An investigation of the Effects of Supply Chain Efficiency on Business Performance in selected Supermarkets of Lusaka

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ABSTRACT

This study investigates the effects of supply chain efficiency on business performance in selected supermarkets in Lusaka. Specifically, it examines how key supply chain efficiency metrics, fill rate, cash to cash time, cycle time, and inventory turnover, affect overall business performance. The research adopts a positivist philosophy and employs a deductive approach, utilizing a quantitative, cross-sectional survey design. Data was collected using Likert scale questionnaires from a sample of 120 employees across 12 randomly selected supermarkets in Lusaka. The analysis was conducted using multiple linear regression to test the relationships between the independent variables (efficiency metrics) and the dependent variable (business performance). The findings revealed that while cash to cash time and cycle time exhibited positive correlations with business performance, their effects were not statistically significant. This diverges from some existing literature that highlights these metrics as critical for performance improvement, suggesting that in Lusaka's unique operational context, such metrics may be overshadowed by other factors. Conversely, fill rate and inventory turnover showed significant positive relationships with business performance, aligning with prior research that emphasizes the role of high stock availability and efficient inventory management in driving profitability and customer satisfaction. These results underscore the importance of working on specific supply chain metrics to enhance performance in the retail supermarket sector. The study provides practical insights for supply chain managers and decision-makers aiming to improve operational efficiency and competitiveness.

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Introduction

Supply chain is a very important aspect of any business in the world. It can be described as the life blood of a business firm that empowers it to exist. Supply chain entails all arrangements and activities relating to both the delivery of goods and exchange of services between producing (manufacturing) firms and consuming (retailing).

(Bernardita, 2023) defined supply chain as "the network of all the individuals, organizations, resources, activities and technology involved in the creation and sale of a product. The stakeholders in a supply chain discussed, therefore, includes the manufacturing firms as well as consuming firms".

Efficient supply chains, according to (Avinadav & Levy, 2024), "refers to a state in which 'products move from manufactures to consumer within a short time, ensuring that consumers' demands are always met through consistent availability of the demanded products'" (Avinadav & Levy, 2024).

According to (Bernardita, 2023), "supply chain has twenty different metrics among which are four that directly relate to efficiency while others relate to other aspects". The four metrics that directly relate to supply chain efficiency are; 'Cash to Cash (C2C)' 'cycle time', 'Supply chain cycle time', 'fill rate', and 'Inventory turnover'.

In today's retail landscape, particularly within emerging markets such as Lusaka, the efficiency of supply chain operations has emerged as a critical determinant of success and business growth. Supermarkets, which serve as important retail centers, face increasing pressure to meet consumer demands for timely deliveries and high-quality services. As competition intensifies, understanding the dynamics of supply chain efficiency becomes greatly important not only for enhancing customer satisfaction but also for achieving financial viability and long-term growth. This study investigates the effects of supply chain efficiency on business performance specifically within Lusaka's supermarket sector, focusing on key metrics such as 'supply chain cycle time', 'fill rate', 'Cash to Cash time cycle', and 'inventory turnover'. By analyzing these metrics, the research aims to uncover the relationship between supply chain practices and the overall performance of business in supermarkets, providing valuable insights for managers and stakeholders.

Research Objectives

i) To assess the influence of 'fill rate' on the business performance in supermarkets of Lusaka.
ii) To determine the effect of 'cash to cash time' on the business performance in supermarkets of Lusaka.
iii) To evaluate the impact of 'cycle time' on the business performance in supermarkets of Lusaka.
iv) To determine the relationship between 'inventory turnover' and business performance in supermarkets of Lusaka.

Literature Review

The purpose of this chapter was to review the studies that have previously been conducted on the topic of supply chain in relation to business performance. Supply chain is "the network of all the individuals, organizations, resources, activities and technology involved in the creation and sale of a product". According to (Bernardita, 2023), supply chain efficiency can be measured using four metrics namely, 'fill rate', 'Cash to Cash', 'cycle time' and 'Inventory turnover'. The four metrics constituted the independent variables of the study and so were the focus in the review of literature.

Fill Rate

Fill rate can be defined as a percentage rate that can be used to measure a customer's orders that have been fulfilled the first time an order is made. This is very important because it indicates the customer's satisfaction as well as improve brand reputation of a company or organization. According to (Wan, Gligor, Fan, Qi, & Britto, 2024,), "fill rate is measured by the percentage of units filled to the total units ordered". They further state that "fill rate is a metric that can be used to measure the 'operational performance' of a business". (Wang, Zhang, & Zhang, 2021), state that "higher fill rates reflect better inventory management and order fulfillment processes which enhance customer loyalty and business profitability". "A high fill rate reflects a well-organized supply chain that meets customer expectations efficiently" (Wang, Zhang, & Zhang, 2021).

