confirming that homoscedasticity was present in the regression model.

Table 1: Breusch-Pagan test for Homoscedasticity

Ho: Constant variance	
Chi2 (1)	0.96
Prob>chi2	0.3274
Variables: Fitted with values of project performance	

Linearity Test

A linearity test was conducted to assess whether the predictor variables had a significant linear relationship with the response variable. The significance (sig.) values obtained from the test were 0.649 for price fluctuations and 0.566 for customer response, as shown in Table 2. Since both values were greater than 0.05, it was concluded that a significant linear relationship existed between the predictor variables and firm performance. This implies that increasing the effect of price fluctuations and customer response leads to an improvement in the response variable.

Table 2: Coefficients of Linearity Test

Model	Sig.	95.0% Confidence Interval for B		
		Lower Bound	Upper Bound	Tolerance
Price fluctuations	.649	-13.608	11.411	.560
customer response	.566	-39.618	45.182	.281

Multicollinearity Test

Multicollinearity was examined using the Variance Inflation Factor (VIF), where a VIF greater than 10 indicates a high correlation among independent variables. The study reported a VIF value of 1.660 for price fluctuations, as shown in Table 3. Since all values were below 10, there was no multicollinearity among the independent variables. This means that the predictive power of each independent variable on the dependent variable was not significantly affected by the presence of other independent variables, ensuring the robustness of the regression model.

Table 3: Multicollinearity Test

	Tolerance	VIF
Price fluctuations	.603	1.660

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

Response Rate

The study sampled 208 respondents, including logistics and procurement managers and their assistants in Kenya's food and beverage manufacturing sector. A total of 208 questionnaires were distributed, with 193 fully completed and returned, yielding a 92.8% response rate. According to Sekaran and Bougie (2019), a response rate above 70% is excellent, making this study's response rate highly reliable for further analysis and reporting.

Table 4: Response Rate

Category	Frequency	Percent
Response	193	92.8
Non-Response	15	7.2
Total	208	100

Descriptive Analysis

This section presents findings on Likert scale questions where respondents were asked to indicate their level of agreement on various statements that relate with the influence of price fluctuations on performance of food and beverage manufacturing firms in Kenya and the moderating effect of customer response. They used a 5-point Likert scale where 1-strongly disagree, 2-disagree, 3-moderate, 4-agree, 5-strongly agree. The means and standard deviations were used to interpret the findings where a mean value of 1-1.4 was strongly disagree, 1.5-2.4 disagree, 2.5-3.4 neutral, 3.5-4.4 agree and 4.5-5 strongly agree (Joshi, Kale, Chandel, & Pal, 2015; Nemoto & Beglar, 2014). Standard deviation greater than 2 was considered large meaning responses were widely spread out and not tightly clustered around the mean. Additionally, standard deviations were computed to measure the spread of data points around the mean, indicating how many individual responses varied from the average

Price Fluctuations and Firm Performance

The second objective of the study was to establish the effect of price fluctuations on performance of food and beverage manufacturing firms in Kenya. The respondents were requested to indicate their level of agreement with various statements on price fluctuations and performance of food and beverage manufacturing firms in Kenya. The study results were as shown in Table 5.

Table 5: Descriptive Results for Price Fluctuations

Price Fluctuations	Mean	Std. Dev.
Price fluctuations are a common occurrence in my industry.	3.982	0.375
Our organization frequently experiences significant price fluctuations in its primary products or services.	3.948	0.34
Price fluctuations have a substantial impact on our supply chain.	3.889	0.377
Our organization effectively monitors market trends and anticipates price changes.	3.863	0.36
We have strategies in place to mitigate the impact of price fluctuations.	3.836	0.33
Our organization quickly adapts its pricing strategies in response to market changes.	3.777	0.345
Price fluctuations have negatively impacted our organization's financial performance over the past year.	3.738	0.361
Price fluctuations significantly affect our organization's profitability.	3.698	0.358
Price fluctuations heavily influence our organization's investment decisions.	3.676	0.345
Operational efficiency is significantly impacted by price fluctuations.	3.654	0.392
Our organization frequently adjusts its budget in response to price fluctuations.	3.644	0.334
Compared to our competitors, our organization is highly resilient to price fluctuations.	3.576	0.386

