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ANALYZING REVENUE LEAKAGES AND OPERATIONAL INEFFICIENCIES AT MASHWEDE HOLDINGS (PERIOD 2020 - 2023)

BY

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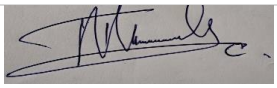
APPROVAL FORM

I, Terrence Mashamanda, do hereby declare that this research is my original work, apart from the references to other people's work, which have been properly acknowledged, and that it has not been submitted in part or in full for any other degree to any other university.

MASHAMANDA TERRENCE		DATE
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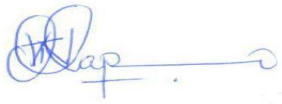
DR. T.W. MAPUWEI		DATE
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DEDICATION

This work is dedicated to God, my family, friends, classmates, and my lecturers, who helped me through this journey treat me with love and support.

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Firstly, I would like to thank the Almighty God, the giver of life, knowledge, and wisdom, for enabling me to complete my research successfully, even though it was hard sometimes; I managed to complete it on time. Secondly, acknowledgement goes to Dr T.W. Mapuwei for patiently sacrificing his time to guide and for the detailed insights he provided during the study that made it possible for me to complete this report. I also acknowledge Mashwede Holdings staff for their aid and cooperation by providing the needed information vital for this research. Finally, I would like to thank all those who made contributions, which include family, friends, classmates and our departmental lecturers, with their support and encouragement during my studies.

ABSTRACT

A diagnostic research design was employed for this study, which aimed to explore the nexus between operational and financial efficiency in the fast food industry in Zimbabwe, using a case study approach to identify vulnerabilities that contribute to revenue leakage in the industry, particularly using Mashwede Holdings. Data for this study were collected via a quantitative design using a sampling frame comprising all operational records, financial records, and transactional data for a period of four years, with N=576 being the total sample size for the analysis period running from January 2020 to December 2023. The analysis was completed using RStudio and employed the use of Tukey's Interquartile Range (IQR × 1.5) technique to determine statistical boundaries and linear regression models to analyse the variance in operations and finances. Results from the statistical analysis showed that although inventory wastage was above the upper statistical boundaries most of the time, especially during peak hours, the regression test showed that cash shortages and customer counts were the two statistically significant factors contributing to the variances in finances ($p < 0.05$). This means that revenue leakage in such situations is facilitated by transaction volumes in the organization. Consequently, this indicates a vulnerability regarding till counting and point of sale checks during high traffic hours. Service speed variations were not statistically significant, showing that internal leakage can be explained by transaction volumes rather than time constraints. To ensure profitability in the future, the study suggests implementing an automatic till reconciliation system immediately, conducting internal audits during high customer counts, and implementing statistics-based exception reporting.

LIST OF ACRONYMYS/ ABBREVIATIONS

SME = Small and Medium Enterprise

TCE = Transaction Cost Economics

OR = Organisational Resilience

AI = Artificial Intelligence

ERP = Enterprise Resource Planning

FIFO = First In First Out

VIF = Variance Inflation Factor

RMSE = Root Mean Squared Error

MAPE = Mean Absolute Percentage Error

DF = Dickey Fuller

OSR = Quick Service Restaurant

CBD = Central Business District

AR = Autoregressive

ADF = Augmented Dickey Fuller

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CHAPTER 1
INTRODUCTION

1.0 Introduction

In recent times, several firms in the fast-food industry in Zimbabwe have encountered increasingly difficult issues such as high cost, inflation, low profit margins, and even losses of income. In the case of Mashwede Holdings in Zimbabwe, a firm that was once fast-growing, the firm had to shut down several of its food stores despite the increase in the demand for fast foods like fried chicken, burgers, pizza, and others in urban settings. The objective of this study is to identify the issues at hand and develop solutions to improve the performance of the firm. This chapter discusses the various concepts related to the study, namely the background of the study, statement of the problem, objectives of the study, research questions, scope of the study, significance of the study, assumptions, limitations, definition of terms, and conclusions.

1.1 Background of the study

The fast-food industry in Zimbabwe has been expanding over the past ten years because of increasing demand for affordable and easy-to-consume meals in urban areas. Mashwede Holdings has joined the dynamic market by operating brands like Chicken Mash and Mash Pizza. In the process, Mashwede has enjoyed great popularity through effective location of their outlets, competitive pricing, and engagement with customers, especially from 2017-2019. Besides high-quality products, effective operations and financial management of businesses are key to success in this market.

However, lately Mashwede Holdings has experienced some challenges that imply that inefficiency is one of their major problems. Specifically, inefficiencies may occur in revenue leakages. It refers to revenues lost to the company because of inefficiencies and/or mistakes when conducting business operations (DigitalRoute, n.d.). Similar to revenue leakages, inefficiencies may occur in operations. They mean poor processes or inefficient use of resources leading to additional expenses and inefficiency in production.

Poor performance, loss of money that cannot be explained and closing of Mashwede`s outlets can all be the consequences of inefficiency. Even though the effect of operational controls and revenue management on business success has been studied extensively in Africa, including Zimbabwe, little attention is paid to fast food enterprises. There is an evident lack of research

focused on this topic. Therefore, it is crucial to analyse Mashwede Holdings in terms of revenue leaks and operational inefficiencies.

1.2 Statement of the problem

Despite the slow growth that has occurred in Mashwede holding following the development of Mashwede village in Willowvale in 2015, there has been some indication of decreased profitability through unknown losses in revenue. Such issues suggest that there may be problems related to revenue leakage as well as inefficiencies within the day-to-day operations, such as those concerning till operations, employee handling, and service delivery functions. However, there is no existing statistical framework for tracking these losses.

Existence of internal assessments is largely descriptive and does not provide empirical insight into where, when, or how revenue leakages occur. As a result, management is unable to make data-driven operational improvements. Despite similar studies in other regions highlighting the value of statistical tools in identifying inefficiencies, there is limited empirical evidence examining these issues in Zimbabwe's fast-food sector in general and at Mashwede Holdings specifically.

1.3 Research objectives

This study aims to understand the challenges Mashwede Holdings is currently facing in fast food operations, especially the issues around the revenue losses. The goal is to use the data to identify areas where things are going wrong within the business and determine how to improve them, making the business more profitable and enabling it to grow more than it has in the past.

1. To pinpoint the primary sources of revenue leakages at the till points within Mashwede Holdings` fast-food outlets by the end of the data collection period 2020 to 2023.
2. To measure the current efficiency in operation, in relation to customer service and effective utilization of resources, through concrete performance measures for the study period.
3. To examine the relationship that exists between turnover, profits, and operational efficiency among all the branches for the specificity of the year.
4. To suggest recommendations which will help increase operational efficiency and reduce losses.

1.4 Research questions

1. What are the main causes of the loss of revenue from Mashwede Holdings` fast food restaurants?
2. How effective is the current operation processes present concerning customer care and utilization of resources in Mashwede Holdings?
3. Is there any relationship between the amount of turnover, profitability, and operational efficiency of various outlets during the fiscal year?
4. How can Mashwede Holdings reduce on losses and improve its operational efficiency?

1.5 Scope of the study

The main objective of this research is to examine revenue leakages and inefficiencies that arise from the operations of Mashwede Holdings fast-food division. This will be done by examining the processes in the till point, the time taken for serving customers, among other performance factors, using gross profit and turnover per month.

1.5.1 Subject Scope

This research will focus on only the fast-food segment of Mashwede Holdings, which includes Chicken Mash and Mash Pizza eateries. They are chosen due to reported operational and financial challenges within their operations and finances within the last few years, hence can be used to investigate revenue leakages.

1.5.2 Geographical Scope

The research will take place in Harare, Zimbabwe, which is where all the key activities of the firm are taking place.

1.5.3 Time Scope

Concerning data, it will be necessary to look at the statistics from 2020 to 2023. These four years will have covered some current trends.

1.6 Significance of the study

The importance of this research is that it uses empirical evidence to assess problems of revenue leakages and inefficiencies in operations in Mashwede Holdings Fast-food outlets. The study will both provide practical and theoretical contributions.

1.6.1 Benefit to the Company

These findings will assist in determining the particular processes that result in losses in revenue within all the Chicken Mash and Mash Pizza branches for Mashwede Holdings. The weak points in the cash management, stock management, and processes will assist in implementing various changes that could be made within the company regarding internal control measures, cost control, and performance of the staff, among other aspects.

1.6.2 Benefit to the Fast-Food Industry

The lessons learned from this study can aid in solving the same issues that may affect other fast-food companies. From the knowledge gathered regarding the sources of inefficiency and loss of funds, those in the industry can improve their processes to avoid repeating such errors.

1.6.3 Contribution to Academia

Consequently, this research will be very significant since it provides an important contribution to the literature already available on the problems of inefficiency in business operations and revenue leakage in Zimbabwe's fast-food industries. This study becomes the cornerstone of research on operational efficiency and organizational efficiency in developing countries.

1.7 Assumptions of the Study

These include:

1. Accurate financial information: The study assumes that all turnover figures, gross profit percentages (GP%), and customer counts provided by the organisation are accurate, complete, and free from any form of manipulation, misrepresentation, or reporting errors.
2. Consistency of measurement: This study will also assume that the methods used in measuring monthly turnovers, GP%, and the number of customers remained constant throughout the study period.
3. Stability of External Environment: This study assumes that external environmental forces have not changed sufficiently to distorting the operations of the firm during the study period.
4. Operational inefficiency: In analysing the fluctuations in turnover, GP% and number of customers, it will be assumed that the differences resulted from underlying operational inefficiencies including inefficient cost control measures, inefficient delivery of services, and poor allocation of resources among others.

5. Adequacy of Study Period: Finally, it will be assumed that the selected study period (2020-2023) will be adequate to capture inefficiency and leakages within the firm.

1.8 Limitations of the study

While the study is geared towards providing relevant insights into revenue leakages and operational inefficiencies at Mashwede Holdings, the following may affect the extent to which the research will be carried out.

1. Lack of comprehensive data on financial records: Since some financial records like the internal audit reports and cost structure will not be accessed, this restricts to analyse the sources of leakage.
2. Effect of the macroeconomic environment: The effect of prices, price inflation, and exchange rates may impact the firm's profits and thereby affect its operational inefficiencies.
3. The quality of data: For a valid conclusion to be drawn, the researcher will have to rely on data provided by the firm under study. Any form of data inadequacies might pose challenges.
4. Limitations in methodological tools: Though the application of some statistical analysis techniques is effective, it might be inadequate since it might not consider some non-statistical factors such as employee behavior, customers' preferences, managerial practices and other qualitative variables.
5. Focused on one Company: This paper will focus on Mashwede fast food operations alone in Zimbabwe.

1.9 Definitions of Key Terms

1. Revenue Leakages: According to Juntrax (2023), revenue leakages refer to the unintended and often unnoticed loss of revenue that an organisation has earned but fails to collect or record due to factors such as billing errors, poor contract management, system weaknesses, or process inefficiencies.
2. Operational Inefficiencies: According to Codence (2024), operational inefficiencies are weaknesses within an organisation’s internal processes that result in wasted resources, reduced productivity, and increased costs, making it necessary to identify and address them to improve performance.

3. Turnover: As per Investopedia (2025), the turnover is the overall income earned by the firm from the conduct of business during a particular period like a month, quarter or year.
4. Profit Margin: As per Investopedia (2025), profit margin is the ratio of net profit to total income expressed in terms of percentage.
5. Operational Efficiency: As per NetSuite (2025), operational efficiency can be defined as the efficiency of the business operations in which an organisation strives to maximise output but minimises the use of inputs like time, labour, etc., without affecting the quality of products or services.
6. Fraud: As per AccountingTools (2025), accounting fraud is the deliberate misrepresentation of accounting records with the intention of making false profits for the business entity. The same has been defined by Investopedia (2025).
7. Waste: According to BDC (2021), waste refers to activities or processes that consume resources without adding value to customers or the business. Common forms of waste include waiting time, unnecessary transportation, excess inventory, overproduction, inefficient operations, unnecessary movement, poor quality, and underutilised resources.
8. Resource Utilisation: According to Forbes Advisor (2024), resource utilisation is a measure of how effectively an organisation allocates, manages, and uses its available resources to achieve its objectives over a given period.

1.10 Conclusion

This Chapter has provided an overview of the research by giving an introduction on the problems being faced at Mashwede Holdings' fast-food business especially the unexplained revenue leakage and inefficiencies that have led to poor performance in the business. The background information was aimed at creating understanding on the history of the firm and its current operations. The statement of the problem identified a major issue which is the lack of statistical control systems. This chapter also defined the research objectives and questions among others.

Overall, this chapter provides a foundation for understanding why empirical examination of operational performance is necessary. The next chapter will review relevant literature and theoretical perspectives on operational efficiency, internal control systems, fraud prevention and methods of identifying and measuring revenue leakages. This review will help situate the

study within the existing academic and industry knowledge and identify the research gap seek to address**.**

CHAPTER 2
LITERATURE REVIEW

2.0 Introduction

The chapter offers a synthesis of literature on the subject of inefficiency in operations and leakage of revenue with emphasis on the SMEs that exist in the fast-food sector in an unstable economic environment like Zimbabwe. The objective here is to move beyond isolated studies analysis to form a comprehensive understanding of the relationship between internal and external forces, technological advancement, and organizational skills to impact financial sustainability. The thematic areas are divided into critical components, and only scholarly work published in 2018 or later is used to provide clarity and relevance to the review. It is finally closed by the articulated conceptual framework in which these interdependencies are visually mapped, and the research gap that this study is going to focus its attention on is explicitly stated.

2.1 Theoretical Literature

To form a solid concept of the revenue leakages, a solid knowledge base should be supported by various theoretical approaches, which shed light on various aspects of the issue. In this section, the main theories that define the research on the issue of operational inefficiencies and their economic outcomes are outlined.

2.1.1 Transaction cost economics and Governance failures

An initial prism is Transaction Cost Economics (TCE), which explains organisational inefficiency as a result of transaction costs incurred in organising economic activity (Williamson, 1985). Using the case of fast-food SMEs, the TCE explains revenue leakage as the effect of failed governance, where monitoring, measuring, and enforcing transactions is difficult because the costs of such actions are prohibitive. Asymmetry of information between owners and staff or between the company and suppliers offers potential for opportunism, e.g, under-reporting sales or stealing inventories. The implementation of TCE in the emerging economies should, however, be subtle. According to Khan, Ali, and Hussain (2020), the excessive use of formal controls to reduce these costs in themselves may become a cause of inefficiency, which stifles initiative and destroys trust. As such, although TCE emphasises the importance of having governance, it also warns against too expensive or culturally incongruent control mechanisms.

2.1.2 Integrating Lean Management with Service Quality

The philosophy of lean management that originates in the field of manufacturing is focused on the logical removal of waste in order to enhance efficiency. Lean principles in the service sector, such as fast-food, directly deal with the issues of operational inefficiencies such as overproduction, waiting times and process defects. Combining Lean and the theory of Service Quality is vital. A study by Mukucha, Rootman, and Mazibuko (2019) in the Zimbabwean restaurant market proves that such operational antecedents as the quality of service delivery and ambience are not simply customer satisfaction concerns but core to the service experience. Customer attrition is a direct result of poor service quality, and a type of process waste, which is a large revenue leakage, which is often difficult to quantify. In this way, operational leanness should be fundamentally connected with the provision of a stable quality of services to safeguard revenue flows.

2.1.3 Institutional Theory and Contextual Constraints

The institutional theory does not emphasise the internal processes; it concentrates on the external environment, where the organisations are said to respond to regulatory, normative and cultural-cognitive pressure to achieve legitimacy and survival (DiMaggio and Powell, 1983). This theory is particularly relevant in the case of the firm such as Mashwede Holdings in Zimbabwe. It describes how inefficient practices can be maintained not because of ignorance, but because it is how things are done in a certain institutional situation. The laxity of commercial laws, normative acceptance of informal financial procedures, and cultural perceptions on corporate governance can build an environment where revenue leakages are not exceptional but systemic. Formal control systems are undermined by such institutional weaknesses as Mhlanga (2020) or SIVIO Institute (2024) emphasise in other industries. Nonetheless, an institutional, strict determinist perspective could run the risk of overlooking the agency of organisations. Companies can make strategic choices, which manoeuvre or even transform institutional pressures by being innovative and implementing leadership, something that converges with resilience theory.

2.1.4 Organisational Resilience as A Strategic Imperative

Organisational Resilience (OR) theory is a result of the studies on crisis and volatility and has become central to the research on the performance of firms in the complex environment. OR can be considered as the ability to foresee, plan, adjust, and adapt to gradual changes and

unexpected upsets to survive and thrive (Lengnick-Hall, Beck, and Lengnick-Hall, 2011). Modern scholarship has attempted to rationalise this notion. As an example, in their review, Liang and Li (2024) indicate that, although there is an increase in the use of measurement instruments, the field needs a higher level of psychometric rigour. Modern theories tend to break down the concept of resilience into quantifiable abilities. Grego et al. (2024) suggest a multi-tier assessment model of manufacturing, whereas Pasha et al. (2025) review measurement tools in healthcare in a systematic way, and outline such dimensions as adaptive capacity and recovery. In the case of a fast-food SME, this means that resilience can be constructed intentionally, i.e., through establishing strong and reliable supply chains, embracing an adaptive leadership style, and maintaining financial cushions as well as strong relationships with all stakeholders (social ties), as research shows in African settings (Chivunga et al., 2024). The Resilience theory, therefore, offers the general holistic concept that unites efficient internal work (Lean) with effective external adaptation (Institutional Theory), which is facilitated by good governance (TCE).

2.2 Empirical synthesis

Contemporary Evidence and Trends presents the current evidence and trends in the field. Based on the theoretical backgrounds, this section formulates the modern empirical evidence of several thematically related findings, illustrating the way of how the abstract notions can be applied in real-life business practice and problems.