Kumar (2022), defined fill rate as "the percentage of customer orders that are successfully fulfilled from available inventory, without backorders or stock outs". He further stated that "fill rate directly influences customer satisfaction and business performance by preventing stock outs, backorders or lost sales". When a company can fulfil the customers' needs, it would have its brand reputation improved on the market. Kumar (2022) further stated that "when your business consistently completes customer orders and maintains a high fill rate, it enhances its reputation, builds market trust and ultimately leads to positive positioning".

If Shoprite, for example orders 20 units of a products from its suppliers and receives 18 units in the first delivery, then the fill rate for the product involved was calculated as $\frac{18}{20} \times 100$ $\frac{18}{20} \times 100$, which gives 90% 90% of its orders.

The formula for calculating fill rate is:-

$$\text{Fill Rate} = \frac{\text{Shipped Orders}}{\text{Total Orders}} \times 100$$

Fill rate has been studied by many scholars and the come up with conclusions. Some of the scholars include (Closs, Nyaga, & Voss, 2010) studies show that "the differential impact of the product complexity, inventory level and configuration capacity on unit and order fill rate performance". Their study focused on the "impact of configuration capacity, inventory level, and complexity of service performance as measured by unit and order fill rate in a configure-to-order environment". The findings in their study were that "there are differential direct and interactive effects of examined variables on units and order fill rate". (Closs, Nyaga, & Voss, 2010; Tembo & Sikalumbi, 2025) claimed that their study was "the first to simultaneously examine the interactive effect of product complexity, inventory level, and configurative capacity on performance as measured by unit and order fill rate".

Another group of scholars who studied fill rate included (Wan, Gligor, Fan, Qi, & Britto, 2024,). They focused their study on the topic titled "impact of product variety decisions on operational performance (unit fill rate) and on sales performance". The findings in their study were that "increased product variety actually results in lower sales, indicating the impact of product variety on fill rate and sales performance".

(Wang, Cui, & Xu, 2024), were another team of scholars who studied fill rate. They particularly focused on "the extent to which trans-shipments contributed to inventory turnover and fill rate". The discovery in their study was that "by simply implementing shipments does not guarantee an improvement in inventory turnover and in fill rate".

Cash-to-Cash Cycle

Cash to cash is a very useful metric in supply chain management that is used to measure efficiency. Cash to cash can be defined as the time it takes when cash is outflowed for purchases to the time cash is inflows in the business from sales. Bernardita (2023) defined cash to cash as "the period required between the moments a business pays cash to its suppliers to the time it receives cash from its customers". Farris and Hutchison (2022) defined cash to cash as "the period between a company's expenditure on inventory and the receipt of cash from product sales". Cash to cash can simply be stated as the time it takes it takes from payment to suppliers to the receipt of cash from customers. An example of cash to cash to cash cycle time could be when food lovers chain store pays its suppliers for the purchase of Irish potatoes to the time it receives cash from its customers who buy the product from their store.

Cycle Time

Cycle time is another important metric that is used to determine the efficiency of supply chain. It can be defined as 'the total time taken for a product to move through the supply chain process; from the point it is ordered from suppliers to the point is sold to consumers. That means, every product on sale has its own cycle time. For example, a beef product completes its cycle time as it moves from suppliers (such as Zambeef), through a supermarket (such as Shoprite) to a consumer as they buy it from Shoprite.

Literature provides us with different ways of defining supply chain cycle time to help better understanding of it. For example, the Oboloo Team (2023), defined it as a cycle that "encompasses all the steps involved in sourcing, ordering, manufacturing, and delivering goods or services to customers". Jones and Towill (1999), defined cycle time as "the elapsed time

between customer enquiry and customer needs being met".

Tracking cycle time of various products is important for businesses so as to maintain high inventory levels, ensuring the timely delivery of products, and meeting customer demands. As it was emphasized by the Oboloo Team (2023), "reducing cycle time…allows companies to respond quickly to changing customer demands and provide timely deliveries", which is vital for businesses striving to offer competitive services.