The findings show that the respondents agreed that price fluctuations are a common occurrence in their industry (M= 3.982, SD= 0.375). In addition, the respondents agreed that their organization frequently experiences significant price fluctuations in its primary products or services (M= 3.948, SD= 0.34). Further, the respondents agreed that price fluctuations have a substantial impact on their supply chain (M= 3.889, SD= 0.377). The findings also show that their organization effectively monitors market trends and anticipates price changes. (M= 3.863, SD= 0.36). These results are supported by the findings of Minot (2019) who indicates that price volatility is a prevalent issue, significantly affecting food security and market stability. In

addition, Kilian and Murphy (2020) indicate that commodity price shocks can disrupt supply chains, leading to increased costs and logistical challenges.

From the results, the respondents agreed that they have strategies in place to mitigate the impact of price fluctuations (M= 3.836, SD= 0.33). In addition, the respondents agreed that organization quickly adapts its pricing strategies in response to market changes (M= 3.777, SD= 0.345). The respondents also agreed that price fluctuations have negatively impacted their organization's financial performance over the past year (M= 3.738, SD= 0.361). Further, the respondents agreed that price fluctuations significantly affect their organization's profitability (M= 3.698, SD= 0.358). The respondents also agreed that price fluctuations heavily influence their organization's investment decisions (M= 3.676, SD= 0.345). The respondents agreed that operational efficiency is significantly impacted by price fluctuations (M= 3.654, SD= 0.392). In addition, the respondents agreed that their organization frequently adjusts its budget in response to price fluctuations (M= 3.644, SD= 0.334). The respondents also agreed that compared to their competitors, their organization is highly resilient to price fluctuations. (M= 3.576, SD= 0.386). These results are supported by the findings of Porter (2019), effective monitoring of market trends and strategic foresight are critical for firms to navigate market uncertainties and maintain competitive advantage. This proactive approach is essential for mitigating risks associated with price volatility. In addition, Miller and Reuer (2021) emphasize the importance of risk management strategies, such as diversification, hedging, and flexible pricing strategies, to cope with market volatility. These strategies help firms stabilize their financial performance and reduce vulnerability to adverse price movements.

The findings therefore show that the respondents were of the pinion that price fluctuations influences performance of food and beverage manufacturing firms in Kenya as supported by an aggregate mean score of 3.783 (SD=0.352). The findings agree with those of Baihaqi, (2017) that price fluctuations influences organization performance.

The respondents were further requested to indicate how else price fluctuations influence performance of food and beverage manufacturing firms in Kenya. From the results, the respondents revealed that price fluctuations significantly impact the cost of raw materials in the food and beverage manufacturing sector. When prices for essential inputs rise, manufacturers face increased production costs. This variability can strain budgets and force companies to adjust their financial strategies to accommodate the higher expenses. As a result, firms may need to increase product prices to maintain profitability, which can lead to reduced consumer demand and competitive disadvantage in the market. In addition, the respondents indicated that fluctuating prices lead to variability in production costs, creating challenges for maintaining stable profit margins. Manufacturers must continuously adapt to these changes, often resulting in the need for dynamic pricing strategies. However, frequent price adjustments can alienate customers who prefer price stability. This situation forces companies to find a balance between passing on costs to consumers and absorbing them, which can impact overall financial health and long-term sustainability. According to Froot *et al.* (2019), firms facing price uncertainty may adopt more conservative investment strategies and prioritize flexibility in operations to adapt to changing market conditions.