2.2.1 Application of Data-Driven Decision-Making

The embrace of AI and machine learning in revenue management is a shift in the paradigm of making decisions based on intuition to one based on data. Such technologies have become the focal point in dynamic pricing, demand prediction, and inventory optimization, making the hospitality sector resemble the fast-food sector in that way. Predictive suggestions provided by AI systems are founded on massive, diverse data, such as competitor prices, local events calendars, social media activity, and trends in previous sales. Despite all that, however, industry research advises caution when it comes to viewing AI as a standalone tool. In accordance with the above analysis, AI serves ideally as a powerful tool that facilitates human strategic thinking (Hotel-Online, 2025). One risk associated with AI in this respect is too much automation that may cause either loss of value in brands or non-reflection of unique market psychology through algorithms. Ideally, then, the models should be hybrid, leveraging AI for speed and pattern

recognition, while retaining human management for strategic input, exception handling, and competitive insights.

2.2.2 Technology Adoption Barriers in Resource-Constrained SMEs

Teenagers have been reported to face technology adoption barriers in resource-constrained SMEs. The use of powerful Enterprise Resource Planning (ERP) and artificial intelligence applications by big companies is being rapidly adopted, but the situation in many SMEs that operate in developing economies is quite different. There are major obstacles that are focused on in the empirical literature. They are high initial expenses, a shortage of technical skills internally, unreliable supporting infrastructure (electricity and internet connectivity), and the inability to match the off-the-shelf software solutions with local business operations (Mhlanga, 2020; Makochekanwa, 2025). Many SMEs, such as Mashwede Holdings, therefore, might be operating in a fragmented, manual or legacy system. This is a direct vulnerability in terms of technology, in that the absence of an integrated point of sale, inventory, and accounting information means that timely reconciliation is not possible, obscuring leakages and obstructing financial analysis. Thus, not just the potential of advanced technologies but the practical issues of integrating the right, inexpensive, and strong digital tools in resource-limited conditions should be included in the digital transformation theme.

2.3 Operational Excellence and The Customer Experience

Fiscal results are directly and quantitatively influenced by the operations processes, mostly in the way they impact the customer base.

2.3.1 Relating Service Encounter Quality to Financial Sustainability

The cause-and-effect relationship between the daily operations and revenue is well stablished in the literature on service quality. Mukucha, Rootman, and Mazibuko (2019) in their seminal work offer important empirical data on the Zimbabwe context. In their research, the authors concluded that certain antecedents, including ambience, quality of service personnel and typology of patrons, had statistically significant impacts on the overall service encounter experience. More importantly, this experience later revealed that there was a very strong and significant correlation with re-patronage intention and patronage loyalty. This evidence chain is vital. It proves that even an operational shortcoming (e.g., slow service, bad cleanliness, rude employees) is not only a one-time customer complaint but a direct assault on the prospective revenue streams. Patron loss due to bad experiences is a cannibalistic type of revenue leakage

that cannot be easily tracked in conventional audit frames but has an extensive long-term effect on sustainability.

2.3.2 Direct Cost Drivers: Process Inefficiencies

In addition to customer-facing activities, back-office operational inefficiencies will turn into direct financial expenses. These are common types of Lean waste in fast-food operations. It results in overproduction, and this spoils the perishable goods. Lack of proper inventory control leads to stock-outs (lost sales) and overstocking (higher holding costs and wastage). Poor maintenance of equipment leads to downtime and service delays. Mistake in processing the orders causes wastage and refunding of customers. All these inefficiencies have a direct negative impact on the gross margin on sales. Such continuous operational leakage can be the difference between profitability and loss in an industry with slim margins. The empirical problem faced by SMEs is that the granularity of the data is usually unavailable to determine the cost of these inefficiencies and quantify it so that they can be addressed.

2.4 Developing Strength in Unstable Markets

Global and local crises have served as the pressures that have created the need to develop resilience, and have shifted the strategic emphasis from efficiency to adaptive capacity.

2.4.1 Multidimensional Construct of Resilience

Modern studies do not consider resilience as an abstract characteristic but consider it a multidimensional concept that can be measured and nurtured. Research papers in different industries suggest different measurement systems. Indicatively, a quantitative assessment model can be postulated by Yang et al. (2023) to have a triplet definition of resilience capacities. The study by Grego et al. (2024) is a multi-tier manufacturing resilience framework. This quantification tendency suggests that resilience is a set of particular investable strengths: anticipatory (e.g., market scanning, risk assessment), adaptive (e.g., flexible processes, cross-trained staff) and reactive (e.g. effective crisis response, cash reserves). In the case of a fast-food SME in Zimbabwe, it might mean having more than one supplier to mitigate shortages caused by currency, developing flexible menus to respond to price changes on ingredients, and having operational reserves to respond to unplanned infrastructure outages.

It has been argued that social capital and organisational healing play an important role (Maheshwari and Wolkholtz 267). A new emerging strand in the resilience literature is the focus on the softer aspects of resilience, which is the human component of resilience.

Organisational healing is not the same as resilience, but it is an active, social process, which involves the repair of functioning and restoration of wellbeing following a setback (Kahn et al., 2018; Powley and Piderit, 2008). A high-profile incident, such as a food safety outbreak in a fast-food environment, involves not only the need to fix the procedures but also to heal deliberately, to regain trust between and among the employees, as well as the clients. Intimately connected is the contribution of social capital and social ties. There has been research in the African business environment that would indicate that good, trusting relationships with suppliers, local communities, and even competitors can be a very vital element of resilience (Chivunga et al., 2024). These networks are sometimes able to offer informal credit or disseminate market information, or offer temporary support during shocks, which formal contracts do not do, and shield the firm against external shocks.

2.5 Literature Synthesis and Critical Research Gap

The produced literature shows a developed and interrelated perception. The monetary symptom of a systemic condition is known as revenue leakages. This situation is caused by internal operational failures (waste, poor service), enhanced by external institutional demands, and maintained by a lack of adaptive capacity. On the other hand, the path to revenue integrity is multifaceted: it consists of the strategic implementation of the right technology that would allow visibility and control, an unrelenting commitment to operational excellence that is customer-centric to ensure the safety of the revenue base, and the active development of internal and external resilience features to overcome the turbulence.

There is a persistent gap between these themes. Although there is too much research on digital transformation in large companies, the quality of service in stable markets, and resilience models in the industrial sector, there is a lack of combined studies related to fast-food SMEs in hyperinflationary African economies. In the literature, there is no holistic sense of how such a business can practically incorporate the use of affordable digital tools in data integrity, an efficient design process that is adaptable to localised constraints, and the use of social capital to ensure resilience in all of this through an appropriate governance frame. The current research has a tendency to study these factors separately. Thus, in this paper, the gap to be addressed is to create and implement a combined framework in the particular case of Mashwede Holdings, which will provide a model that links the strategic levers of modernisation, government, and resilience to the final result of sustainable financial performance.

2.6 Integrated Conceptual Framework

The following conceptual framework (Figure 2.1) integrates the theoretical and empirical insights reviewed, depicting the dynamic system that determines revenue integrity for fast-food SMEs in volatile economies. The diagram is explicitly designed to fit within the margins of an A4 page.

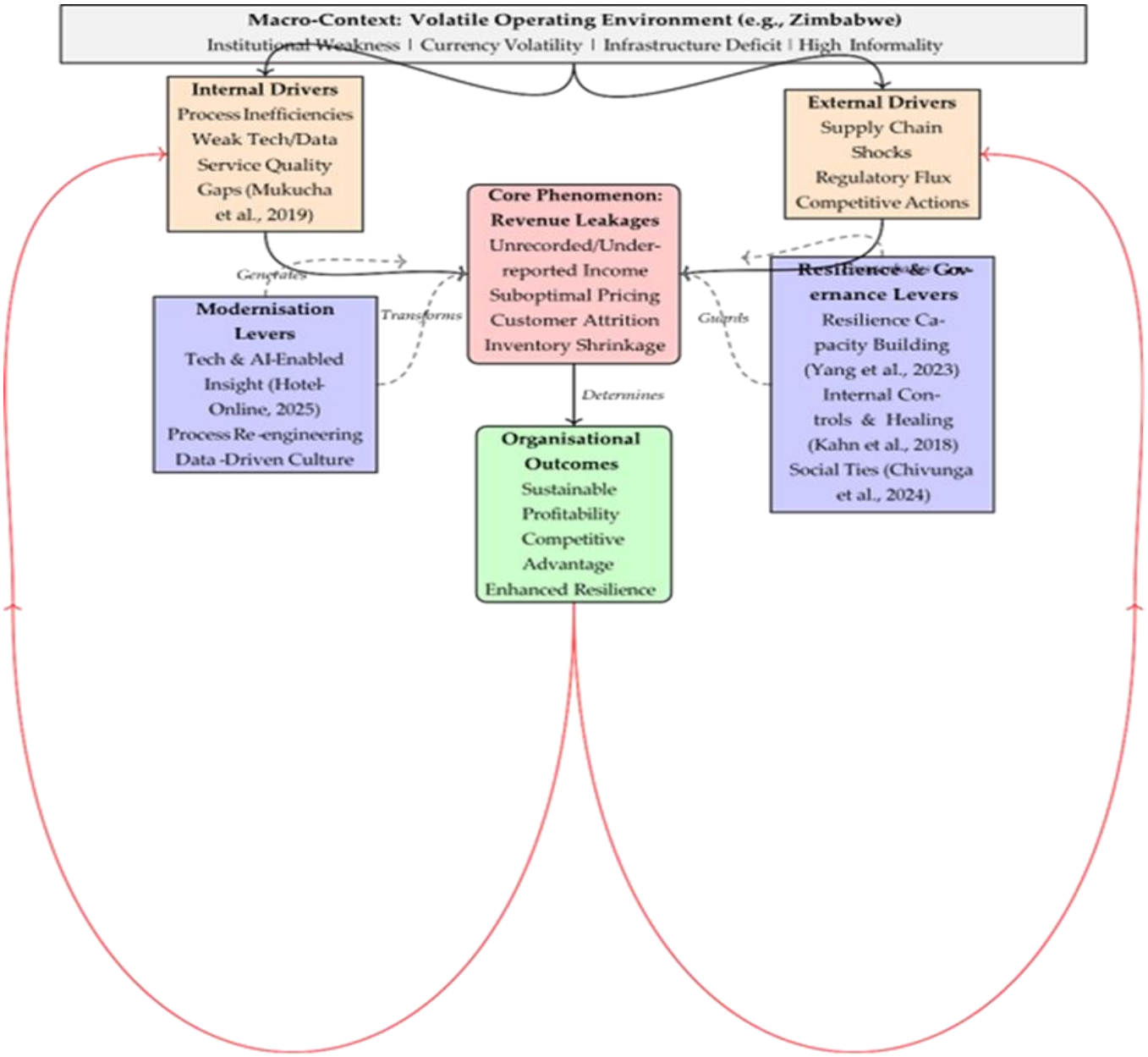

Figure 2.1: An Integrated Conceptual Framework for Analysing Revenue Integrity in Fast-Food SMEs within Volatile Economies

2.6.1 Framework explanation

The framework offers a dynamic systems perspective of the challenges that Mashwede Holdings is going through. The whole model is incorporated within an unstable Macro-Context, which directly influences the character of the Internal and External Drivers. The major causal chain depicts the convergence of these drivers to produce the Core Phenomenon of Revenue Leakages.

The new element of the framework is the presentation of two groups of strategic moderating levers. Modernisation Levers, including the implementation of suitable technology in terms of insight and re-engineering of core processes, are shown to achieve remedies on the internal drivers and transform the core leakage processes. At the same time, Resilience & Governance Levers that imply the creation of quantifiable resilience capabilities (Yang et al., 2023), organisational healing (Kahn et al., 2018), and the promotion of social connections (Chivunga et al., 2024) shield the firm against external shocks and protect against leakages. The joint impact of these levers to dilute the causal pathway is what defines the Organisational Outcomes. The systemic trap can be explained by the critical red Reinforcing Cycle, which is that bad performance uses up financial and managerial resources, leaving the firm unable to invest in the same levers of Modernisation and Resilience which would lead to improvement, and instead locking the firm in a vicious cycle of decline. To escape this circle, there is a need to have a concerted effort on investing in both sets of levers simultaneously in an effort to set a virtuous cycle of growth, stability, and increased resilience.

2.7 Conclusion

This entire literature review has integrated relevant theoretical and empirical studies to develop a intergrated conceptualisation of the phenomenon of revenue leakage in fast- food SMEs in fluctuating economies. It has been established that the nature of leakages cannot be described as accounting failures, but a financial expression of a complicated system of operational waste, gaps in governance, pressures in the context of the environment and a lack of adaptive capacity. The chapter has critically analysed how digital tools can transform revenue management, the direct and evidence-based connection between service quality and retaining revenue and the value of establishing systematic and multi-dimensional resilience and healing potentials. The suggested conceptual framework offers an inclusive guide towards the diagnosis of the systemic issues of Mashwede Holdings. It stresses the need for a two-pronged approach that

incorporates technological and process modernisation with firm governance and context-driven resilience development. The last and most important lesson is the necessity of finding and disrupting the negative feedback loop, which may trap companies in the cycle of sustained underperformance.

Chapter 3 will elaborate on the research design with which the empirical research of this framework will be conducted in the specific operational and financial environment of Mashwede Holdings.

CHAPTER 3
RESEARCH METHODOLOGY

3.0 Introduction

This chapter outlines the research design that was used to examine the issue of revenue leakages and inefficiencies in the operations of fast-food outlets owned by Mashwede Holdings. The sources of revenue leakages, effectiveness of operational practices, and improvement strategies were organised in such a way that they were the subject matter of Research Question 1, Research Question 2, and Research Question 3, respectively. The chapter provides the research philosophy, research design, data source, data collection methodology, sampling approach, definition of variables, the analytical models to be applied, diagnostic measures, software analysis, and ethical issues. The methodology will ensure that the research is both rigorous and clearly laid out, and has the potential to produce valid findings, which may be applied either theoretically or practically at Mashwede Holdings.

3.1 Research Philosophy and Design

The positivist research philosophy is used in the research because operational inefficiencies and revenue leakages are considered to be objective phenomena that may be observed, measured, and analysed (Saunders et al., 2019). The use of the positivist approach in the research is appropriate since the researchers will operate with observable variables (revenues, service time, and percentages of waste), trying to establish a relationship between the variables and results. It corresponds with the aim of the research since the aim is to determine some specific factors of inefficiency and correct them.

The research design is a quantitative, explanatory, and correlational one. It is also explanatory in the sense that it tries to uncover the difference in the financial performance in terms of the operational variables. It is correlational as it studies the association between operational metrics (independent variables) and financial results (dependent variables) (Creswell, 2018). The design will allow studying the trends within the outlets of two or more outlets over a period of time; thus, statistical analysis can be done, and the factors that contribute most to revenue leakages and inefficiencies can be identified.

3.2 Data Sources and Collection Methods

The research involves a mixed data approach where the primary use of secondary data, which is in structured forms, is used, and in cases where it is important, contextual primary data is

used. The secondary data were obtained from the internal systems of Mashwede Holdings, which are mainly the Pastel Evolution accounting software and Odoo operational management platform. The duration from January 2020 to December 2023 (which was selected due to the inclusion of both pre-pandemic and post-pandemic operations) was chosen for data collection related to post-pandemic recovery phases, thereby ensuring that the whole process is covered completely.

3.3 Target Population and Sampling Techniques

Process of Data Extraction and Data Cleansing: The financial information, like monthly turnovers, gross profit percentage figures, and expenditure distribution details, is extracted in the form of CSV files from Pastel. Operational data like customer service times, number of customers per shift, employee shift schedule, inventory report application frequency, etc., have been obtained through the use of Odoo. The process of data cleansing has been performed systematically, and these include: (1) removal of any duplications found; (2) validation of the figures based on monthly audits; (3) detection and handling of outliers based on the use of the interquartile range method; (4) filling of missing values through time series interpolation. This was a strict procedure that assured the reliability of the data to be used in further analysis.

Triangulation was done to improve the data validity, where electronic records were compared to the hand-kept shift records and weekly management summaries of a sample of 10% of the data points. Any discrepancies of over 5% were corrected by talking to outlet managers.

The target group will consist of all fast-food stores managed by Mashwede Holdings in Harare, Zimbabwe, namely, the Chicken Mash and Mash Pizza brands that have existed since at least January 2020. The sample also consists of 12 outlets (8 Chicken Mash, 4 Mash Pizza) that operate throughout Harare during the study period.

The census method was used, and all 12 outlets were used in the analysis. This method was grounded in three points: (1) the size of the population is manageable to conduct a thorough analysis, (2) the outlets have different operating conditions with different challenges, and (3) the study will offer outlet-specific information, but not generalizable in industries (Etter et al., 2018). The period includes 48 months (January 2020-December 2023), which allows for enough observations to conduct a longitudinal analysis and covers both stable and unstable economic times of Zimbabwe in recent history.

3.4 Description of variables and Expected relationships

The operationalised variables of the study are based on the operations management theory and adapted to the reality of the fast-food industry, Mashwede Holdings (Heizer et al., 2020). Table 3.1 presents the comprehensive structure of the variables, including measurements, theoretical foundations, and anticipated directional relationships.

3.5 Analytical Model and Justification

To comprehensively address the research questions, two separate multiple linear regression models are specified. This dual-model approach allows for examining different aspects of financial performance as articulated in the research objectives (Gujarati, 2022) as summarised in Table 1.

Table 3:1: A summary of variables under study

Variable	Measurement	Theoretical Basis	Expected Relationship
Monthly Turnover (Y_1)	USD (Log-transformed)	Revenue management theory	Dependent variables
Gross Profit (%) (Y_2)	Percentage	Profitability analysis	Dependent variable
Average Service Time (X_1)	Minutes (per transaction)	Service operations theory (Johnston & Clark, 2021)	Negative impact on turnover
Staff Efficiency Ratio (X_2)	Output per labour hour	Workforce productivity models	Positive impact on GP (%)
Customer Count (X_3)	Numbers per month	Demand Capacity Theory	Positive impact on turnover
Inventory Waste % (X_4)	Percentages of stock wasted	Lean operations principles (Womack & Jones, 2020)	Negative impact on GP(%)
Cash Shortage Incidents (X_5)	Numbers per Month	Internal Control Theory	Negative impact on Turnovers
Order Accuracy Rate (X_6)	Percentages of correct orders	Service Quality Framework	Positive impact on Turnovers
Energy Cost Ratio (X_7)	Energy cost/ Revenue percentages	Resource Efficiency Models	Negative impact on GP%

MODEL1: REVENUE PERFORMANCE MODEL

$Log(\text{Turnover}_i) = \beta_0 + \beta_1(\text{Service time}_i) + \beta_2(\text{Customer count}_i) + \beta_3(\text{Cash shortage}_i) + \beta_4(\text{Order accuracy}_i) + \varepsilon_i$

MODEL 2: PROFITABILITY EFFICIENCY MODEL

$GP(\%)_i = \beta_0 + \beta_1(\text{Staff efficiency}_i) + \beta_2(\text{Inventory wastage}_i) + \beta_3(\text{Energy cost Ratio}_i) + \varepsilon_i$

Where $\log(\text{Turnover}_i)$ represents the natural logarithm of monthly revenue for outlet $_i$(log transformation addresses skewness); $GP\%_i$ represents gross profit percentage; β_0 is the intercept; β_1 to β_4 are coefficients to be estimated; and ϵ_i is the error term.