Inventory Turnover

Inventory turnover can be defined as several times a business sells and replaces its stock of goods in a specified period. For instance, if 'Pick-n-Pay' supermarket orders a total of 1000 litres of milk in each consignment, and can sell it all, up to ten times in a month, then the inventory turnover for milk in 'Pick-n-Pay' is ten per month. Bernardita (2023) defines inventory turnover as "the number of times the entire inventory has been sold over a certain time frame".

Literature further reveals the calculation of inventory turnover. According to Rao et al (2005), it "is calculated as the ratio of sales to average inventory". Rao et al (2005), pointed out that in the calculation of inventory turnover, "both the sales and average inventory are valued at either selling price or original cost". The calculation of inventory turnover, as described by Rao et al (2005), can be expressed as;

$$\text{Inventory turnover} = \frac{\text{sales}}{\text{average inventory}}$$

High inventory turnover rates are associated with effective production planning and efficient fulfilment processes. In the study by Akhter, Islam, and Hasan (2022), it was pointed out that "enhancing inventory turnover is needful for reducing excess stock and improving cash flow, thus contributing to better financial outcomes and competitive advantage". Thus, a "higher inventory turnover ratio indicates efficient inventory management and effective use of resources, while a lower ratio indicates inefficiencies, such as overstocking or slow-moving products". In the study conducted by Rao et al. (2005), it was suggested that "by minimizing inventory inaccuracies, the firm can operate with minimum levels of inventory".

Business Performance

Business performance refers to a company's outcomes of its strategic and operational efforts. It serves as a measure of an organization's "effectiveness in achieving its goals and objectives". It can be defined as the process of evaluating how well an organization meets its goals and objectives.

According to Gibson (2023), business performance can be measured in terms of 'financial goals and profitability', and 'non-financial goals and intangible assets.'

To assess its financial performance, a business firm or company need to set financial goals which can be used as benchmarks. According to Gibson (2023), "financial performance is often assessed using metrics such as revenue, profit margin, return on investment, and cost-efficiency". Financial goals can be presented as income statements, providing an overview of the business's anticipated revenue and expenditures for a specific period. These financial goals are crucial for ensuring that a business firm is financially viable and capable of reinvesting in future growth. According to Simons (2020), one of the "critical factors in financial goal setting is ensuring that a company generates enough cash flow to remain solvent and profitable in the long term".

In addition to financial metrics, Gibson (2023) pointed out that business performance could be measured through non-financial aspects that contribute to long-term success. He identified "customer satisfaction, employee engagement, and operational efficiency" as "non-financial factors that influence a company's financial outcomes". For instance, customer satisfaction has been linked to increased profitability, as "satisfied customers tend to have higher loyalty and make repeated purchases". Cergibozan and Tasan, (2019), attributed to customer satisfaction as an indicator of business performance when they stated that "order fulfillment significantly influence the service level and customer satisfaction in a business". Employee engagement, on the other hand, can result in better service quality and reduced turnover, which can lower recruitment and training costs. As was stated by Sadikoglu and Zehir (2010), "employee performance makes an important contribution to improving business performance". It is important to note that while financial metrics reflect short-term performance, non-financial indicators support

sustained, long-term growth and stability. firms, to track intangible assets as well, in order to understand their performance.

Knowledge Gap

While various studies have assessed the impact of supply chain metrics on business performance across industries, there is no research discovered in literature that focused specifically on the supermarket sector. Supermarkets, with their high-frequency demand cycles, perishability of goods, and need for rapid inventory turnover, present unique challenges that are not sufficiently addressed in the current body of literature. This gap suggests a need to investigate how the four key supply chain metrics (fill rate, Cash to Cash cycle, cycle time, and inventory turnover) specifically influence supermarket operations and performance in Lusaka.

Methodology

This chapter consists of the methodology and data analysis tools which were used in this study. The entire methodology of the study can be explained in relation to the research onion which was developed by Saunders et al. (2007). As pertained to the research onion, the philosophy on which this study was built is positivism. The study employed a deductive approach which required proving the hypotheses. The research strategy for the study was the survey which was done through Likert scale questionnaires. The study was purely quantitative and was cross-sectional in nature. The chapter also describes the data analysis procedure as well as data presentation formats. The main technique that was used in data analysis in this study was the multiple linear regression analysis which was expected to show the relationships between the independent variables and the dependent variable. Finally, the chapter explains how ethical issues were handled during the research.