The respondents indicated that price volatility complicates the ability of food and beverage manufacturers to forecast financial performance accurately. Predictable financial planning becomes difficult when input costs are unstable, leading to potential discrepancies between projected and actual outcomes. This unpredictability can hinder investment in growth initiatives and innovation, as firms may adopt a more conservative approach to avoid financial overextension. Additionally, inconsistent financial performance can affect relationships with investors and creditors, who prefer predictable and stable returns. The study found that price fluctuations also affect the ability to maintain consistent supply levels. Sudden increases in

input costs can disrupt supply chains, causing delays or shortages of raw materials. These disruptions can slow down production processes, leading to missed deadlines and an inability to meet market demand. Companies might need to find alternative suppliers or adjust their inventory management practices to cope with these changes, which can incur additional costs and operational complexities. Hamel and Valikangas (2020) revealed that organizational resilience, characterized by adaptability, robustness, and agility, is crucial for sustaining performance in volatile markets. Firms that can quickly adapt their pricing strategies and operational plans are better positioned to withstand the adverse effects of price fluctuations.

Customer Response and Firm Performance

The second objective of the study was to assess the moderating effect of customer response on the relationship between bullwhip effect and performance of food and beverage manufacturing firms in Kenya. The respondents were requested to indicate their level of agreement on various statements relating to customer response and performance of food and beverage manufacturing firms in Kenya. The results were as shown in Table 6.

Table 6: Descriptive Results for Customer Response

Customer Response	Mean	Stddev.
Customer give feedback on the quality of services provided	3.945	0.342
In our organization there is a suggestion box to receive customer compliments as well as customer complaints	3.921	0.353
Our organization ensures quick response to customer demands	3.902	0.352
Am satisfied with the customer response cycle time in our organization	3.858	0.315
Customers rate the quality of our service delivery to them	3.848	0.356
Our organizations ensures improvement to the suggested areas by our customers	3.802	0.352
Am satisfied with the response of customer feedback	3.736	0.356
Our employees are productive and contribute to efficient customer response	3.733	0.432
Our team handles customer requests efficiently, ensuring high productivity	3.728	0.433
We achieve our productive performance targets consistently	3.715	0.398
Customers frequently commend the quality of our service	3.699	0.378
We receive positive feedback regarding the quality of our responses	3.689	0.873
Customer Response	**3.854**	**0.355**

The findings show that customer give feedback on the quality of services provided (M= 3.945, SD= 0.342). In addition, the respondents agreed that in their organization there is a suggestion box to receive customer compliments as well as customer complaints (M= 3.921, SD= 0.353). Further, the respondents agreed that their organization ensures quick response to customer demands (M= 3.902, SD= 0.352). The results are in line with those of Zhang and Lu (2019) who established that customer feedback is a key performance indicator, reflecting customer satisfaction and the organization's ability to meet customer expectations. Positive feedback typically signals effective service delivery, while negative feedback highlights areas needing improvement. In addition, Johnston and Clark (2019) revealed that responsiveness to customer needs is crucial for maintaining customer satisfaction and loyalty. Quick response times can enhance customer perceptions of service quality and reliability, contributing to better overall performance

The findings further show that the respondents are satisfied with the customer response cycle time in their organization (M= 3.858, SD= 0.315). In addition, the respondents agreed that customers rate the quality of our service delivery to them (M= 3.848, SD= 0.356). From the results, the respondents agreed that their organizations ensures improvement to the suggested

areas by their customers (M= 3.802, SD= 0.352). In addition, the respondents agreed that satisfied with the response of customer feedback (M= 3.736, SD= 0.356). The results are in line with the findings of Grönroos (2019) who established that customer ratings and reviews are critical indicators of perceived service quality and can influence potential customers' purchasing decisions. High ratings typically reflect effective service delivery and contribute to a positive company image.