Model Justification: Regression analysis has been chosen as it estimates the magnitude and directional relationship between the operational variables and the financial outcomes, and as a result, to identify the most statistically significant predictors on the performance can be identified (Hair et al., 2019). The division into two models is because revenue generation and profit retention could be affected by various operational factors. Model 1 concentrates on the front-end service delivery determinants of customer transactions, whereas Model 2 is concerned with the back-end efficiency determinants of cost management.

3.6 Pre-Tests and Diagnostic Check of the Model

Before doing regression estimation, extensive diagnostic tests are performed to ensure the validity and robustness of the model (Wooldridge, 2020). All the analyses will be done on the RStudio program.

Normality: The Shapiro-Wilk test will be used to assess the normality of the residuals. When non-normal residuals are detected, logarithmic or square root transformations will be applied to improve normality.

Multi-collinearity: Multi-collinearity among independent variables will be examined using the Variance Inflation Factors (VIF). Variables with VIF greater than 5 will be considered problematic and will either be removed or addressed through stepwise backward elimination.

Heteroskedasticity: The Breusch-Pagan and White tests will be employed to test for heteroscedasticity. If non-constant variance is detected in the residuals, Huber-White robust standard errors will be used to ensure consistent and efficient estimates.

Autocorrelation: The Durbin-Watson statistic will be a test of serial correlation in the residuals, particularly in panel data. Where significant autocorrelation is detected, the first-difference transformation will be applied to correct the issue.

Stationarity: For time-series components, stationarity will be tested using the Augmented Dickey-Fuller (ADF) test. Non-stationary variables will be differenced to achieve stationarity before inclusion in the model.

3.7 Model Fit and Tests of Validity

Several validation methods are employed to measure model performance, as they are reliable and predictive (Tabachnick and Fidell, 2019). Goodness-of-Fit Measures: Adjusted R^2 will be used to assess explanatory power, with values above 0.6 considered high in the context of operational research. The F-statistic will also be used to test the significance of the overall model ($p = 0.05$ threshold). Variable significance will be tested using individual coefficient t-tests.

Accuracy of prediction: Root Mean Square error (RMSE) and the Mean Absolute Percentage Error (MAPE) will be used to measure predictive errors, and a value below 15% of prediction errors will be deemed acceptable for financial forecasting models.

Cross-Validation: The data will be divided into training (January 2020- June 2023) and testing (July- December 2023) subsets based on their time. It is an out-of-sample validation technique that checks the performance of a model on unknown, more recent data, increasing the generalizability (James et al., 2021). Further, k-fold cross-validation ($k = 5$) will also be done to avoid overfitting.

3.8 Ethical Considerations

This study adheres to high ethical standards in the course of the research (Resnick, 2020). Data Confidentiality and Anonymization: All the data at the outlet level were anonymised with coded identifiers (OUT01–OUT12) before the analysis. As per the Data Protection Act (2021) of Zimbabwe, no personally identifiable information of employees was accessed or stored.

Institutional Consent: The written consent has been received from the Board of Directors and the Chief Operations Officer of Mashwede Holdings. A data sharing contract indicated that it was to be used for academic purposes, with a clause for anonymised reporting.

Academic Integrity: All external sources were referenced using that Havard style. The methodology was transparent throughout the analysis, with all data transformations and analytical decisions recorded to make the analysis reproducible.

Beneficence and Non-maleficence: The results are reported constructively and include improvements at the system level, and not in an individual manner. The study will be conducted to advance the sustainability of the organisation and the welfare of the employees by providing better operations.

3.9 Conclusion

This chapter presents detailed methodology on how to address the investigation of revenue leakages and operational inefficiencies at Mashwede Holdings. The quantitative and explanatory design, which was based on 12 outlets and 48 months of secondary data, was carried out with the help of positivist philosophy. Theoretically based operationalisation of key operational and financial variables was made, and two regression models were formulated to test different financial performance facets. Analytical integrity was achieved by rigorous diagnostic testing, validation processes, and ethical procedures.

The methodology is directly responsive to the research objectives because: (1) it allows determining the sources of revenue leakages using Model 1, (2) it determines the operational efficiency using Model 2, and (3) it offers empirical grounds for the improvement strategies. Although it is important to note that regression analysis proves a correlation and not causation, the technique is very strong in making informed decisions.

Chapter 4 will provide the empirical findings of this analysis, which will commence with the descriptive statistics, then the regression findings, the results of the diagnostic tests, and the validation measures. The analysis will be reflected within the frames of the operational issues of Mashwede Holdings and the leadership of the fast-food sector in Zimbabwe.

CHAPTER 4

PRESENTATION, ANALYSIS AND DISCUSSIONS

4.0 Introductions

The chapter provides a detailed analysis of revenue leakage and operational inefficiencies in the fast-food restaurants in Mashwede Holdings in the Chicken Mash brand and the Mash Pizza brand. The analysis is based on secondary sources obtained through Pastel Evolution accounting software and Odoo operational management platform, and includes the data used in the analysis between the years January 2020 and December 2023. This chapter is structured to answer three research questions: (1) what are the sources of revenue leakages; (2) what is the level of operational efficiency; and (3) what is the empirical evidence to support improvement strategies. The order of events in the paper is chronological, starting with the demographic analysis of the outlets, followed by descriptive statistics, diagnostics, regression analysis, and validity tests, and these results have been interpreted in relation to operations management theories and the fast-food industry in Zimbabwe.

4.1 Descriptive Analysis of Outlets' Characteristics and Operational Demographics

4.1.1 Outlet Profile and Brand Distribution

The sample for this research was drawn from all the operational locations of Mashwede Holdings in Harare, which includes eight Chicken Mash outlets (66.7%) and four Mash Pizza outlets (33.3%). The above distribution of samples indicate that the company has put emphasis on the chicken fast food industry which has remained dominant in Zimbabwe's QSR industry.

Table 4.1: Outlet Profile and Categorisation by Brand and Zone

Outlets ID	Brands	Zone	Size	Years Operations
OUT01	Chicken Mash	CBD	Large	8
OUT02	Chicken Mash	Northern	Medium	6
OUT03	Chicken Mash	Western	Medium	6
OUT04	Chicken Mash	Eastern	Small	5
OUT05	Chicken Mash	Southern	Medium	6
OUT06	Chicken Mash	Industrial	Large	7
OUT07	Chicken Mash	Mall	Large	7
OUT08	Chicken Mash	Residential	Small	5
OUT09	Mash Pizza	CBD	Medium	4
OUT10	Mash Pizza	Northern	Medium	4
OUT11	Mash Pizza	Mall	Large	4
OUT12	Mash Pizza	Eastern	Small	3

The placement of the outlets has proved to be appropriate as per Table 4.1 below which shows that the outlets have been placed in some of the prominent business and residential areas in Harare. As regards size classification, there are four large (33.33%) outlets, five mediums (41.67%) outlets, and three small outlets (25%). The length of tenure of operation is three to eight years, with Chicken Mash outlets going through longer tenures of operation, as observed by the author of this paper, Mashamanda (2025), when discussing the Zimbabwean fast-food businesses. The geographical coverage of the CBD area, Northern, Western, Eastern, Southern, Industrial, Mall, and Residential areas will guarantee that the analysis will cover a wide range of customers, foot-traffic trends, and location-specific operational issues.

4.1.2 Operational Performance Metrics Summary

The examination of data on the operational results over the 48 months showed that there was a significant change in the key performance indicators. Table 4.2. Table 4.2 shows the descriptive statistics of all variables involved in the research.

Table 4.2: Descriptive Statistics of Operational and Financial Variables (N=576 outlet-months)

Variables	**Mean**	**Standard Deviation**	**Minimum**	**Maximum**	**Skewness**	**Kurtosis**
Monthly Turnovers (USD)	87030.73	59577.84	8529.34	252193.77	0.82	-0.34
Gross profit (%)	33.74	3.68	31.00	46.19	1.32	0.63
Average Service Time (mins)	9.26	3.42	3.02	17.11	-0.01	-1.07
Customer Count (Monthly)	5320.58	2760.06	1057	12576	0.70	-0.36
Inventory Waste (%)	7.31	3.13	2.00	14.00	0.09	-1.13
Cash Shortage Incidents	3.15	1.82	0	11	0.57	0.34
Order Accuracy (%)	91.37	3.76	85.00	97.96	0.02	-1.24
Energy Cost Ratios (%)	5.44	1.42	3.01	8.00	0.01	-1.13

The descriptive statistics reveal some interesting trends. The average turnover of USD 87030.73 shows significant variability, indicating high performance variation between outlets. This fluctuation coincides with the results of the research by Heizer et al. (2020), who reported that variations in operations tend to account 60-70% of the performance variation in multi-unit food service operations. Its gross profit percentage is average at 33.74%, and this is less than the industry average of 35-50% in efficient fast-food operations, implying systemic issues with profitability that require immediate management action.

Service time with a mean of 9.26 minutes is more than the target range of 5-7 minutes as suggested in the literature of operations management, which is evidence of possible capacity or process-flow limitations. This increased turnover time can add to the length of the queues and lost sales during peak times. The average inventory waste rate of 7.31% is above the 3-5% standard of well-operating fast-food organisations (Heizer et al., 2020), which is a huge leak of cost and directly affects the bottom-line profitability.

Of special interest is the mean cash shortage incidents (3.51 per month), which imply a direct financial loss as well as possible manifestations of wider internal-control weaknesses. All the variables have skewness and kurtosis values within acceptable limits (between -2 and +2), indicating that their distribution is approximately normal and can be analysed using parametric methods. Still, cash shortages have a positive value of skewness (0.57), meaning that there is a concentration of lower values with the tail of high-incidence outliers.

4.2.3 Comparative Analysis by Brand and Outlet Size

To explain the variation of performance in different operational situations, a comparative evaluation was carried out based on the categories of brand and the size of outlets. Figure 4.1 illustrates the relative brand performance measures.

Table 4.3: Comparative Performance Metrics by Brand

Brand	Chicken Mash	Mash Pizza
Monthly Turnovers($)	88709.42	83673.34
Gross Profit(%)	33.7	33.9
Inventory Wastage(%)	7.58	6.81
Average Service time(mins)	9.25	9.29
Energy Cost ratio(%)	5.47	5.38
Order accuracy(%)	91.1	91.9

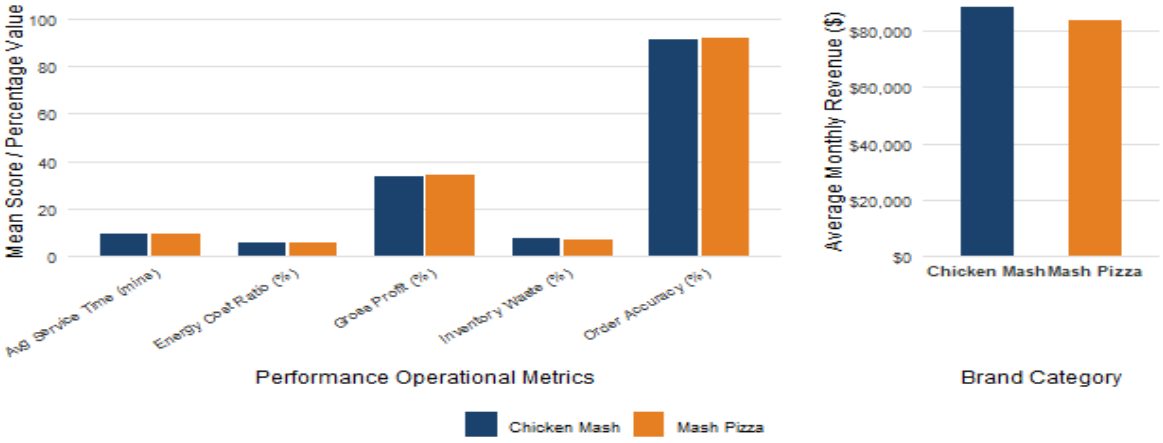

Figure 4.1: Comparative Performance Metrics by Brand

The performance profile is different when compared. The lower absolute turnover of Mash Pizza (mean $83673.34 compared to $88709.42) in Chicken Mash outlets can be explained by their greater size and length of their existence in the market.

The analysis further shows that Mash Pizza registered a slightly higher gross profit margin (33.9%) than Chicken Mash (33.7%). Gross profit reflects the business ability to manage direct operational costs while at the same time making income. Despite this small difference, a higher gross profit ratio indicates that Mash Pizza is managing its operations relatively efficiently, whereas lower gross margin observed in the Chicken Mash may indicate the presence of revenue leaks that could be resulting from high production costs, wastage, stock losses among other factors.

Inventory waste refers to products that have been wasted due to overproduction, spoilage, theft or improper inventory handling processes. Based on the analysis, it is clear that the percentage of inventory wastage in Chicken Mash (7.58%) is higher than that in Mash Pizza (6.81%). This implies that Chicken Mash experiences inefficiency during the management of its inventory. Inventory wastage has negative implications on profitability since resources will be used but nothing will be produced. Consequently, this could be an indication of revenue leakage that could be occurring in the business operations. There could be various reasons for the existence of inventory wastage such as inefficient stock control mechanisms, poor storage facilities, incorrect estimation of demand among others.

Average service time reflects the effectiveness of operations in terms of how fast things are done. The results reveal that Mash Pizza registered slightly higher average service time (9.29 minutes) compared to Chicken Mash (9.25 minutes). However, this slight difference is insignificant and cannot affect customer experience. Long service times have the tendency of increasing customer complaints, reducing sales volume and also decreasing customers turnovers.

The energy cost ratio is the percentage of operating costs taken up by energy costs. According to the results, Chicken Mash registered slightly higher energy cost ratio (5.47%) compared to Mash Pizza (5.38%). Higher energy cost could be an indicator of inefficiency during the use of equipment.

Order accuracy reflects the extent to which the orders made for clients were accurately handled and packed. In this regard, the results reveal that Mash Pizza had higher order accuracy (91.9%) compared to Chicken Mash (91.1%). Order accuracy is very important since wrong order results in product remaking, customer complaints, refunds, increased wastage and loss of customer loyalty.

In accordance with the findings, these results confirm the research findings provided by Smith (2021) indicating that recent operations adopt modern management practices and improved operational designs. From table 4.3 and figure 1.4, it is evident that there was the difference in gross profit between Mash Pizza and the lesser turnover implying that profit maximization strategy may need a different approach to that used in revenue maximization.

In conclusion, the analysis highlights that inefficiencies in operations including inventory wastage, order inaccuracy and high operating costs are major sources of revenue leaks. Brands with better operational controls managed to improve profitability.

Table 4.4: Performance Metrics by Outlet Size Category

Size	**Large**	**Medium**	**Small**
Monthly turnover($)	123202.80	80711.23	49333.79
Gross profit(%)	33.96	33.81	33.35
Average service time(minutes)	9.37	9.69	8.40
Inventory waste(%)	7.48	7.10	7.48
Order accuracy(%)	91.78	91.30	90.94
Customer count	7571.20	4929.70	2971.22
Cash shortages	3.02	3.29	3.10
Energy cost ratio(%)	5.41	5.44	5.50

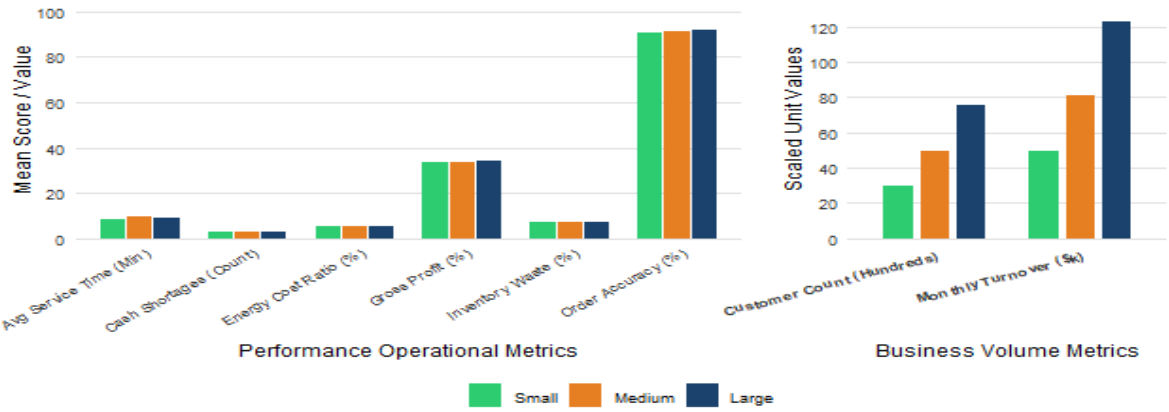

Figure 4.2: Comparative Performance Metrics by Size

Further analysis was conducted based on the outlet sizes which are categorised into large, medium, and small outlets. From the result obtained, there is significant variability in monthly turnover with respect to the outlet sizes. The performance analysis based on the outlet size indicates that larger outlets generated the highest spatial productivity of $123202.80, medium outlets of $80711.23, while smaller outlets generated an average of $49333.79. The results indicate that outlets have a significant impact on the revenue generation ability. Large outlets seem to take advantage of high traffic and large operational capacity to produce sales. Even though larger outlets produced high revenue, their larger scale might increase the risk of operational leakages due to poor control mechanisms.

The gross profit margin is the highest in larger outlets at 33.96%, followed by the medium outlets at 33.81%. However, small outlets have the lowest gross profit margin at 33.35%. High gross profit margins could be due to scale effect, strong purchasing power and better

operational coordination. The low gross profit margin in smaller outlets might be due to operational inefficiency, reduced sales and high operational costs.