Underlying Philosophy

This study was informed by the positivist paradigm. Positivist paradigm views reality as being objectively true and discoverable. It considers knowledge to be accurate and certain, and that it can be described systematically. In inquiry, positivists apply scientific methods and make use of empirical observations and measures, and they quantify phenomena. They rely heavily on quantitative methods for data collection and analysis. These methods involve the use of numerical data that can be analyzed statistically to identify patterns, relationships, and trends within the data.

In this study, numerical data was collected using the five-point Likert scale questionnaire and was statistically analyzed using ‘multiple linear regression analyses. The results obtained were considered a true reflection of reality in as far as efficiency of supply chain and the performance of business in supermarkets of Lusaka are concerned.

Research Approach

The approach that was used in this study was the deductive approach. The approach starting from existing theories to develop hypotheses (Sikalumbi, 2025), which were then tested according to data. This method focused on moving from general concepts to specific conclusions, aiming at confirming or refuting established knowledge within the contexts of supermarkets in Lusaka.

Time Horizon

the study was cross section in nature as the researcher had to collect data in a space of two weeks’ time.

Research method and Justification

A quantitative study was conducted because the research needed to obtain an understanding of the research problem through the analysis of numeric data. In this study, the participant’s knowledge on the topic could best be arrived at by statistical procedures. Therefore, the research design used was a survey which was done by distributing Likert scale questionnaires to the sampled supermarkets in Lusaka. By using this design, the researcher would collect numerical data and used it to explain phenomenon more exhaustively to support the findings. The analysis of data was conducted as a process of hypotheses testing. The technique used in testing the hypotheses was the multiple linear regression. This was because the research in the study was assessing the relationships that four independent variables had with only one dependent variable.

Sampling frame and sample size

The study was conducted on a targeted sample of one hundred and twenty (120) participants. The sample

size was calculated using Yamane's formula. The formula assumes a confidence level of 95%, and a population proportion of 50%. The marginal error considered for the calculation was 8.5%, and population size of 960 employees. Thus, the results of the calculations indicate that 120 or more measurements/surveys are needed to have a confidence level of 95% that the real value is within ±8.5% of the surveyed value". The samples size calculation was done as follows;

$$n = \frac{\mathrm{N}}{1 + \mathrm{N}(e)^2}$$

$$n = \frac{960}{1 + 960(0.085)^2}$$

$$\underline{\boldsymbol{n = 120}}$$

The simple random sampling technique was used to select the participants of the study. From the 24 supermarkets, 12 supermarkets were randomly sampled (population proportion of 50 %,); and from each of the sampled supermarkets, 13 employees were randomly selected to be participants of the study.

Data collection and analysis

A 'five-point Likert scale questionnaire' was used to collect data for this study. Each point was representing a level of agreement or disagreement with a respective statement or question in the questionnaire. The scale ranged from 1 to 5, with 1 indicating "strongly disagree" or its equivalent, and 5 indicating "strongly agree" or its equivalent. The questionnaire consisted of five questions to measure 'cash-to-cash cycle time; five questions to measure 'Supply chain cycle time'; five questions to measure 'fill rate', five questions to measure 'Inventory turnover', and five questions to measure 'business performance'. The data collected was analysed through hypothesis testing to determine the relationships between the independent and the dependent variables. Hypothesis testing was conducted using the Multiple Linear Regression analysis (Ebudetse, 2025).

Validity, Reliability and Generalisability of Research Findings

The validity test was done using the principal component analysis (PCA). In this test, the researcher assessed two parameters; the first parameter was the "sampling adequacy",
using the "Kaiser-Meyer-Olkin of sampling adequacy" (KMO) (Cerny & Kaiser, 1977; Shrestha, 2021). For a valid set of data, the KMO should rate within the range 0.7 to 1.0 inclusive. The test results had a KMO value of 0.771 which falls within the acceptable level. The second parameter consisted of the "factor loadings" of each questionnaire item (Stathis & Jeffery, 1996). The factor loading indicated the extent to which each of the item contributed to the study. It is a statistic value in the range '0.00 to 1.00 (Johnny Lin, 2025). Four items had factor loading less than 0.4 and were considered invalid hence excluded from the study.
Reliability test was done using the Cronbach's alpha (Fanelli, & Frost, 2019). A Cronbach's alpha is a statistic ranging from '0.00 to 1.00'. For a reliable data set, its value must be in the range '0.7 to 1.00' inclusive (Frost, 2025). The results of the test had an alpha statistic of 0.758. Thus, it was concluded that the data collected had high level of reliability.
Thus, the results obtained in this study were generalised to the population where the sample was drawn (Sikalumbi, 2021).