The respondents agreed that their employees are productive and contribute to efficient customer response (M= 3.733, SD= 0.432). In addition, the respondents agreed that their team handles customer requests efficiently, ensuring high productivity (M= 3.728, SD= 0.433). From the results, the respondents agreed that they achieve their productive performance targets consistently (M= 3.715, SD= 0.398). In addition, the respondents agreed that customers frequently commend the quality of their service (M= 3.699, SD= 0.378). Further, the respondents agreed that they receive positive feedback regarding the quality of our responses (M= 3.689, SD= 0.873).

As the findings above have shown, customer response influences performance of food and beverage manufacturing firms in Kenya. This was supported by an aggregate mean of 3.854 (SD= 0.355). The findings agree with Zhang and Lu (2016) who demonstrated that customer response is a key indicator on how an organization is performing. A positive feedback from customer indicates that an organization is performing well while a negative feedback indicates poor performance. The results are also in line with the findings of Eroglu (2017) who established that customer loyalty influences firm performance. Loyalty means the positive trends of consumers towards a store or brand. And this consists after the result of the judgment or assessment from purchasing a particular product or service

Performance of Food and Beverage Manufacturing Firms

Performance of food and beverage manufacturing firms in Kenya was measured through use of profitability, market share and sales volume in a period of 5 years from 2018-2022. The results were as shown in Figures 1.

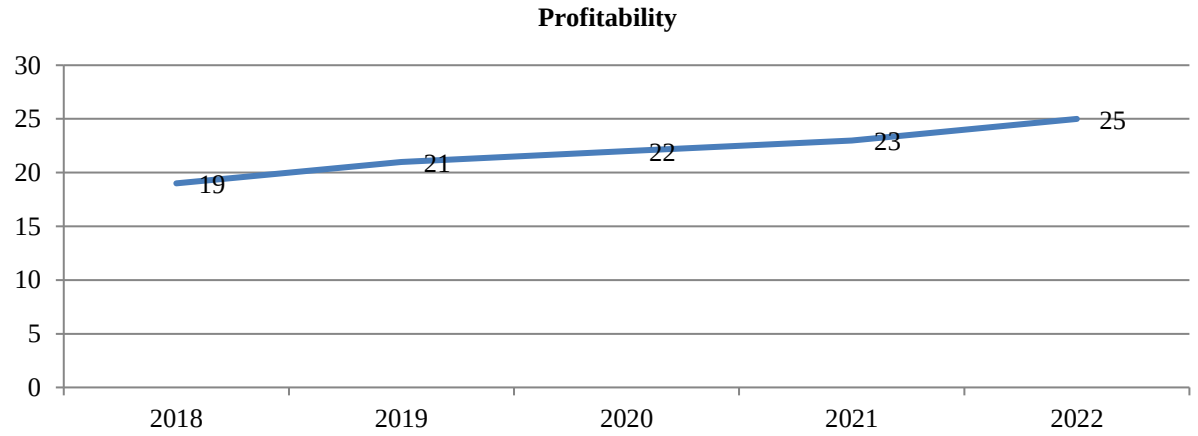

Figure 1: Profitability

The study collected data on profitability of food and beverage manufacturing firms in Kenya for a period of 5 years from 2018 to 2022. The results were as shown in Figure 1. From the results, profitability of food and beverage manufacturing firms in Kenya improved by 19% in the year 2018, in the years 2019, profitability increased by 21% and slightly increased to 22% in 2020 before increasing to 23% and 25% in 2021 and 2022 respectively.