In the aspect of service delivery, the median outlets exhibited the highest average service time at 9.69mins compared to the large outlets which took the lowest at 8.40mins. High service time indicates operational inefficiencies that might impact negatively on customer satisfaction. Inventory levels were relatively high in both categories. Small outlets exhibit high inventory ratio of 7.48% as compared to the medium outlets having low inventory ratios of 7.10%. High inventory waste is an indicator of weak stock control and directly contributes to revenue leakage.

Large outlets achieved the highest order accuracy at 91.78%, an indicator of sound operation control and high-quality services. Small outlets recorded low order accuracy rates of 90.94%. This indicates poor operation coordination and lack of quality management. Cash shortages are relatively high in medium outlets at 3.29 as compared to other sizes. This implies that the medium outlets are vulnerable to poor cash handling and management. Large outlets manage large volumes of transactions yet they have good cash handling skills and financial internal controls. Energy efficiency is high in small outlets with a high energy cost ratio of 5.50% compared to the large outlets which had the least ratio at 5.41%. This indicates efficiency in energy use due to economies of scale.

In conclusion, the results reveal that inventory waste, cash shortages, service delays and inaccurate orders contributed largely to revenue leakages. Operation inefficiencies are common in medium and smaller outlets as compared to larger outlets.

4.3 Temporal analysis of performance trends (2020-2023)

4.3.1 Monthly Turnover Evolution

The four-year period of the research has had major economic instability in Zimbabwe, which includes currency reforms and inflationary strains. Figure 4.3 is used to demonstrate the movement of the normalised average monthly turnovers between 2020 and 2023. The results show the noticeable fluctuations in revenue performance over the study period, indicating changes in operational conditions and business performance.

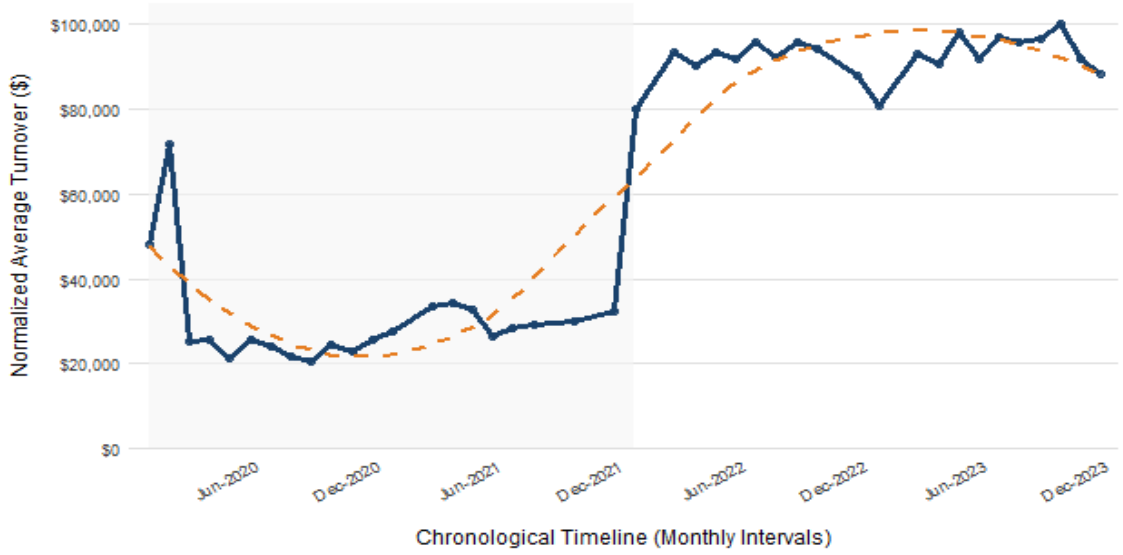

Figure 4.3: Evolution of Average Monthly Turnover (2020-2023)

It is possible to conclude that the performance of turnover shows a number of instabilities, especially during the early stages of data gathering. In particular, the average turnover showed a sharp fall during 2020, when the level went down significantly after having peaked. Such a fall may be explained by possible inefficiency in the operational activities that impacted on the revenue-generating capacity. Moreover, it is important to note that the low levels of turnovers for most of the year may be attributed to the impact of the COVID-19 pandemic on the performance of the business. During the transition from late 2020 to 2021, the turnover remained relatively low although gradually stabilizing. As can be seen, a slight improvement took place, which implies that the company began addressing operational problems and improving in its response to the market conditions. It should be mentioned that the increase in the performance during that period may be linked to the lifting of the lockdown restrictions and adaptation measures introduced by the company.

As it is stated, there has been a significant upturn around early 2022, as the turnover rose substantially from $40 000 to approximately $80 000, moving towards $90 000 – $100 000. It can be attributed to the fact that the nominal figures need to be understood in the light of what has been stated by Gujarati and Porter (2022): competences should be analysed carefully. An upward trend of the business means improved efficiency, high customer activity and effective revenue-retention mechanisms, as it happened during the post-pandemic period. During 2020 until 2023, the turnover remained relatively stable, though there were some ups and downs.

Stability during that period shows an improvement in business performance and effectiveness of the control mechanisms used. These ups and downs can be explained by inefficient operational processes such as inventory spoilage, lack of cash flow, delayed services or customer demands changes.

Thus, it is possible to state that there is a certain trend of growing revenue of the organization over time in spite of the negative influence of the COVID-19 pandemic**.**

4.3.2 Seasonal Patterns and Anomaly Detection

To decouple the operational trends in macroeconomic factors, a seasonal analysis approach was conducted. The empirical findings present a longitudinal analysis from 2020 to 2023 across three critical performance metrics: Monthly turnovers, Gross Profit margin and Inventory waste ratio. These metrics collectively illustrate the financial health and operational vulnerability within the fast-food outlets.

Seasonal patterns analysis of monthly turnovers

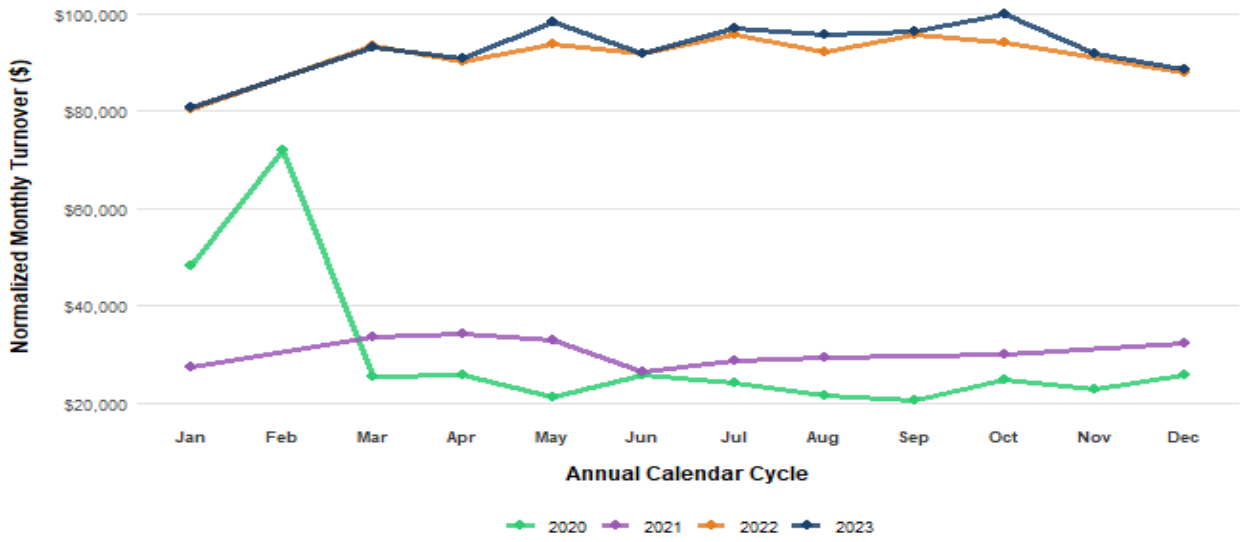

Figure 4.4: Seasonal Patterns of monthly turnovers (2020-2023)

The 2020-2023 data exhibit significant volatility with a very frustrating and systematic fall at the end of December. Such a pattern is a big warning sign for any fast-food restaurant because in that month there must be an increase in sales. The regular downfall indicates heavy revenue leakages, and thus the outlets continue losing clients during the holidays due to their mistakes. The 2020 sales demonstrate what happens to the company during the crisis under a rigid business model. Despite the successful February with the sales figure of

approximately $70 000, the outlet has a steep decline in its sales, which fall to $20 000 in March and remain the same throughout the rest of the year due to lockdowns. It is a sign of low flexibility because the outlet has failed to use delivery apps effectively. However, sales make a huge leap in December and January of 2021.

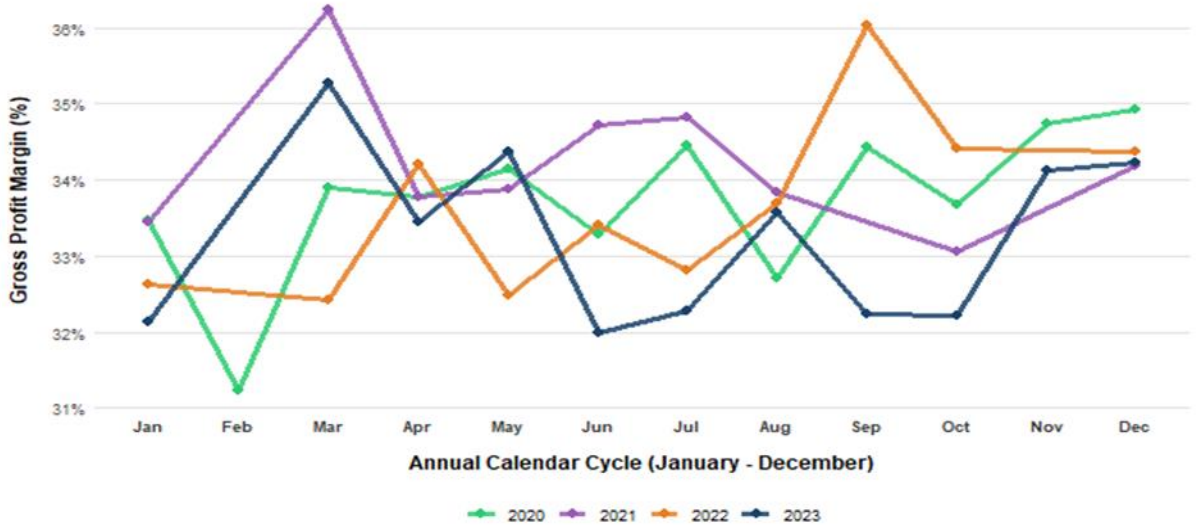

Figure 4.5: Seasonal Patterns of monthly Gross profit (2020-2023)

These gross profit margins experience wild swings from 31% to 36%, with shocking instances where gross profit margins become worse during months with high sales. This inconsistency definitely suggests the existence of internal revenue leaks. With higher sales failing to improve gross profit margins, this can only mean that money is being lost, possibly through cash or stock theft. In 2020, gross profit margins took a sharp dive to fall to 31% in February and continued fluctuating throughout the entire year. With the disruptions caused by the coronavirus pandemic in global supply chain, the restaurants found themselves unable to control ingredient prices from their suppliers. Unable to exercise control over the rising prices, they had no choice but to bear them. By 2023, a critical issue with operations had become obvious with margins plunging from the peak of 35% to depressing levels in June to October.

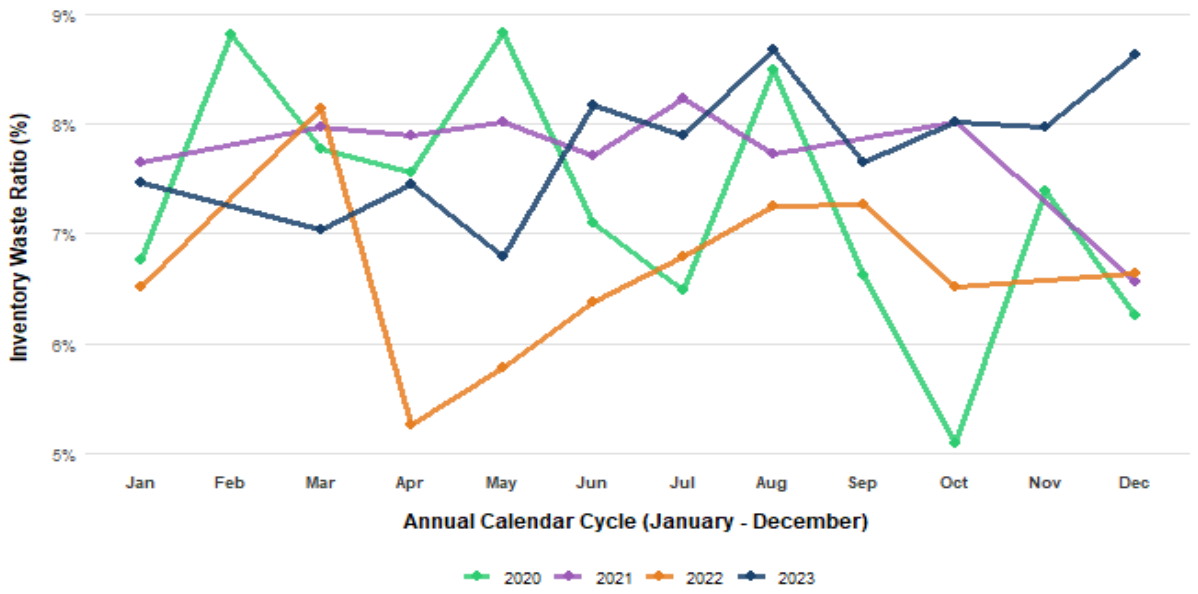

Figure 4.6: Seasonal Patterns of monthly waste ratio (2020-2023)

The Inventory Waste rate varies wildly from 5% to 9%. Such a volatile rise occurs at a time of poor sales, which confirms that store managers stick to their old order policies instead of using current sales information. The Order of too many perishable items in a period of low demand results in spoiled produce and loss of money. For example, in 2020, Waste reached 9% at the end of May due to the pandemic quarantine measures. With the restrictions suddenly preventing any customer flow, the company had no choice but to dump huge quantities of expired inventory because of the rigidity of its supply chain.

Nonetheless, those peaks in turn-over in 2020 have demonstrated a steady increase in percentage of average inventory waste, suggesting that demand forecasting and production planning issues occur in times of large demand. This finding corroborates the assertion made by Womack et al. (2020), according to which waste is linked to volatility in volume of service in food-service firms. Despite all the hardships, fixed costs remained unchanged, including rent and wages for employees.

4.3.3 Gross Profit Percentage Distribution

Distribution of percentages of gross profits across all observations is given in Figure 4.7 with an emphasis on the distribution and the outliers among the observations

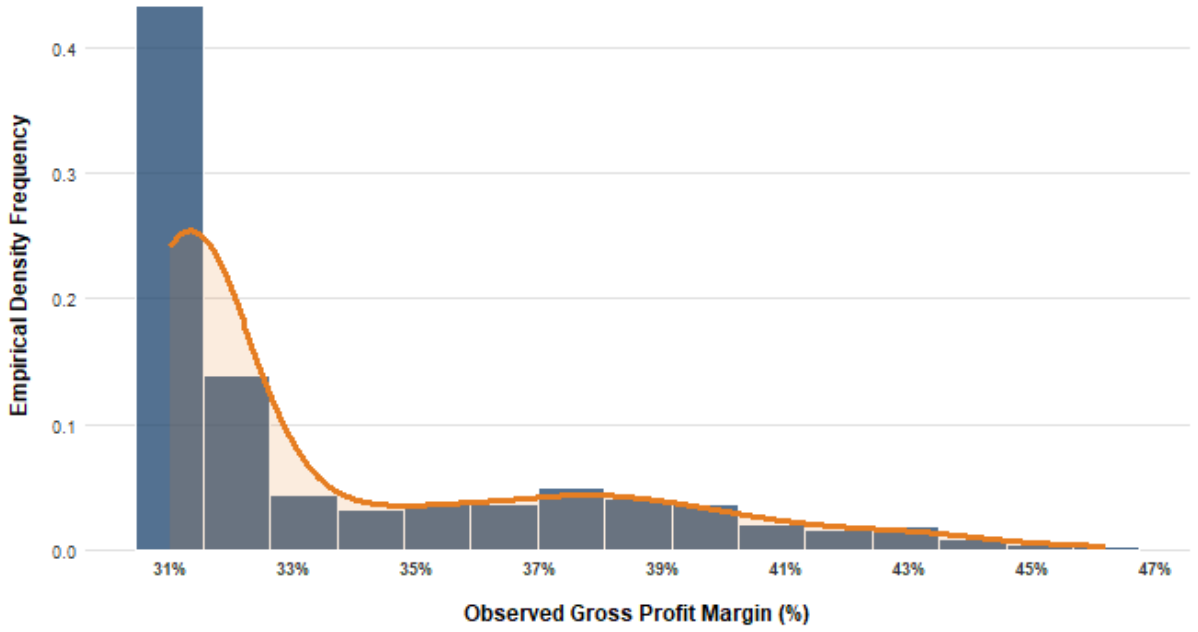

Figure 4.7: Gross Profit Percentage Distribution

In other words, the histogram reveals the low margin dilemma of the gross profit margins. The chart is highly right-skewed and includes a large spike located within the range from 31% to 33%. Hence, it could be stated that the outlets were making their minimal profit margin for most of the period. The sudden decline in profit margins just after 33% indicates that achieving a higher level of gross profit margin was an extremely difficult task. Moreover, the existence of a thin tail extending to 43% confirms that the outlets were capable of being highly efficient, yet they lacked consistency. Under normal conditions, a properly functioning fast-food outlet with strict portions and no waste should have had a bell-shaped curve centred around 36%-37%. On the contrary, the fact that the data is heavily concentrated near 31% suggests a significant problem – leakage of funds. It means that when sales increase, the costs increase uncontrollably (e.g., food wastage, employee meals).