Findings

The main objective of the study was to assess the effects of the supply chain metrics, specifically, fill rate, cash to cash time, cycle time, and inventory turnover, on business performance in supermarkets of Lusaka.
The study found that Fill Rate, which measures the ability to meet customer demand with available stock, has a significant positive impact on business performance. This finding suggests that supermarkets in Lusaka that can maintain a high fill rate tend to perform better. Meeting customer demand by having the right products available at the right time directly contributes to customer satisfaction, leading to better sales and overall performance.
The finding, in relation to cash to cash, and business performance, were that Cash-to-Cash Time did not significantly impact business performance in Lusaka

supermarkets. While a positive relationship between Cash-to-Cash Time and business performance was observed, it was not strong enough to be considered statistically significant.

Furthermore, in relation to the impact of 'cycle time' on business performance, the findings were that Cycle Time had no significant influence on business performance. Despite a positive relationship being observed, the effect was weak and did not reach statistical significance. This indicates that the time it takes for processes to cycle through, from order placement to restocking, did not appear to directly impact business performance in Lusaka supermarkets.

Model		Unstandardized Coefficients		p-value (Sig)
		B	Std. Error	
1	(Constant)	12.175	1.998	0.000
	Fill Rate	0.170	0.067	0.012
	Cash to Cash	0.151	0.107	0.162
	Cycle Time	0.111	0.110	0.316
	Inventory Turnover	0.186	0.059	0.002
a. Dependent Variable: Business Performance				

Finally, the findings of the study, in line with the relationship between 'inventory turnover' and business performance in supermarkets of Lusaka", it was found that Inventory Turnover significantly influenced business performance. Supermarkets with higher inventory turnover, tend to experience better performance. This result highlights the importance of maintaining an effective inventory management system that ensures products are moving quickly and stock levels are enhanced

Data analysis

The analysis of data was conducted as a process of hypotheses testing, with the multiple linear regression, as a technique used. The study had four independent variables whose relationships with the only dependent variable were to be analyzed. The multiple linear regression analysis was therefore used to test the four hypothesized relationships at 0.05 level of significance. Table 1 below shows the output of the analysis.

Table 1: Multiple Linear Regression

The results of the multiple linear regression analysis displayed in table 1 above, were used to test the hypotheses related to the influence of Fill Rate, Cash to Cash Time, Cycle Time, and Inventory Turnover on Business Performance in supermarkets in Lusaka.

In relation to the influence of 'Fill Rate' on 'Business Performance', the test was conducted against the null hypothesis:

> *"Fill rate does not significantly influence 'Business Performance' in supermarkets in Lusaka."*

The analysis revealed that the unstandardized coefficient (B) for Fill Rate was 0.170, suggesting a positive relationship between Fill Rate and Business Performance. With a p-value of 0.012. The p-value is less than 0.05, indicating that Fill Rate significantly influenced Business Performance. Therefore, we reject the null hypothesis and accept the alternative hypothesis, concluding that Fill Rate significantly affected Business Performance in supermarkets in Lusaka.

In relation to the influence of 'Cash to Cash Time' on 'Business Performance', the test was conducted against the null hypothesis:

> *"Cash to Cash time does not significantly influence 'Business Performance' in Lusaka supermarkets".*

The coefficient for Cash to Cash was 0.151, suggesting a positive but relatively weaker relationship with Business Performance. However, the p-value of 0.162 indicates that the relationship is not statistically significant, as the p-value is greater than 0.05. Thus, we failed to reject the null hypothesis and concluded that Cash to Cash time does not significantly influence Business Performance in supermarkets in Lusaka.

In relation to the influence of 'Cycle Time' on 'Business Performance', the test was conducted against the null hypothesis:

"Cycle time does not significantly influence 'Business Performance' in Lusaka supermarkets."

The coefficient for Cycle Time was 0.111, indicating a positive relationship with Business Performance. However, the p-value of 0.316 suggests that Cycle Time was not statistically significant, as the p-value was greater than 0.05. Therefore, we failed to reject the null hypothesis and concluded that Cycle Time did not significantly influence Business Performance in Lusaka supermarkets.

In relation to the influence of 'Inventory Turnover' on 'Business Performance', the test was conducted against the null hypothesis:

"Inventory turnover does not significantly influence 'Business Performance' in supermarkets in Lusaka."