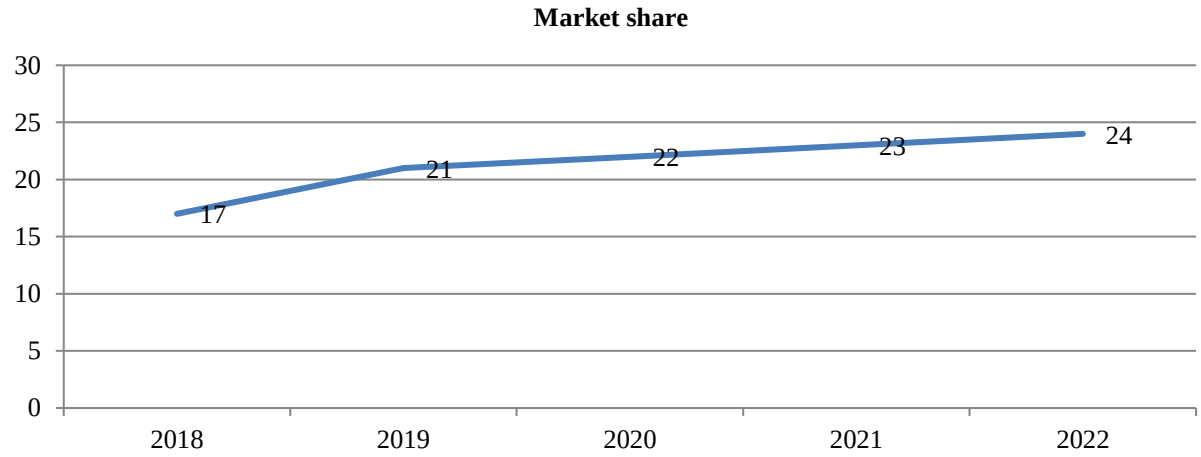

Figure 2: Market share

The study collected data on market share of food and beverage manufacturing firms in Kenya for a period of 5 years from 2018 to 2022. The results were as shown in Figure 2. From the results, the market share of food and beverage manufacturing firms in Kenya improved by 17% in the year 2018, in the years 2019, the market share increased by 21% and slightly increased to 22% in 2020 before increasing to 23% and 24% in 2021 and 2022 respectively.

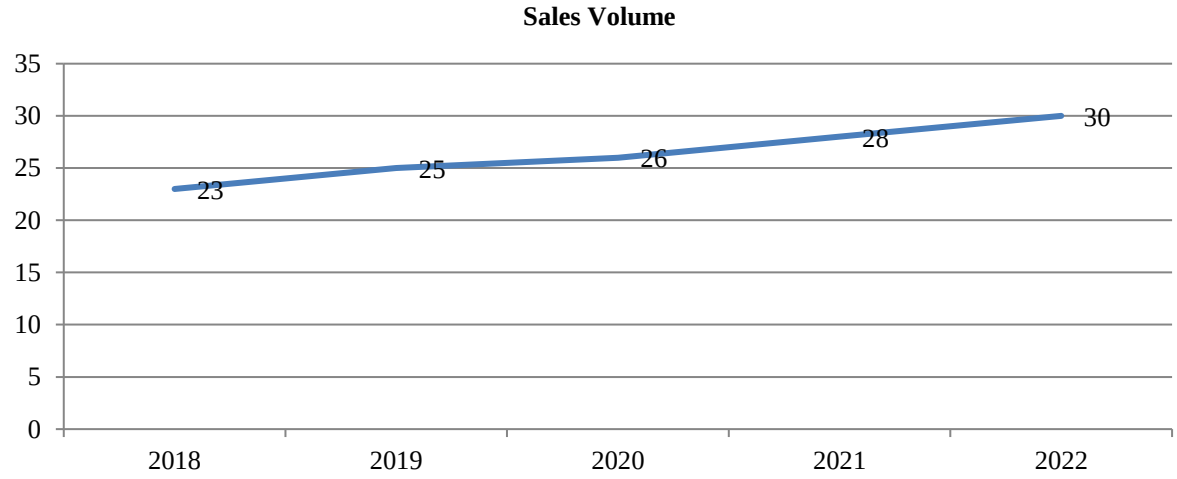

Figure 3: Sales Volume

The study collected data on sales volume of food and beverage manufacturing firms in Kenya for a period of 5 years from 2018 to 2022. The results were as shown in Figure 3. From the results, the sales volume of food and beverage manufacturing firms in Kenya improved by 23% in the year 2018, in the years 2019, the sales volume increased by 25% and slightly increased to 26% in 2020 before increasing to 28% and 30% in 2021 and 2022 respectively.