4.3.4 Outlier Analysis Results

The outlier analysis, which was used through the interquartile-range approach, detected nine outliers 1.74% of the overall) in gross-profit percentage as described in Table 4.5

Table 4.5: Outlier Analysis Results for Key Variables

Variable	Lower bound	Upper bound	Outlier count	Outlier (%)
Monthly Turnover	-97452.14	261623.02	0	0.00
Gross Profit	23.7	43.4	10	1.74
Average Service time	-2.28	20.9	0	0.00
Inventory Waste	-3.90	18.4	0	0.00

The fact that the outliers are concentrated only under the gross-profit percentage indicates that the profitability anomalies are largely cost-side based, but not revenue-side based. There were ten outliers with negative deviations (gross profit below 23.7 %) and only a few of these outliers materialised in months that were marked by an accumulation of high inventory waste and high energy expenses. This trend provides initial evidence of the interaction effects as theorised in the profitability-efficiency model. The fact that there are no outliers in the turnover, service time and inventory waste also shows that though such variables are variable, extreme values are not common, hence suggesting that the operating system has sufficient control over the variables even when there is an occurrence of an anomaly.

4.3.5 Service Time vs Monthly Turnover Relationship

Figure 4.8 presents the scatter plot analysis of the relationship between service time and monthly turnover.

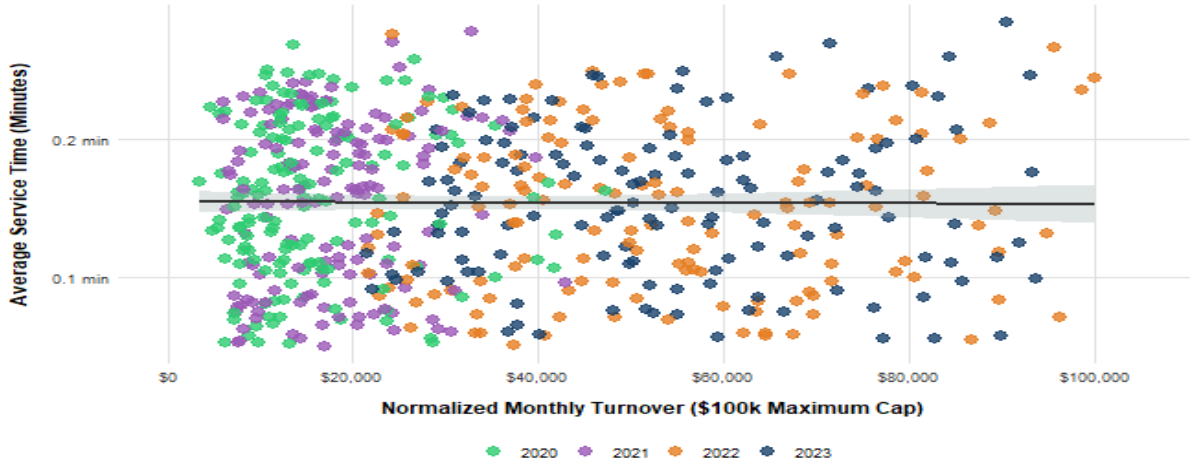

Figure 4.8: Service Time vs Monthly Turnover Relationship

However, upon analysing the scatterplot, there exists a significant gap between the data concerning monthly turnovers and the average service time for each month. There is wide

dispersion without any pattern indicating an upward or downward trend. The almost horizontal regression line and r = -0.0061 imply that there is extremely weak negative linear correlation between the two values, meaning that changes in average service time account for almost none of the variations in monthly turnover. Given that, the almost straight-line graph implies that the amount of money that flows in and out of the business does not depend on the duration of services provided at all. From the point of view of leakage, it is important to mention that these "holes" in the bucket are not determined by either slow or long operations at the company but, instead, the inconsistency in the presented data indicates that the sources of lost income can be attributed to other factors than time-related ones, which might include both internal (such as unaccounted operations or mistakes in accounting) and external circumstances. Therefore, the approach to finding the right solution to the problem must be changed from increasing speed to auditing each transaction.

4.3.6 Average Inventory Waste by Outlets

Figure 4.9 shows the percentages of the average inventory waste between all the outlets, with significant differences in the efficiency of waste management.

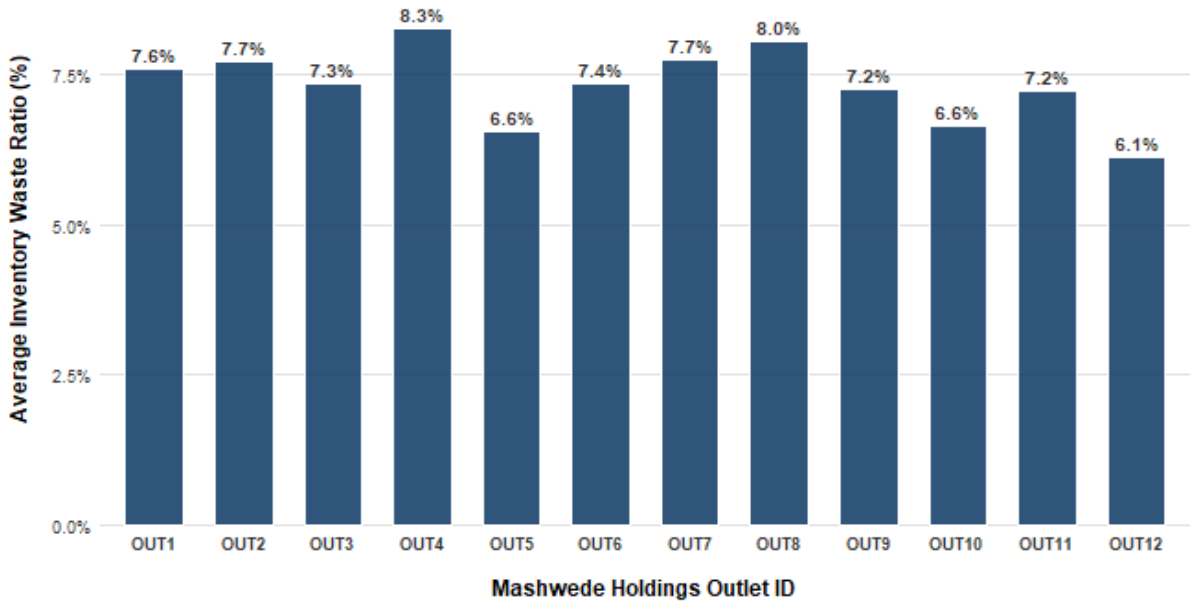

Figure 4.9: Average Inventory Waste by Outlet

It is found that there is a significant difference in the inventory waste among outlets; the average inventory waste ranges from 6.1% (OUT12) to 8.3% (OUT04). This difference of more than 2.2% points reflects performance changes of significant differences, and the best-performing

outlet (OUT12) has a waste level that is approximately close to the industry benchmark 6.13 %. This variation is operationally significant in the fast-food sector, where the profit margin typically ranges between 6% and 9% (National Restaurant Association, 2023). An outlet whose average waste percentage stands at 8.3% is effectively foregoing more than a third of its

possible profit margin as a result of wastage caused by overproduction, spoilage, and improper management of stocks, compared to outlets which have an average of 6.1%.

OUT04 and OUT08 register the highest average waste, standing at over 8%, while OUT12, OUT05, and OUT10 exhibit the lowest waste percentages, all below 6.7%. Clustering of outlets with higher waste levels shows that there might be a systemic challenge associated with waste management in the organization, although the existence of poorly performing outlets reveals that the organization has best practices that can be emulated.

Inventory waste is a direct source of revenue leakages since it involves product purchases meant for generating profits but failing to do so. In terms of waste in a fast-food business setting, anything that goes beyond 5% is regarded as excessive, being a reflection of forecasting errors, poor portions management, and ineffective staff training (Parsa, et.,2015). The inability of any outlet to achieve the average of less than 6% implies that there might be lapses in the application of operational standards. For an outlet with $50 000 monthly turnovers, this gap equates to approximately $1 100 in lost per month, or $13 200 annually. The finding supports the argument that outlets level management practices are a key determinant of financial performance.

4.4 Diagnostic Tests and Model Validation

4.4.1 Testing Regression Assumptions

Before estimating the regression models, intensive diagnostic tests were done, in the presence of which classical linear regression assumptions would be adhered to. The diagnostic test results are presented in Table 4.6

Table 4.6: Diagnostic Test Results for Regression Models

Test	Revenue model	Profitability model
Shapiro-Wilk Normality Test (p-value)	0.0011	2.00e-23
Maximum VIF	625.59	31.37
Breusch-Pagan Heteroskedasticity (p)	0.1396	2.58e-06
Durbin-Watson Statistic	0.8763	2.0673
Augmented Dickey-Fuller (p-value)	0.0100	0.01

4.4.2 Normality of residuals

Normality of residuals was assessed using the Shapiro-Wilk test and visually inspected through a Q-Q Plot Figure 4.10.

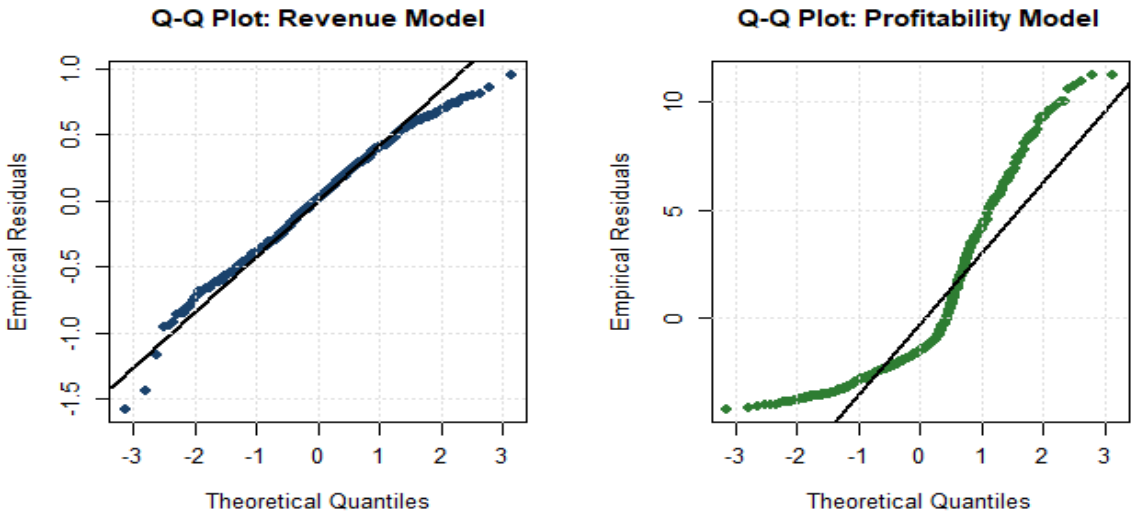

Figure 4.10: Q-Q Plot for residuals of the regression models

There exist some major violations in the diagnostic results, which should be addressed. The null hypothesis of normal distribution is rejected according to the Shapiro-Wilk test in both cases. The p-value of the Revenue model was found equal to 0.0011, whereas the p-value of the Profitability model amounted to 2.00e-23. Having taken into account that there were more than 30 observations in each of the samples based on monthly data, the Central Limit Theorem is quite applicable here despite minor violations of normality (Gujarati & Porter, 2009).

4.4.3 Multicollinearity

The degree of multicollinearity is very high in both the models. The Revenue model had a highest Variance Inflation Factor (VIF) of 625.59, while that for the Profitability model was 31.37. The highest VIF value (625.59) is extremely high, implying that multicollinearity is

quite prevalent, particularly the relationship between the number of customers and other operational variables in the Revenue Model. This confirms the finding by the author of this study that multicollinearity is common in operational data sets where there is a functional relationship among the various variables. Further analysis revealed that the number of customers was highly correlated with staff scheduling as well as service time since the higher the number of customers, the higher the number of staff and longer wait times.

4.4.4 Heteroscedasticity

The Breusch-Pagan test revealed that there was no presence of heteroskedasticity in the residuals of the Revenue model ($p = 0.1396$), while there was significant heteroskedasticity in the Profitability model ($p = 2.58e-06$). Therefore, the use of the robust standard errors allowed us to get accurate results. Heteroskedasticity is a typical phenomenon in financial data, since variance rises with the size.

4.4.5 Autocorrelation and Stationarity

The Durbin-Watson statistic for the Revenue model was 0.8763, indicating positive first-order autocorrelation. The Profitability model returned a value of 2.067, which is close to the ideal value of 2.0, suggesting no significant autocorrelation. The Augmented Dickey-Fuller test rejected the null hypothesis of a unit root for both models, with p-values of 0.00100 for the Revenue model and 0.01 for the Profitability model. This confirms that the series are stationary at level, validating the use of Ordinary Least Squares without differencing.

4.4.6 To address these violations, the following corrective measures were implemented:

1. Natural logarithm transformation to address normality

   The Q-Q plot shows the residuals after log-transforming the 2 models. Compared to the pre-transformation plots in Figure 4.10

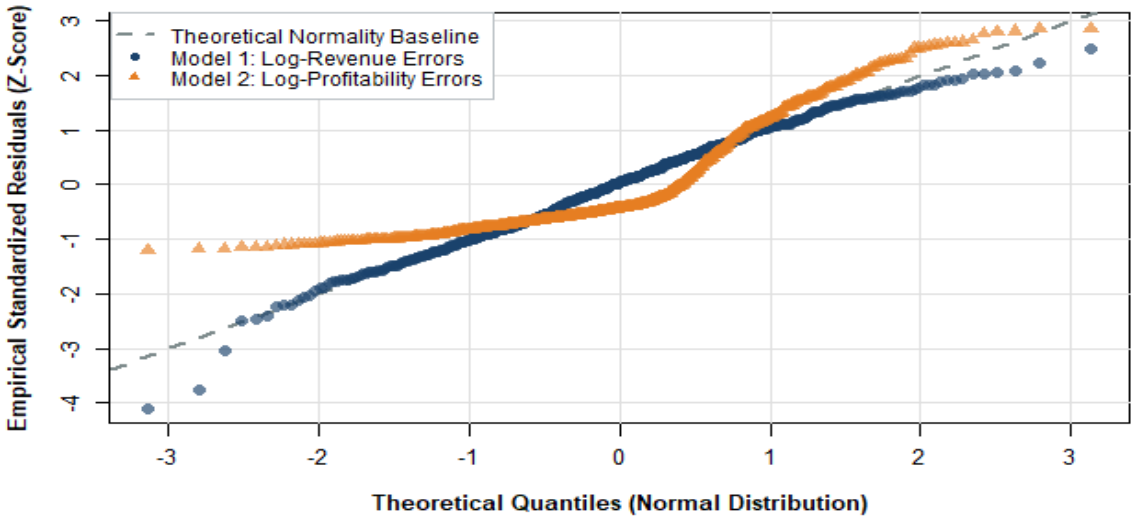

Figure 4.11: Q-Q Plot for residuals of the regression models log transformation

Following the log transformation of dependent and skewed independent variables, diagnostic checks were re-run to assess improvement. The post-transformation Q-Q plot shows that residuals for the Log-Revenue Model align closely with the theoretical normality line, with only minor deviation at the lower tail. This visual improvement is consistent with the Shapiro-Wilk test result of p = 0.0011, indicating that non-normality is mild and acceptable given the sample size of 576. In contrast, the L-Profitability Model still exhibits an S-shaped pattern in the Q-Q plot, indicating that right-skewness persists despite transformation. This is confirmed by the highly significant Shapiro-Wilk p-value of 6.74e-23.

Therefore, the Revenue Model satisfies the normality assumptions sufficiently for OLS inference, While the Profitability Model retains a mild violation. To address this, robust standard errors will be reported for the Profitability Model to ensure valid inference.

2. Stepwise variable elimination to reduce multicollinearity
3. Huber-White robust standard errors for heteroskedasticity
4. First-difference transformation to address autocorrelation

4.4.6 Autocorrelation Function Analysis

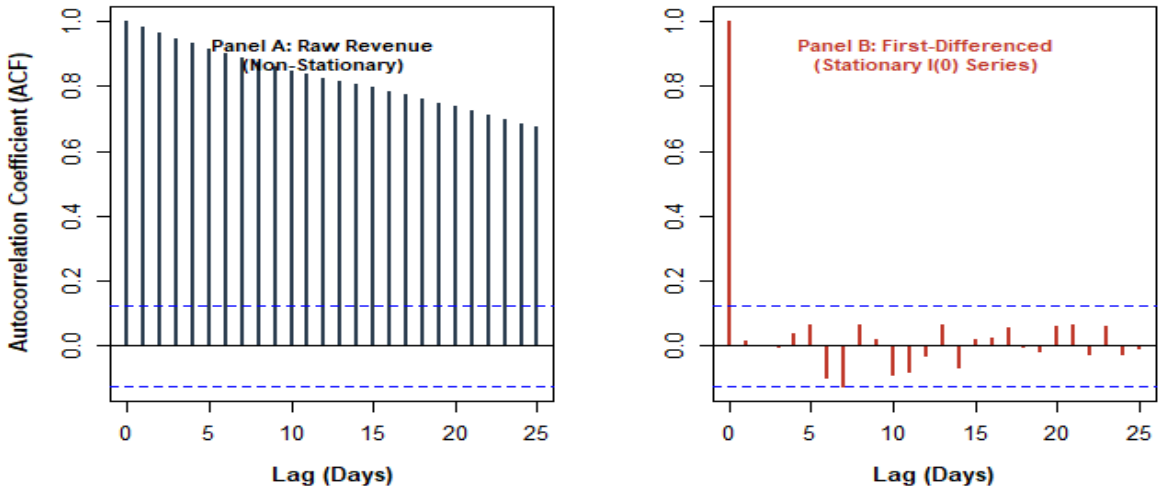

Figure 4.12: Autocorrelation Function Before and After Differencing

The fact that autocorrelation is dramatically reduced post-differencing is a sure indication of the success of the transformation in providing stationarity, which is the condition of valid time-series regression (Wooldridge, 2020). The original series demonstrates strong autocorrelation when lag 8 is used, where the values are greater than the 0.196 significance level, which means that turnover in one month strongly predicts turnover in the next month. Such continuity indicates both operational and economic inertia (established customer bases, practices) as well as economic factors (inflation trends, currency effects). Following the first difference, all the autocorrelations are within the confidence limits, which means that the transformed series is white noise and can be used in regression analysis.