The analysis showed that the unstandardized coefficient for Inventory Turnover was 0.186, suggesting a positive relationship with Business Performance. With a p-value of 0.002, which is less than 0.05, we rejected the null hypothesis and concluded that Inventory Turnover had a significant positive effect on Business Performance in supermarkets in Lusaka.

Conclusions and Recommendations

This research has revealed that Cash to Cash Time and Cycle Time did not have statistically significant impact on the business performance of supermarkets in Lusaka, despite showing some positive relationships with performance. These findings suggest that factors like liquidity management and process cycle times may not be as crucial in this context as some previous literature suggests. This could be attributed to the unique operational environment in Lusaka, where external factors or other operational challenges may overshadow the impact of these metrics on performance.

On the other hand, both Fill Rate and Inventory Turnover were found to have significant positive relationships with business performance. Supermarkets with high fill rates were better able to meet customer demand, which led to enhanced customer satisfaction, repeat business, and overall profitability. Similarly, effective inventory turnover practices, such as reducing holding costs and enhancing stock levels, significantly contributed to the financial performance of supermarkets in Lusaka. These findings align with existing literature that emphasizes the importance of stock availability and efficient inventory management for improving business performance. While some supply chain metrics such as Cash-to-Cash Time and Cycle Time may not have a significant direct effect on business performance in Lusaka supermarkets, other aspects like Fill Rate and Inventory Turnover are critical drivers of success in this context. Therefore, supermarkets in Lusaka should prioritize enhancing these supply chain processes to improve their overall business performance

Overall findings

The result of the study, therefore, indicate that 'Fill Rate' significantly affect Business Performance in supermarkets in Lusaka. Similarly, the results show that 'Inventory Turnover', like 'fill rate', had a significant positive effect on Business Performance. On the other hand, the results of the study revealed that both 'Cash to Cash time' and 'Cycle Time' did not significantly influence Business Performance in Lusaka supermarkets.

Originality/value

This study is original in that it examines the effects of supply chain efficiency on business performance in selected supermarkets in Lusaka district of Zambia. The study was conducted using the raw data which was collected from the supermarkets and was primarily meant for this study. Additionally, the study was done in a perspective not yet explored in prior literature. While existing studies have focused on studying supply chain metrics in isolation, this paper introduces an approach of analysing the metrics collectively so that their effects on business performance could be weighed in a well-balanced perspective.

Recommendations

The following are the recommendations emanating from this study:

a) Focus on Fill Rate Enhancement: Given the significant positive relationship between fill rate and business performance, supermarkets should prioritize maintaining a high fill rate by

improving stock availability and demand forecasting accuracy. This can be achieved through better inventory management systems, closer supplier relationships, and implementing more responsive restocking processes to avoid stock outs and meet customer demands promptly.

b) Enhance Inventory Management Practices: The study found that higher inventory turnover was positively correlated with business performance. Supermarkets should adopt efficient inventory management strategies such as "Just-In-Time" (JIT) systems or lean inventory approaches. These strategies can help minimize holding costs, reduce the risk of obsolescence, and improve cash flow. Investments in real-time tracking systems and automated stock management can further streamline inventory turnover processes.

c) Review and Improve Cash to Cash Cycle: While Cash to Cash Time did not show a significant direct impact on performance, supermarkets in Lusaka should continue to explore ways to improve liquidity management. Efforts to reduce the time between spending and receiving cash may still have indirect benefits, especially in terms of financial stability and the ability to reinvest in operations. Focus could be placed on improving supplier payment terms or enhancing cash flow management to support better operational flexibility.

d) Assess and Improve Cycle Time: Although Cycle Time was not statistically significant in this study, supermarkets could still benefit from identifying inefficiencies in their order-to-stock processes. Reducing unnecessary delays or bottlenecks in the supply chain can improve overall operational efficiency, which may lead to other indirect benefits such as better customer service and faster product availability.

e) Further Research on External Factors: Given that some supply chain efficiency metrics did not show significant effects on business performance, future research could explore the influence of external factors such as economic conditions, market competition, and consumer behavior in Lusaka. Understanding how these elements interact with supply chain efficiency may provide a more holistic view of business performance drivers in the supermarket industry.

Targeted Training and Capacity Building: Supermarkets in Lusaka should invest in training programs that build staff capacity in supply chain management, with a particular focus on inventory control, demand forecasting, and supplier relationship management. Enhancing human capital will enable better decision-making and foster a culture of continuous improvement within supermarket operations.

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