Regressions Analysis

The study aimed to assess the influence of price fluctuations on performance of food and beverage manufacturing firms in Kenya. To achieve the objective, the study conducted regression analysis to first establish whether there exist some relationship between price fluctuations and performance of food and beverage manufacturing firms in Kenya.

Table 7: Multiple Coefficients regression without moderation

	Unstandardized Coefficients		**Standardized Coefficients**	**t**	**Sig.**
	B	Std. Error	Beta		
(Constant)	0.342	0.089		3.843	0.00
Price fluctuations	0.397	0.097	0.398	4.093	0.001
a. Dependent Variable: Firm performance					

The regression analysis presented in Table 7 evaluates the relationship between price fluctuations and the performance of food and beverage manufacturing firms in Kenya. The constant (B = 0.342, p = 0.000) represents the baseline level of performance when the independent variables are held at zero. Given that the null hypothesis for the constant assumes no significant effect, the statistically significant p-value ($p < 0.05$) suggests that the constant is meaningful in explaining performance even in the absence of the predictor variable. Additionally, the independent variables exhibit positive and significant coefficients ($p < 0.05$), indicating that price fluctuations (B = 0.397) contribute positively to firm performance. The overall findings reject the null hypothesis for the constant, confirming that, even without these predictors, there is a significant baseline level of performance, while also demonstrating that supply chain risks significantly influence firm performance.

The regression equation for predicting firm performance from price fluctuations was;

$Y= 0.342 +0.397X_1 +\varepsilon$ implying that price fluctuations has positive significant effect on firm performance (B=0.342, $p<0.05$).

Multiple Linear Regression with Moderator Variable

The study computed the second model of multiple linear regressions with customer response as the moderator variable to find out whether the moderation factor could improve the model. The analysis was computed as in

The analysis of the coefficients table provides insight into the influence of price fluctuations on firm performance while considering customer response as a moderating variable in Model 2. In Model 1, price fluctuations positively and significantly associated with firm performance.

Table 8: Coefficients for Stepwise regression analysis

Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
	B	**Std. Error**	**Beta**		
1 (Constant)	.342	.089		3.843	.000
price fluctuations	.397	.097	.398	4.093	.001
2 (Constant)	.404	4.322		.024	.008
price fluctuations	.047	.247	.043	.191	.022
Customer response	.455	.247	.449	1.840	.003
Price fluctuations * customer response	.013	.014	.387	.887	.004
a. Dependent Variable: Firm Performance					

Price fluctuations exhibit the impact of (B = 0.397, p = 0.001). These results indicate that price fluctuations contributes to firm performance.

In Model 2, customer response is introduced as a moderating variable, altering the relationships observed in Model 1. The constant increases from 0.342 to 0.404, indicating a higher baseline firm performance when customer response is factored in. The direct effect of customer response on firm performance is positive and significant (B = 0.455, p = 0.003), implying that customer responsiveness independently enhances firm performance. However, the influence of the price

fluctuations weakens when customer response is considered. Price fluctuations, which had a strong impact in Model 1, decline sharply in influence (B = 0.047, p = 0.022), indicating that customer response moderates this effect. The interaction terms between customer response and price fluctuations further illustrate the moderating impact. The interaction between price fluctuations and customer response (B = 0.013, p = 0.004) suggests a significant yet small positive moderating effect.

Overall, this analysis highlights that while price fluctuations significantly influence firm performance, customer response plays a crucial moderating role. The decline in coefficients for price fluctuations in Model 2 suggests that firms with strong customer response mechanisms can mitigate the adverse effects of these factor. Furthermore, the significant interaction terms indicate that customer response enhances firm performance by moderating inefficiencies in supply chain processes. Firms aiming to reduce the bullwhip effect's negative consequences should invest in strategies that enhance customer engagement and responsiveness.