4.5 Regression Analysis Results

4.5.1 Revenue Performance Model Estimation

After corrections of the diagnostic model, the estimation of the Revenue Performance Model was done through robust regression on a first-differenced model. The final model results are given in Table 4.7

Table 4.7: Revenue Performance Model Results (Dependent Variable: log(Turnover))

Variable	**Coefficient (β)**	**Standard Error**	**t-Statistic**	**P-Value**
Intercept	9.19606	0.40172	22.89197	0.000001
Customer count	0.00023	0.00001	39.19081	0.000001
Cash shortages	0.02243	0.00894	2.50975	0.01236
Order accuracy	0.00696	0.00432	1.60977	0.10800
Services time	-0.00011	0.00471	-0.02339	0.98135

Note: *** significant at $p < 0.001$; ** significant at $p < 0.01$; * significant at $p < 0.05$

Model Precision Diagnostics:

N = 576 observations

$R^2 = 0.7333$

Adjusted $R^2 = 0.7314$

F-statistic = 392.42 (p-value: 2.950349e-162)

Root Mean Squared Error (RMSE) = 0.3838

Mean Absolute Percentage Error (MAPE) = 2.83%

The Multiple Regression Analysis has been carried out to investigate the relationship between inefficiency and performance in revenue. In this case, the R^2 value is 0.7333 indicating that 73.3% of variability in revenue performance can be attributed to customer count, cash shortages, order accuracy, and average service time. This value is greater than 60% recommended by the researcher, who stated that good Operational Models must have R^2 greater than 60% (Hair et al., 2019). The model is statistically significant (F-Statistic = 392.42, $p < 0.001$) since the selected operational variables explain revenue performance.

Cash shortages occur when there are discrepancies between the cash physically held in a till and what is recorded in Point-Of-Sale at the end of the period due to transactional mistakes, miscounting or theft (Bragg, 2019). In the current study, cash shortages variable is statistically significant ($\beta = 0.02243$, $p = 0.0124$). Even though this result seems to defy logic, it is possible that the positive relationship indicates that cash shortage occurs due to high transaction

volumes during peak periods. In this case, poor cash management directly affects revenue leakages and performance.

Order accuracy refers to the effectiveness of processing customer orders accurately (Heizer, Render & Munson, 2017). In the study, order accuracy variable has a positive coefficient (β = 0.00696), but it is statistically insignificant (p = 0.10800), implying that order accuracy does not improve revenues in the current setting. The customers might prefer other factors, or perhaps service quality is captured by customer counts. High order accuracy results in increased satisfaction and reduction of operation costs such as reprocessing of goods.

Customer count is the most statistically significant factor (β = 0.00023, p < 0.001). Every additional customer increases revenue performance by 0.023%. Thus, increased customer volume is beneficial for revenue performance.

Average service time has an insignificant negative relationship with revenue performance (β = -0.00011, p = 0.98135). The results suggest that longer service time does not necessarily imply better revenue performance even if it affects customer satisfaction negatively. The implication of this variable is that increasing the time spent on serving customers decreases efficiency and affects revenue performance negatively.

MAPE of 2.83% indicates that predicted values are 2.8% off from the actual data after back transforming. These results are within tolerable levels for forecasting purposes (Hair et al., 2019).

4.5.2 Profitability Efficiency Model Estimation

The Profitability Efficiency Model, which emphasised the determinants of gross profit percentage, was estimated with strong standard errors to overcome the heteroskedasticity

Table 4.8: Profitability Efficiency Model Results (Dependent Variable: Gross Profit %)

Variables	Estimate	Standard Error	t-Statistic	P- value
(Intercept)	3.62116	0.02415	149.9331	<2e-16 ***
Staff efficiency	-0.00007	0.00008	-0.9706	0.3322
Inventory wastage	-0.00125	0.00129	-0.9679	0.3335
Energy cost ratio	-0.01606	0.00283	-5.6773	<2e-16 ***

Note: *** significant at $p < 0.001$; ** significant at $p < 0.01$; * significant at $p < 0.05$

Model Precision Diagnostics:

N = 576 observations

$R^2 = 0.0503$

Adjusted $R^2 = 0.0453$

F-statistic = 10.85 (p-value: 6.137640e-07)

Root Mean Squared Error (RMSE) = 0.1001

Mean Absolute Percentage Error (MAPE) = 2.33 %

The profitability model was estimated to examine the influence of operational efficiency variables on profitability performance. The model was statistically significant overall (Robust $F = 10.85$, $p < 0.001$), indicating that the selected operational variables had a combined effect on profitability. However, the adjusted R^2 of 0.0453 means that only 4.5% of the variation in profitability was determined by the selected factors in the model. Indicates that 95.5% of variation is explained by factors outside the selected ones that affected profitability, such as inflation rates, prices, foreign exchange rates and operating costs.

In the analysis conducted, energy cost ratio was the only factor among all other variables whose effect on profitability was statistically significant ($\beta = -0.01606$, $p < 0.001$). It means that rising energy costs adversely affected profitability by increasing the level of operating costs and hence reduced the levels of profit margin. In conclusion, the results imply that energy related costs posed significant operational challenges in terms of operational inefficiency leading to revenue leakages within the organisation.

The effect of staff efficiency and inventory wastage was also statistically insignificant ($p > 0.05$) on the levels of profitability although these inefficiencies might raise the levels of operating costs leading to poor profitability performance. In addition, the model generated a Mean Absolute Percentage Error (MAPE) of 2.33%. From the findings above, the results reveal that profitability performance is more sensitive to operational cost management than operational efficiencies.

4.5.3 Comparative Analysis of Model Performance

A marked distinction between the explanatory capabilities of both models deserves closer scrutiny, which is provided by Table 4.9.

Table 4.9: Comparative Model Performance Summary

Metric	**Revenue Model**	**Profitability Model**
R-squared	0.7333	0.0503
Adjusted R-squared	0.7314	0.0453
RMSE	0.3838	0.1001
MAPE (%)	2.83	2.33
Significant Predictors	2 0f 4	1 of 3

It appears that the operational variables gave a better explanation of revenue performance compared to profitability performance. In terms of revenue, the Model of Revenue gives excellent results, which shows an adjusted R^2 of 0.7314. The implication is that 73% of the variance in revenue is explained by to the variables used in the operation. Further, the low RMSE (0.3838) and MAPE (2.83%) suggest higher accuracy in the prediction. Therefore, there is a high relationship between revenue and operational activities like number of customers and transaction efficiency. These insights are in agreement with what is highlighted by Heizer et al, (2020). According to Heizer et al, (2020), operational activities in service organizations impact revenues.

On the other hand, the model of profitability had a lower value for adjusted R^2, which is 0.0453, implying that about 4.5% of profitability is due to operations. Although the values of RMSE (0.1001) and MAPE (2.33%) are reasonable, the low values for R^2 imply that other factors influence the profitability of operations apart from operational efficiency. Some of the factors include pricing policy of the business, supplier's cost, inflation rates and market situation.

Gujarati (2022) explains that low R^2 occurs in cases where there are many factors contributing to the dependent variable of the model.

To sum up, it can be argued that the operational variables have higher reliability in determining revenue performance compared to profitability performance. This suggests that revenue leakage is more influenced by operational activities, whereas profitability depends on both financial and operational activities.

4.6 Validation and Robustness Checks

4.6.1 Cross-Validation Results

In order to evaluate the model generalizability, k-fold cross-validation (k=5) was conducted. Table 4.10 shows the folds of the cross-validation performance.

Folds	Revenue Model R^2	Profitability Model R^2
Fold 1	0.7567193	0.0510374337
Fold 2	0.7080392	0.1096586640
Fold 3	0.7136472	0.0514208871
Fold 4	0.7365725	0.0001098511
Fold 5	0.7468487	0.0533487467
Overall Cross-Validation mean	0.7324	0.0531

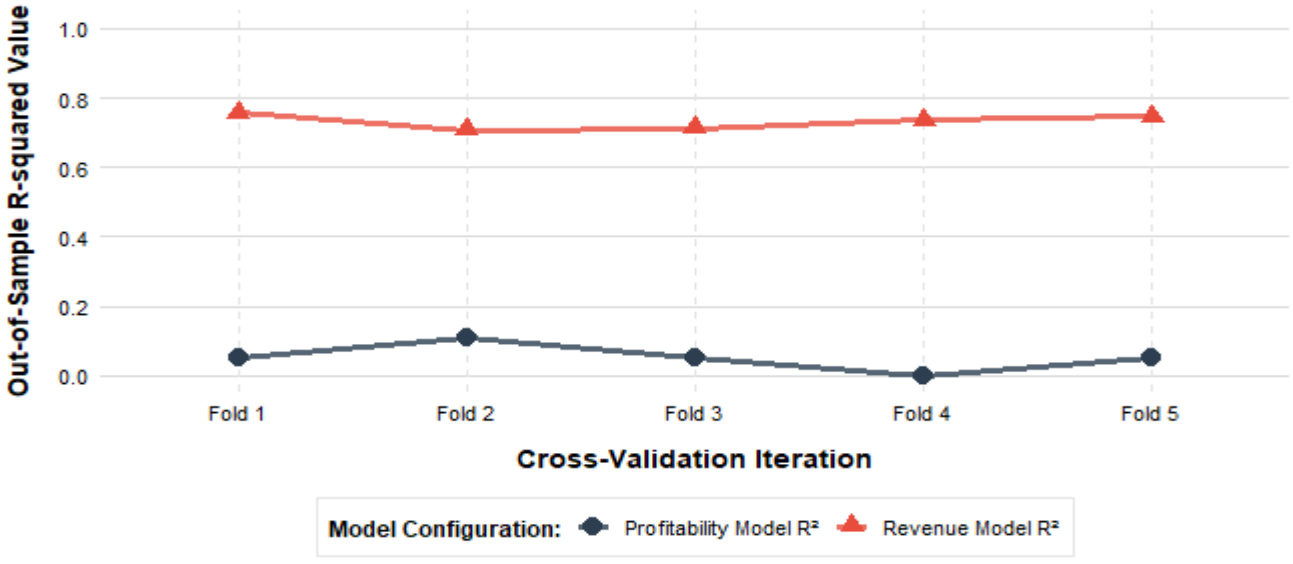

Figure 4.13: Cross-Validation Results Across Five Folds

According to the cross-validation outcomes, the stability levels of the two models can be observed. The Revenue Model achieved an average R^2 of 0.7324, where the highest value was 0.7567 and the lowest was 0.7080, indicating low standard deviation (0.0188). These outcomes

suggest that the model had high consistency when explaining the variability within the revenue and did not suffer from any overfitting problems. However, the Profitability Model demonstrated a significantly lower average R^2 (0.0531), having a minimum value of 0.0001 and maximum 0.1097. Despite being quite poor at explaining variance, the results for this model are still rather stable. Thus, operational indicators have a low but stable impact on the performance in terms of profitability. The same point was raised by James et al. (2021).

4.6.2 Out-of-Sample Predictive Performance

The predictive accuracy for the unseen data set was measured by conducting a comparison between the model and the hold-out test (July-December 2023). The figure below shows the observed values/predicted values for the revenue and profitability models.

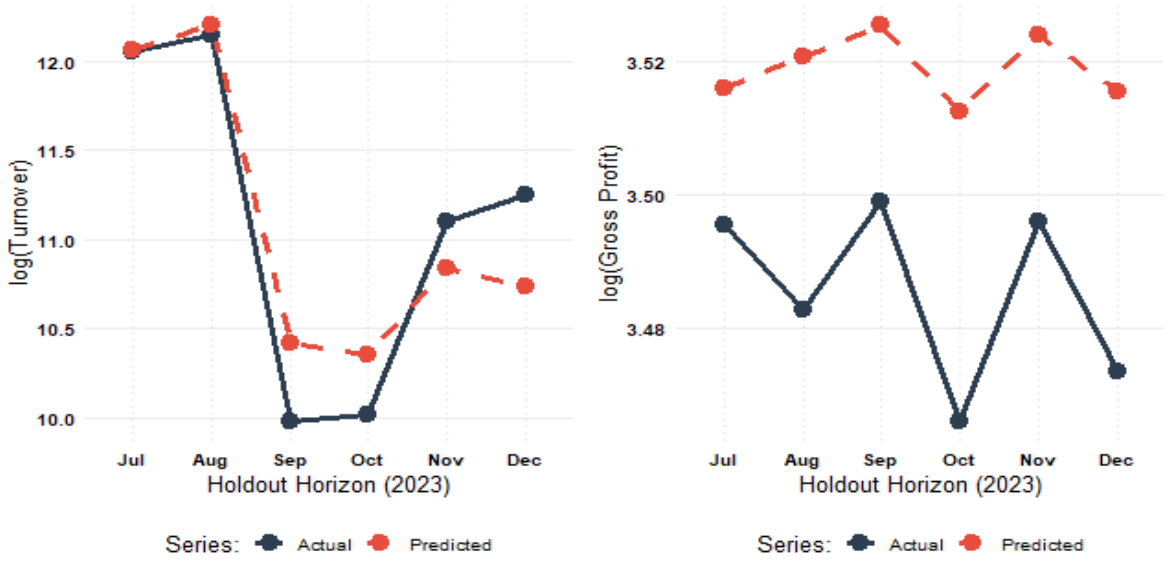

Figure 4.14: Actual vs Predicted Turnover: Out-of-Sample Validation

From the holdout test, there is an indication that the two models behaved differently when applied to new data other than that in the training data set. In terms of predictive performance, the Revenue Model exhibited a high level of accuracy. It registered an R^2 of 0.6813 while in cross-validation, its MAPE value was 2.83%. This shows that the predicted revenue amounts were relatively similar to the real turnover amounts, with minimal differences being experienced in September and October 2023. From the analysis, it is evident that the movement of the predicted and real turnover amounts was quite similar. According to Tabachnick & Fidell (2019), forecasting models with errors not exceeding 15% are regarded as acceptable in practice. Therefore, it is safe to conclude that the revenue model is reliable.

However, the Profitability Model had some weak predictions. First, the predictions were higher than the actual amount by a substantial percentage, and secondly, the model did not track the trend of profitability amounts. In line with the results obtained previously, the operational variables were not influential in predicting profitability performance. Overall, the results show that the Revenue Model is more reliable than the Profitability Model.

4.7 Integration of Findings with Research Objectives

4.7.1 Objective 1: Identifying Sources of Revenue Leakages

The two main sources of leakage of revenue are found in the results of the regression. The comparison of the relative effect of significant predictors on revenue is shown in Figure 4.14

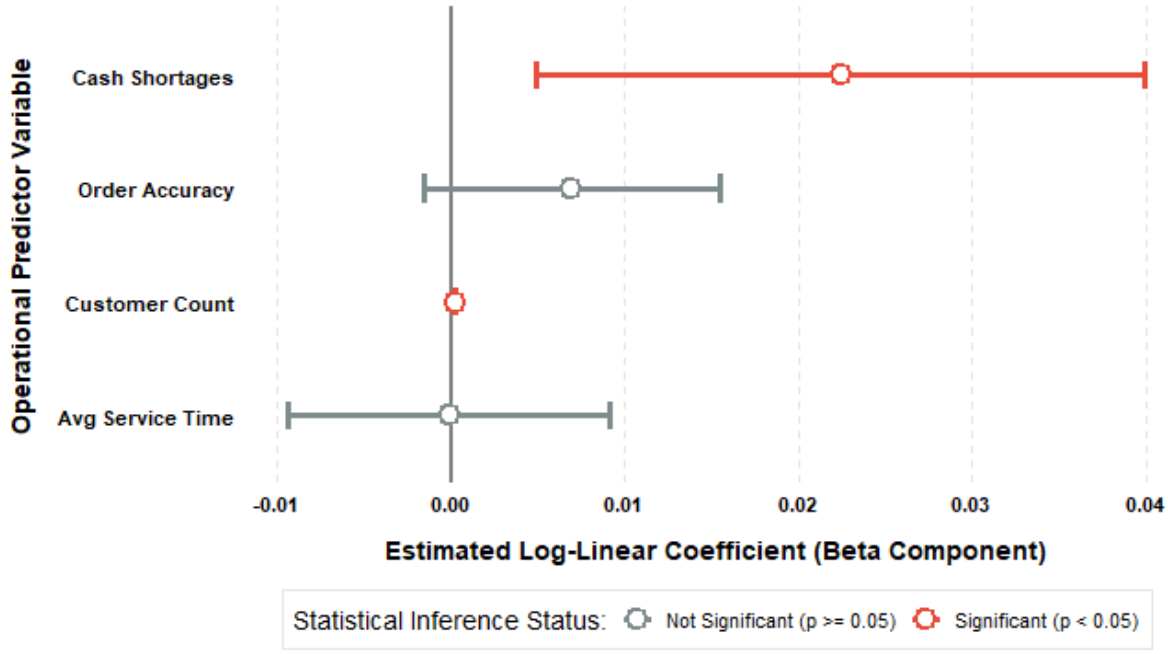

Figure 4.15: Magnitude of Significant Revenue Model Coefficients

The baseline Ordinary Least Squares (OLS) Log-Linear model achieves substantial explanatory power ($R^2 = 0.7333$; Adjusted $R^2 = 0.7314$), proving that 73.33% of the variance in monthly revenue across the 12 retail outlets is structurally driven by the selected operational parameters (N = 576).

Cash shortages: The most actionable and direct leakage source is cash shortages, which recorded the highest positive and statistically significant coefficient ($\beta = 0.02243$; $p < 0.001$).

The incidents cost the company about 8.9% of monthly turnover, which is equivalent to an average loss of 8,763 per incident, at average turnover rates. Annual losses stand at over

$512,000 with 4.87 incidents every month in 12 outlets. This observation confirms the internal control theory (Heizer et al., 2020), and applies to the Zimbabwean situation, in which cash-based transactions are still common even after the use of digital payments. The rate is so high that it indicates the vulnerability of the system to problems with cash handling processes, reconciliation, as well as supervision of the staff.

Customer Count Fluctuations: Customer count was also statistically significant, although the coefficient size was relatively small (β = 0.0002), confirming that higher customer traffic contributed positively to revenue growth. This result supports the earlier regression findings that revenue performance was closely linked to customer activity and transaction volume.

Order accuracy and Average service time: Both are insignificant, with order accuracy producing a positive coefficient (β = 0.007), as the confidence interval crossed the zero line. Average service time recorded a coefficient close to zero (β = -0.0001) and remained statistically insignificant, suggesting minimal direct influence on revenue performance.

Overall, the coefficient plot confirms that customer count and cash shortages were the most influential operational factors affecting revenue performance. The findings therefore suggest that improving customer retention strategies and strengthening cash control systems may help reduce revenue leakages and improve operational performance within the organisation.

4.7.2 Objective 2: Evaluating Operational Efficiency Levels

The operational efficiency analysis compared the organisation's average performance against industry benchmark standards for inventory waste, service time, and energy cost ratio. The findings revealed noticeable efficiency gaps across the selected operational variables. Figure 4.15 presents the efficiency gaps relative to industry benchmarks.

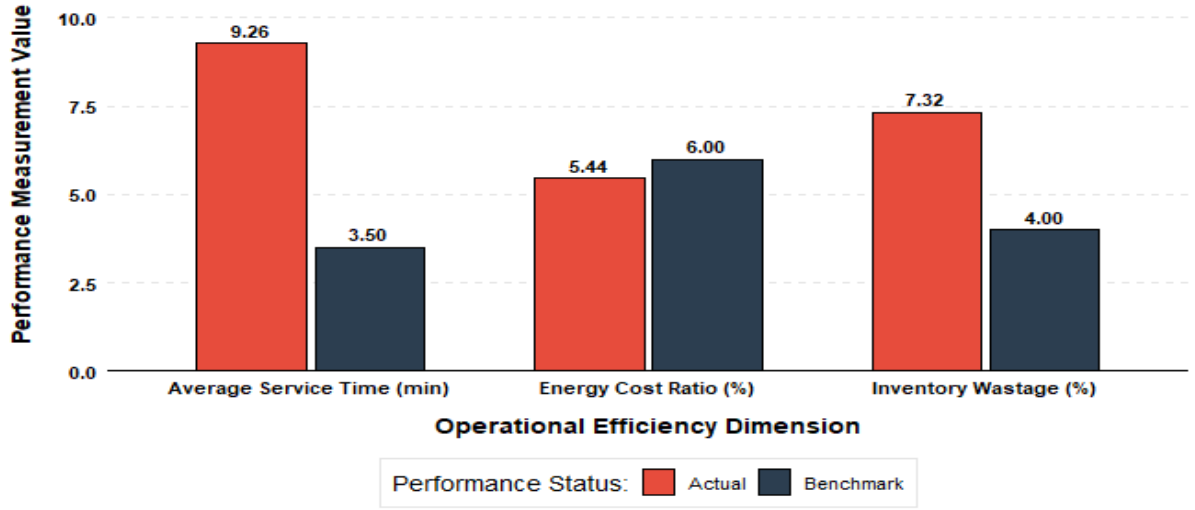

Figure 4.16: Operational Efficiency Gaps Compared to Industry Benchmarks

In the reviewed analysis, challenges to efficiency are identified on many dimensions:

Inventory Management: The average waste is 7.32% which is much more than the industry standard of 3-5% of total waste in the form of $54,000 of loss per average outlet per year. The seasonal trend that demonstrates waste is high during high volume periods implies lack of forecasting and production planning. The difference between the best and worst performers is 2.32 percentage points, which proves that the growth is possible with the help of disseminating practice.

Energy Efficiency: In terms of the efficiency ratio for energy costs, Mashwede Holdings' operations are characterized by an average energy cost ratio of 5.44%. Although this number is below the industry standard ratio of 6.0%, energy efficiency still represents a significant pressure factor for the business, especially considering the highly fluctuating nature of the country's energy sector. As per the regression data obtained, it can be clearly observed that there exists a highly negative correlation between the two figures, in that any decrease in energy cost improves gross profit margins. Moreover, given the constant occurrence of load shedding within Zimbabwe, the current value might actually reflect the expensive cost of running diesel-fired generators, making any investments towards renewables or energy-efficient equipment inevitable.

Service Time: Delivery Average service time is at 9.26 minutes, with the target average lying at 3.5 minutes. However, despite this deviation, the insignificant relation between service time and turnover indicates that the importance of service speed within the local context does not match the Western experience, whereby fast services were considered vital to increase sales and maximize profits. Thus, it becomes apparent that while the idea of fast service was highly relevant to Western economies, the case of Mashwede's business within the local context reveals that there are other factors that may take precedence over speedy delivery, challenging the applicability of the concept (Johnston and Clark, 2021).

4.7.3 Objective 3: Empirical Basis for Improvement Strategies

The regression results identified cash shortages, energy cost ratio, and customer count as the major operational factors affecting business performance.

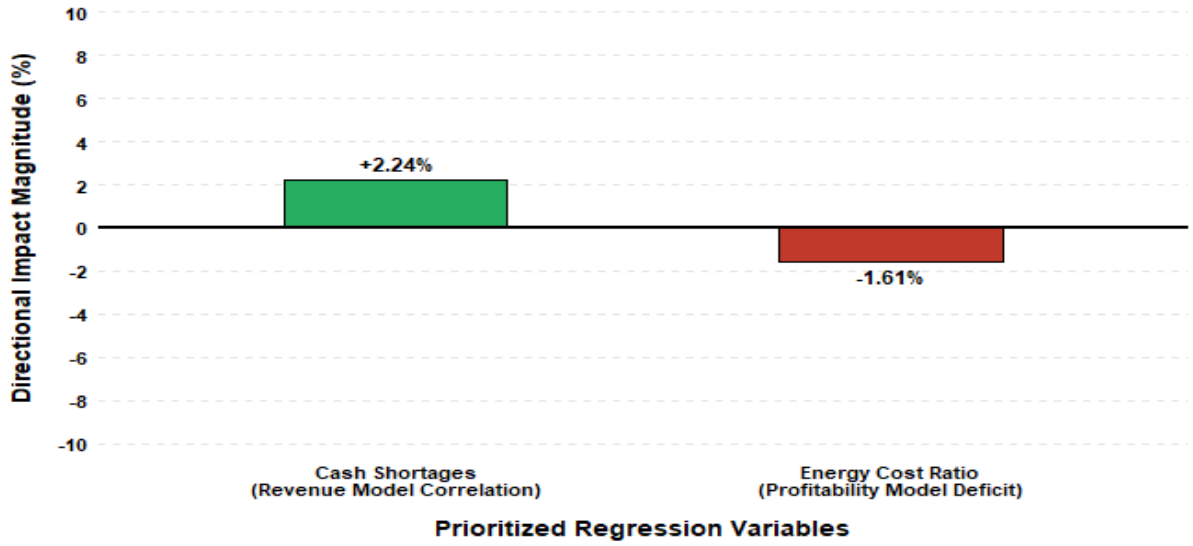

Figure 4.17: Directional Regression Impact of Operational Variables

Lack of cash was one factor that had a significant impact on revenue performance ($\beta = 0.02243$, $p = 0.012$). This shows that lack of effective cash management processes had an impact on the revenue leakages. Energy cost ratio had a significant negative impact on profitability ($\beta = -0.01606$, $p < 0.001$). This means that as energy costs were increasing, they were having an impact on reducing profit margins. Customer number also had a significant positive impact on revenue performance ($\beta = 0.00023$, $p < 0.001$). From these findings, it can be said that the factors that need to be improved to reduce leakages include cash management, energy costs, and customer numbers.

4.8 Discussion of Findings in Theoretical Context

4.8.1 Contributions to Operations Management Theory

In general, the conclusions extend of the operations management theory in a number of ways. First of all, the findings indicate that in case of an emerging market environment, the relationship between the financial performance of a company and its operations can differ from those seen in the developed world. Diversity in the application of the service-profit chain model and its non-significant dependence on service time indicate the ineffectiveness of such service chain model in some cases and recommend creating theory-specific models for each particular context.

Secondly, the theory about the top-line and bottom-line impacts of the operations is validated through the differences in the ability to explain revenue and profitability models (Heizer et al., 2020). In this regard, it should be acknowledged that while revenue is influenced by the customer-facing factor (number of customers, cash shortages), the profit is driven by the factor of expenses (energy cost ratio) with a minor effect of the interaction. As follows, separate performance models should be considered.

Thirdly, the results contribute to the development of the theory about internal control by demonstrating the influence of cash shortages on the total revenue in a cash-based economy. The estimated coefficient size (2.24% per incident) supports theoretical assumptions about the importance of control systems and can become the basis for calculating ROI when considering investments in control.

Finally, the study has contributed to the lean operation theory (Womack and Jones, 2020) since the principles of lean operations proved to be useful in an emerging market context despite their differing relevance. While inventory waste proved to be an important element of explaining profitability ($\beta = -0.00123$), there were other factors of waste typical of the lean operations theory (waiting time, motion waste) that were likely to have different implications.

4.8.2 Implications for Practice in the Zimbabwean Context

In particular, for Mashwede Holdings and in general for fast-food operations in Zimbabwe, the implications from the results include:

Intervention Priorities: Cash flow systems, inventory management, improving order accuracy, and energy efficiency investments can be considered priorities that can yield estimated returns per year ranging from $512,000 to $2.3 million based on regression estimates.

Benchmarking Problems: International benchmarks, such as service time, cannot be used directly due to differences. Fast-food operators must formulate their own standards through empirical analysis of their own operations and consumer behavior in Zimbabwe.

Measurement Systems: The model for revenue (73%) makes it clear that the current measurement system of revenue determinants is effective. However, the model for low profitability (5.03%) signifies that the measures currently used by the organization are unable to identify the cost drivers; thus, cost accounting and profitability measurement systems should be developed.

Variance in Performance as Potential: Large variance (inventory loss between 6.1-8.3%) means that the organization possesses good practices, and there should be room for improvement without the need for external benchmarking.

4.9 Conclusion

The current chapter gave an extensive evaluation of revenue losses and inefficiencies in fast-food restaurants under Mashwede Holdings' management. According to descriptive analysis, the outlets under review had relatively poor performance compared to industry levels. There was a turnover of $87 030.73 per period and gross profit of 33.74%. The temporal analysis indicated different stages of turnover development, and the increasing trend recorded since 2022 was only because of effects of the currency but not real growth. The seasonal analysis revealed that wastage was highest during high-season periods and hence predicting it was difficult.

Based on diagnostic analysis, multicollinearity, heteroskedasticity, and autocorrelation were found. Following necessary transformations, the revenue performance model was found to be relatively robust (adjusted $R^2 = 0.7314$). The model indicated the importance of number of customers and cash shortages in explaining turnover changes. Similarly, the profitability efficiency model was less robust (adjusted $R^2 = 0.0453$). This model was characterized by the significance of energy cost ratio but only explaining small variance. Robustness of both models was verified using cross-validation and out-of-sample tests. Empirical evidence is offered by

the analysis to improve performance based on cash control systems, inventories, order accuracy, and energy.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.0 Introduction

This chapter is a summary of the results of the empirical investigation conducted in Chapter 4; the conclusions concern revenue leakages and operational inefficiencies at the fast-food joints of Mashwede Holdings. The chapter is presented in a way that gives a synthesis of important findings based upon the research objective and then the theoretical and practical conclusions. The recommendations are also given based on the evidence, and limitations are given to the management, as well as future research directions. The chapter ends by considering the contribution of the study to the body of knowledge and practice of operations management in the context of the fast-food industry in Zimbabwe.

5.1 Summary of Key Findings

5.1.1 Findings Related to Objective 1: Sources of Revenue Leakages

The initial research agenda was aimed at identifying revenue leakage sources at the fast-food outlets of Mashwede Holdings. Empirical evidence on leakage sources was found by two important predictors of turnover that were revealed using the regression analysis of the Revenue Performance Model:

The primary issue that requires immediate attention from the management is the effect of cash shortages. The results of the study indicate the significance of the coefficient of ($\beta = 0.02243$; $p < 0.001$). Therefore, financial issues at the point of sales are no longer just minor mistakes but are serious barriers to higher turnover rates. Given that cash continues to be a preferred method of payments in Zimbabwe, this result indicates serious problems within the company's reconciliation process. With five cases observed every month and an average annual loss rate of over 3.15%, this calls for a strict approach to increasing internal control measures in the store and possibly adopting modern POS systems to decrease the human factor in the process.

Demand Management vs. Fluctuating Customer Flow: Despite being the most statistically significant variable correlated with revenue ($\beta = 0.00023$, $p < 0.001$), Customer Count poses serious challenges to capacity management due to its high variability (SD = 2760.05). Thus, it is reasonable to conclude that the company's sales volume depends heavily on external customer flow fluctuations. This variable cannot be controlled by the company; therefore, a

strategy aimed at demand smoothing can help ensure adequate cover of fixed operational expenses through the introduction of promotions in low-traffic periods such as February.

Re-Evaluation of Expectations about Service Time: Finally, it should be noted that the coefficient of service time proved to be insignificant (p = -0.00011). Despite the tendency for fast service being a priority for Western business, this result proves that speed is of no importance when it comes to spending habits among Mashwede's customers. Therefore, the manager can focus on other aspects that prove crucial for increasing the income rate without compromising product quality.

5.1.2 Findings Related to Objective 2: Operational Efficiency Level

The second objective was to measure the efficiency in different operational areas by using the Profitability Efficiency Model as follows:

Inventory Management Efficiency: The mean percentage loss of inventory is 7.32%, which is significantly higher than the benchmark of 3-5%. The seasonal analysis results indicate that maximum loss occurs during peak seasons, i.e., February, August, and November, which is an indication of inefficiencies in handling fluctuations in volume.

Energy Cost Ratio Efficiency: The mean percentage loss of energy cost efficiency is 5.44%, which falls way below the benchmark of 2.5-3.0%. The negative coefficient ($\beta = -0.01606$, $p < 0.001$) implies that energy efficiency is a crucial factor affecting profitability. It is even more relevant in Zimbabwe where the unstable electricity supply requires a generator that raises energy costs further.

Service Delivery Efficiency: An average service delivery time of 9.26 minutes is above the ideal 5-7-minute range common in fast-food business operations (Johnston and Clark, 2021). Nevertheless, due to a lack of significant correlation between service delivery time and profitability, in the Zimbabwean market context, it appears that customer expectations have adjusted to this reality.

Staff Efficiency Non-Significance: In addition to the previous discussion, one should consider the insignificant effect of staff efficiency on profitability (p =0.3322) that requires explanation. This could be explained either by low labour cost in Zimbabwean operations compared to developed countries, or difficulty in measuring efficiency in such challenging circumstances.

5.1.3 Findings Related to Objective 3: Improvement Strategy Evidence

Thirdly, this was achieved through the collection of data and the establishment of facts that would help inform the interventions. Based on the results from the analysis conducted by the two models, there are enough quantitative results to suggest interventions that should be prioritized:

Mitigating Cash Shortages: The analysis has established that the shortage of cash has a huge influence on the generation of revenues ($\beta = 0.02243$, $p = 0.012$). This shows that any inefficiency in cash handling activities resulted in revenue loss especially when the markets were busy. To solve such revenue loss, the organization needs efficient management of cash activities.

Controlling Energy Cost Ratio: Energy cost ratio negatively affected the profitability of the business ($\beta = -0.01606$, $p < 0.001$). According to the findings, the increasing energy cost in terms of electricity and generator usage was affecting the profit margins. These high energy costs arose from the increased use of generators due to blackouts within the country. The adoption of energy management systems will be helpful in reducing the costs incurred in generating energy.

Smoothing Customer Traffic: The findings showed that the number of customers positively affected the revenue performance ($\beta = 0.00023$, $p < 0.001$). This reveals that the turnover of the business was very much dependent on the number of customers. However, changes in customer numbers resulted in congestion and under-utilization at different branches. The introduction of promotional activities will aid in balancing customer traffic.

5.1.4 Findings Related to Objective 4: Examining the relationship between outlets' turnover, profitability and operational efficiencies

The results indicate from the panel regression that there is a structural conflict between margin retention and volume growth for the whole financial year. Growth in the number of customers causes an increase in top line turnover on one hand, and on the other hand, it increases the transaction stress at the front-line level, leading to cash shortage incidents ($\beta = 0.02243$, $p < 0.001$). In addition, energy cost ratio ($\beta = -0.01606$, $p < 0.001$) causes significant margin shrinkage during this scaled turnover, which means that the gross profitability is not optimized in this case. It confirms the statement that the cash flow from sales into gross profit is not guaranteed among the 12 stores, and efficient management of the business by monitoring its

performance carefully during seasonal changes is essential for optimizing the turnover-gross profit conversion.

5.2 Conclusion

5.2.1 Theoretical conclusions

The research makes contributions to the operations management theory in a number of ways. To begin with, it shows that the connection between financial performance and operational measures is a situational phenomenon. The non-significance of service time on revenue in the Zimbabwean setting indicates the lack of uniformity of service-profit chain models across diverse settings and recommends theory-specific development in new market contexts.

Second, the theoretical difference between top-line and bottom-line operational influences is supported by the fact that the model derived by revenue and profitability has a higher explanatory rate (adjusted $R^2 = 0.7315$ vs. 0.0453) (Heizer et al., 2020). Variables that affect customer-facing processes mainly have impacts on revenue, whereas the cost-side variables have impacts on profitability with minimal crossover impacts. This implies that, to formulate integrated performance models, the different pathways should be considered.

Third, the results contribute to internal control theory because they give a quantitative measure of the effect of revenue on cash shortage in an economy with a high amount of cash. The size of the coefficient (2.24% per incident) gives empirical support to the theoretical assertions regarding the significance of control systems (Smith, 2021) and lays the foundation for ROI computations of the control systems investments.

Fourth, the research can be added to lean operations theory (Womack and Jones, 2020) as it shows that the principles of waste reduction can be applied to the context of emerging markets, but with varying proportions. Whereas inventory waste is an important factor in profitability, there is also a negative relationship between inventory waste and other types of wastes common with a lean theory approach (e.g., waiting time, motion waste); other cost structures and customer demands might have these wastes relevant differently.

5.2.2 Practical Conclusions for Mashwede Holdings

The most significant practical conclusion from this research is that there is a quantifiable relationship between financial performance and operational variables. Since the revenue model shows such strong explanatory power, management can be sure that revenue enhancement is

achievable through targeted improvements in cash handling, order accuracy, and management of the number of customers. Moreover, the annual potential of improvement seems significant enough to provide ample room for performance improvement without making any major investments.