Correlation Analysis

The study computed Correlation analysis to determine the strength and the direction of the relationship between the variables being studied. If the correlation values are r = ±0.1 to ±0.29 then the relationship between the two variables is small, if it is r = ±0.3 to ±0.49 the relationship is medium, and when r= ±0.5 and above there is a strong relationship between the two variables under consideration. Table 9 presents the findings obtained.

Table 9: Correlation Analysis

		Firm Performance	Price fluctuations
Firm Performance	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	193	
Price fluctuations	Pearson Correlation	.774**	1
	Sig. (2-tailed)	.001	
	N	193	193

The analysis of the correlation results provides insights into the relationships between firm performance and price fluctuations. A notable correlation exists between firm performance and price fluctuations (r = 0.774, p = 0.001), indicating that changes in prices have a substantial impact on performance. This implies that price fluctuation has significant effect on performance of food and beverage manufacturing firms in Kenya. These findings agree with those of Baihaqi, (2019) that price fluctuation has a positive and significant relationship with organization performance.

Summary of Hypothesis Testing

The study sought to assess the influence of bullwhip effect on performance of food and beverage manufacturing firms in Kenya. To test the hypotheses from the t-statistics was presented in Table 10..

Table 10: Summary of hypothesis testing

Null Hypothesis	Decision reached
Price fluctuations do not affect performance of food and beverage manufacturing firms in Kenya	The hypothesis was rejected and the alternative hypothesis accepted.
Customer response has no moderating effect on the relationship between price fluctuations and performance of food and beverage manufacturing firms in Kenya	The hypothesis was rejected and the alternative hypothesis accepted.

Conclusions

The first null hypothesis test was 'price fluctuations do not affect performance of food and beverage manufacturing firms in Kenya'. The study found that price fluctuation is statistically significant in explaining performance of food and beverage manufacturing firms in Kenya. The influence was found to be positive. This means that unit improvement in price fluctuations would lead to an increase in performance of food and beverage manufacturing firms in Kenya. Based on the findings, the study concluded that price fluctuations positively and significantly influence performance of food and beverage manufacturing firms in Kenya.

The second research hypothesis tested was that 'customer response has no significant moderating effect on the relationship between bullwhip effect and performance of food and beverage manufacturing firms in Kenya'. The study revealed that customer response is statistically significant in explaining performance of food and beverage manufacturing firms in Kenya. It was also found that the interaction between customer response and bullwhip effect had positive, statistically significant effect on performance of food and beverage manufacturing firms in Kenya. Based on the findings, the study concludes that customer response has significant moderating effect on the relationship between bullwhip effect and performance of food and beverage manufacturing firms in Kenya.

Recommendations

Based on the study's findings that price fluctuations positively and significantly influence the performance of food and beverage manufacturing firms in Kenya, it is recommended that firms adopt dynamic pricing strategies and robust financial planning to capitalize on favourable price changes while mitigating risks during unfavorable fluctuations. Companies should invest in real-time market monitoring tools to track price trends and adjust their procurement and pricing decisions accordingly

Recommendations for further Studies

This study was limited to assessing the influence of bullwhip effect on performance of food and beverage manufacturing firms in Kenya. The study thus recommends a similar study to be conducted in other firms in the sectors of the economy such as textiles, pharmaceuticals, construction industry etc. Also, customer response was used as the moderating variable; the study thus recommends the use of a different moderator such as change in taste and preference since customers are highly influenced by their tastes and preferences. Also, the study was limited to four components of bullwhip effect which explained 78.5% of all variation in performance of food and beverage manufacturing firms in Kenya. There is therefore need for a study to be conducted on other factors that can explain the remaining 21.5% variation in performance of food and beverage manufacturing firms in Kenya.

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