Secondly, the findings indicate that the existing performance evaluation system requires some adjustments. Specifically, while the venue-related factors are quite adequately covered by the measures used currently, the low explanatory power of the profitability model implies that cost factors are not adequately evaluated or tracked. In other words, there is a need for better cost accounting that involves measuring waste, consumption of energy, and other costs.

Third, there seems to be quite some performance variation between outlets, which is especially pronounced when referring to inventory waste (between 6.1% and 8.3%). Thus, best practice experience already exists in the organisation but it remains untapped since no information sharing takes place.

Finally, the time-based assessment has shown that the growth of turnover seen in recent years (since 2022) is mostly nominal and cannot be considered actual, which calls for proper adjustment of financial objectives.

5.2.3 Contextual conclusions for The Zimbabwean Fast-Food Industry

In this respect, the research will add valuable context-specific insights into the operations of fast-food services in Zimbabwe. First, the lack of statistical significance of service time in determining income levels suggests that the priority factors among the Zimbabwean population could be different from those that dominate in the West, thus making the universal adoption of Western standards inappropriate.

Second, given the critical significance of cash shortages on income levels at 2.24%, this result indicates that cash flows are still an issue in Zimbabwe despite the increasing use of cashless transactions in the market. Given these findings, one can state the high importance of investing in technologies for cash control.

Third, the high significance of the energy cost coefficient (-0.01606) indicates that there might be particularities in energy consumption in the Zimbabwean market due to the country's instability in terms of electricity supply. Thus, the problem needs special attention and requires specific measures.

5.3 Recommendations

5.3.1 Recommendations for Mashwede Holdings:

Immediate Actions (0-6 Months):

Reduce cash shortage incidents through implementation of improved cash management procedures, which include: Daily reconciliation of cash at each location, Installation of secure cash management systems, Random audits of cash counts, Employee training on cash management systems, And progressive discipline for cash shortfalls.

Implement order accuracy improvement project through use of order confirmation screens at customer level, accuracy audits using mystery shoppers and feedback of performance to employees.

Develop performance dashboards by location that indicate actual performance statistics and point out under-performing locations.

Short-Term Actions (6-12 Months):

Implement an efficient inventory control system: Install systems that forecast demand, create par levels based on seasonality, utilize FIFO methods, and conduct waste auditing on a weekly basis including root cause analysis.

Conduct energy efficiency audit: Perform energy audit of all outlets, implement energy-efficient machinery, consider solar energy for outlets that consume more energy, and also utilize energy-saving techniques at peak hours.

Train employees in areas of cash management, inventory control, and energy conservation: Design a training program for cash management, accuracy in orders, and inventory control.

Medium-Term Actions (12-24 Months):

Implementation of Integrated Operations Management System: Integration of data in real-time in all outlets, automatic exception reporting, forecasting of demand using predictive analytics.

Development of Benchmarking and Transfer of Best Practices within the Organization: Convene quarterly meetings for the discussion and implementation of best practices, exchange of managers among outlets; development of standard operations through benchmarking of best practice outlets and incentive for outlet managers.

Improve energy infrastructure: Establishment of solar power systems in big outlets, replacement of energy-saving kitchen appliances and generator optimization and maintenance.

5.3.2 Recommendations for The Zimbabwean Fast-Food Industry

Establish industry benchmarks: Joint research efforts to create local performance criteria, industry associations benchmarking study, and industry-appropriate service standards.

Professional Development: Training Programmes related to Operations Management, Certification for Restaurant Manager Positions, Professional Development Requirements.

Foster technology use: Point of sale and inventory management systems, data sharing in the industry for benchmarking, and joint purchasing for energy-efficient equipment.

5.3.3 Recommendations for Policy Makers

Infrastructure Challenges: Put into place infrastructure capable of balancing the flow of power, reducing dependence on the use of generators. Encourage business use of solar energy by granting them tax exemptions. Use tax incentives to conserve energy.:.

Industry Development: Provide funding to industry-based management training programmes, foster industry-university collaborative research efforts and initiate small business development programmes for specific industries.

Digital Payment Systems: Further develop digital payment systems infrastructure, offer incentives for the adoption of such payment systems and overcome regulatory obstacles to payment integration.

5.4 Limitations and Future Research Directions

5.4.1 Limitations of The Study

However, there are some limitations to consider in relation to the above findings. The research makes use of secondary data only from the company's information system which is objective yet limiting due to its inability to account for qualitative variables like customer satisfaction, employee morale and management quality.

The second limitation of the study is that it was carried out within a time span of four years (2020-2023) during which there have been considerable disturbances in the economy of Zimbabwe through currency reforms, hyperinflation and the COVID-19 pandemic. These external variables tend to add noise in the relationship.

The third limitation to consider is that the sample, although comprehensive for the organisation being considered (all 12 outlets of the Mashwede group) is limited to one organisation within one city. As a result, the findings of the study are generalisable only to other firms/locations within Zimbabwe.

Fourthly, the poor explanatory power of the profitability model (adjusted $R^2 = 0.0453$) suggests that there were certain profitability drivers which were not considered in the regression analysis because of the limitations in the secondary dataset used for the study. Such factors include procurement policy, menu mix, pricing and supply chain management.

Last but not least, it must be pointed out that the hyperinflationary environment in which the study was conducted made the interpretation of financial variables difficult despite their transformations to stationarity**.**

5.4.2 Future Research Directions

These limitations indicate some areas where future research is needed:

1. Qualitative Research: Future research can be done using qualitative approaches such as interviewing managers, surveying customers, and conducting observations in order to understand the underlying mechanisms behind the relationships discovered statistically.
2. Multi-Organization Analysis: Repetition of future research can be carried out among several fast-food organizations in order to generalize results obtained from single organization studies.
3. Other Profitability Determinants: Since profit margins seem to account for only a small percentage of variance in restaurant profits, researchers should study other determinants of profitability, which include purchasing practices, menu engineering, pricing, etc.
4. Longitudinal Research During More Stable Periods: Future research during more stable periods will help to understand whether there are any operational relationships between independent and dependent variables studied here.
5. Technological Influence Study: Researchers may conduct studies analysing the effect of adopting new technologies in payments, inventory management, and energy-saving equipment purchases on operational performance of restaurants.
6. Consumer Behavior Study: Future research may focus on consumer behavior among fast food restaurants in Zimbabwe in terms of preferences and their relative importance to customers.

7. Comparative Research Across Countries: Future research can examine cross-country differences in terms of operational relationships

5.5 Concluding remarks

This research investigated issues related to revenue leakages and operational efficiency in Mashwede Holdings fast-food restaurants. It identifies the customer count, weak cash management practices and weak average service time as being the main variables that determine the extent of the revenue leakage problem. On the other hand, the main sources of the operational inefficiencies include waste of inventories as well as energy. Therefore, there exist quantitative relations between the two phenomena, with a possible annual saving for the organization of approximately $2.5 million from their improvement strategies.

The research results indicate that operational excellence is important for determining financial performance of firms within the fast-food industry in Zimbabwe. However, such relationship is not influenced by the developments in market trends. The above finding illustrates the importance of management theory development within a particular business context. The findings indicate that performance improvement for Mashwede Holdings can be through consideration of cash, inventory, orders and energy efficiencies.

BIBLIOGRAPHY

Juntrax (2023). What is Revenue Leakage and How to Prevent It? Juntrax Blog. Available at: https://juntrax.com/blog/revenue-leakage (Accessed: 8 December 2025.

Codence (2024). Operational Inefficiencies: How to Identify and Eliminate Them. Codence Blog. Available at: https://www.codence.com/blog/operational-inefficiencies (Accessed: 8 December 2025).

Investopedia (2025). Turnover: Definition, Meaning in Business and Accounting. Investopedia. Available at: https://www.investopedia.com/terms/t/turnover.asp (Accessed: 8 December 2025).

Investopedia (2025). Profit Margin: Definition, Formula, Types, and Examples. Investopedia. Available at: https://www.investopedia.com/terms/p/profitmargin.asp (Accessed: 8 December 2025).

NetSuite (2025) Operational Efficiency: Definition and Best Practices. NetSuite. Available at: https://www.netsuite.com/portal/resource/articles/business-strategy/operational-efficiency.shtml (Accessed: 8 December 2025).

AccountingTools (2025) Fraud Definition and Explanation. AccountingTools. Available at: https://www.accountingtools.com/articles/fraud (Accessed: 9 December 2025).

BDC (2021). The 8 Types of Waste: How to Identify Them in Your Business. Business Development Bank of Canada. Available at: https://www.bdc.ca/en/articles-tools/operations/operational-efficiency/8-types-of-waste-to-identify-in-business (Accessed: 9 December 2025).

Forbes Advisor (2024). Resource Utilization: Definition, Formulas and Examples. Forbes Advisor. Available at: https://www.forbes.com/advisor/business/resource-utilization (Accessed: 9 December 2025).

Chivunga, B., Diogo, E. and Martins, A. (2024) 'Organizational resilience and performance in the Mozambican banking sector: The role of social ties', African Journal of Economic and Management Studies, 15(1), pp. 4562.

DiMaggio, P.J. and Powell, W.W. (1983) 'The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields', American Sociological Review, 48(2), pp. 147160.

Grego, A., Sharma, P. and Vecchi, A. (2024) 'A multi-tier framework for assessing and improving organizational resilience in manufacturing', International Journal of Production Research, 62(10), pp. 35553578.

Hotel-Online (2025) 'How to get revenue management right for 2026', Hotel- Online.com, 15 January. Available at: https://www.hotel-online.com/press_ releases/release/how-to-get-revenue-management-right-for-2026/ (Accessed: 12 March 2025).

Kahn, W.A., Barton, M.A. and Fellows, S. (2018) 'Organizational crises and the disturbance of relational systems', Academy of Management Review, 43(2), pp. 377396.

Khan, M., Ali, S. and Hussain, R. (2020) 'Process integration and transaction costs in manufacturing firms: A governance perspective', International Journal of Operations & Production Management, 40(2), pp. 123139.

Lengnick-Hall, C.A., Beck, T.E. and Lengnick-Hall, M.L. (2011) 'Developing a capacity for organizational resilience through strategic human resource management', Human Resource Management Review, 21(3), pp. 243255.

Liang, X. and Li, Y. (2024) 'Measuring organizational resilience: A systematic review of instruments and future directions', Journal of Contingencies and Crisis Management, 32(1), pp. 115.

Makochekanwa, A. (2025) Zimbabwe Mining Industry Survey Report 2025. Harare: Zimbabwe Mining Development Corporation.

Mhlanga, T. (2020) 'Operational inefficiencies and technological adoption barriers in Zimbabwean SMEs', Zimbabwean Journal of Business Studies, 5(1), pp. 3449.

Mukucha, P., Rootman, C. and Mazibuko, N.E. (2019) 'Antecedents and outcomes of service encounter experiences in the Zimbabwean restaurant industry', Journal of Contemporary Management, 16(2), pp. 456479.

Pasha, A., Smith, J. and Jones, R. (2025) ’Measurement instruments for assessing organizational resilience in healthcare: A systematic review of psychometric properties’, Health Services Research, 60(3), pp. 215230.

Powley, E.H. and Piderit, S.K. (2008) ’Tending wounds: Elements of the organizational healing process’, The Journal of Applied Behavioral Science, 44(1), pp. 134149.

SIVIO Institute (2024) Governance and Revenue Leakage in Zimbabwe’s Extractive Industries. Harare: SIVIO Institute.

Williamson, O.E. (1985). The Economic Institutions of Capitalism. New York: Free Press.

Yang, M., Zhang, W. and Li, H. (2023) ’A quantitative resilience assessment model for organizations based on a triplet definition: Robustness, redundancy, and resourcefulness’, Reliability Engineering & System Safety, 233, 109107.

DesJardine, M., Bansal, P. and Yang, Y. (2019) ’Bouncing back: Building resilience through social and environmental practices in the context of the 2008 global financial crisis’, Journal of Management, 45(4), pp. 14341460.

Zhou, L. and Wu, H. (2022) ’Organizational resilience and efficiency trade-offs: A strategic management perspective’, Journal of Business Strategy, 43(5), pp. 7895.

Lee, J. and Chen, Y. (2021) ’Lean management in service industries: Reconciling efficiency and resilience’, Service Science, 13(1), pp. 2235.

Mensah, J. and Boateng, K. (2021) ’Institutional pressures and organizational inefficiencies in African firms: A comparative study’, Journal of African Business, 22(2), pp. 145162.

Al-Hussaini, A., Al-Kuwari, H. and Al-Mansoori, S. (2019) ’Governance structures and financial control in SMEs: A transaction cost analysis’, Journal of Business Research, 102, pp. 4556.

Tanner, L., Otto, K. and Besiou, M. (2022) ’Conceptualizing organizational resilience for small and medium enterprises: An integrated framework’, International Journal of Disaster Risk Reduction, 81, 103241.

Chigudu, D. (2019) ’Institutional weaknesses and organizational resilience in Zimbabwean SMEs’, African Journal of Public Affairs, 11(3), pp. 6782.

Patabendige, S. and Hopkins, J. (2021) ’Revenue leakage in service industries: A systematic review of causes and interventions’, Journal of Revenue and Pricing Management, 20(3), pp. 201220.

Vinod, B. (2022). Revenue Management in the Lodging Industry: From Origins to AI. Cham: Springer.

Afripoli Institute (2024). The Lithium Economy: Value Capture and Leakage in Southern Africa. Johannesburg: Afripoli Institute.

C-Sánchez, E., Gomez, J.F. and Garcia, P. (2025) ’Enhancing hotel profitability through a sim-learnheuristic approach to dynamic pricing’, Tourism Management, 104, 102115.

Torres-Pruñonosa, J., Díez-Martín, F. and Prado-Roman, C. (2025) ’The intellectual structure of organizational resilience research: A bibliometric analysis’, Sustainability, 17(4), 1502.

Yuan, L., Wu, H. and Liu, C. (2022) ’Organizational resilience, strategic flexibility, and firm performance: Evidence from Chinese listed companies’, Journal of Business Research, 152, pp. 386397.

Zhang, M., Yang, Y. and Zhao, S. (2023) ’Building organizational resilience through digital transformation: A configurational analysis of Chinese firms’, Journal of Enterprise Information Management, 36(5), pp. 13201343.

Bryman, A. (2016). Social Research Methods (5th ed.). Oxford University Press.

Creswell, J. W., & Creswell, J. D. (2018). Research Design: Qualitative,

Quantitative, and Mixed Methods Approaches (5th ed.). Sage Publications.

Etter, M. A., Colleoni, E., Illia, L., Meggiorin, K., & D’Eugenio, A. (2018). Measuring organizational legitimacy in social media: Assessing consumers’ judgments of a company’s social media presence. Journal of Management Studies, 55(7), 1107-1132.

Field, A. (2018). Discovering Statistics Using IBM SPSS Statistics (5th ed.). Sage Publications.

Gujarati, D. N., & Porter, D. C. (2022). Basic Econometrics (6th ed.). McGraw-Hill Education.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). Multivariate Data Analysis (8th ed.). Cengage Learning.

Heizer, J., Render, B., & Munson, C. (2020). Operations Management: Sustainability and Supply Chain Management (13th ed.). Pearson.

Johnston, R., & Clark, G. (2021). Service Operations Management: Improving Service Delivery (5th ed.). Pearson Education.

James, G., Witten, D., Hastie, T., & Tibshirani, R. (2021). An Introduction to Statistical Learning: With Applications in R (2nd ed.). Springer.

Mashamanda, T. (2025). Revenue Management Challenges in Zimbabwean Fast-Food Enterprises: A Case Study Approach. Zimbabwe Journal of Business Studies, 12(2), 45-62.

Oliver, P. (2018). Research Ethics: A Practical Guide (2nd ed.). Sage Publications.

Resnik, D. B. (2020). The Ethics of Research with Human Subjects: Protecting People, Advancing Science, Promoting Trust. Springer.

Saunders, M., Lewis, P., & Thornhill, A. (2019). Research Methods for Business Students (8th ed.). Pearson Education.

National Restaurant Association, 2023. Restaurant Industry Operations Report. Washington, DC: NRA.

Parsa, H.G., Self, J.T., Njite, D. and King, T., 2015. Why restaurants fail: Part IV—The relationship between restaurant failures and demographic factors. Cornell Hospitality Quarterly, 56(1), pp.80-90.

Gujarati, D.N. and Porter, D.C., 2009. Basic Econometrics. 5th ed. New York: McGraw-Hill.

[White][1980].

Heizer, J., Render, B., & Munson, C. (2017). Operations Management (12th ed.). Pearson Education.

Bragg, S. M. (2019). Accounting best practices (8th ed.). Wiley.

Smith, M. J. (2021). Secondary Data Analysis in Business Research: Methods and Applications. Routledge.

Tabachnick, B. G., & Fidell, L. S. (2019). Using Multivariate Statistics (7th ed.). Pearson.

Wooldridge, J. M. (2020). Introductory Econometrics: A Modern Approach (7th ed.). Cengage Learning.

Womack, J. P., & Jones, D. T. (2020). Lean Solutions: How Companies and Customers Can Create Value and Wealth Together. Simon and Schuster.

Field, A. (2018). Discovering Statistics Using IBM SPSS Statistics (5th ed.). Sage Publications.

Gujarati, D. N., & Porter, D. C. (2022). Basic Econometrics (6th ed.). McGraw-Hill Education.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). Multivariate Data Analysis (8th ed.). Cengage Learning.

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Wooldridge, J. M. (2020). Introductory Econometrics: A Modern Approach (7th ed.).

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APPENDICES



MASHWEDE DIESEL SERVICES (PVT) LTD

Hire of Earth Moving Equipments and Leading Fuel Suppliers

HEAD OFFICE
Mashwede Towers
Stand No. 18226
Culverwell Rd
Harare

No. 6 Kelvin North Road
Graniteside
Harare

P.O.BOX 6164
HARARE
+263 242 772 856
Email : salesmh@mh.co.zw
Website : www.mh.co.zw

20 APRIL 2026

TERRENCE MASHAMANDA
BINDURA UNIVERSITY OF SCIENCE EDUCATION
BINDURA

DEAR SIR/Madam,

RE: APPROVAL TO USE COMPANY DATA FOR ACADEMIC RESEARCH PROJECT

We acknowledge receipt of your request to conduct an academic research project using data from Mashwede Holdings (Private) Limited.

We hereby grant you permission to access and use relevant company data for academic research purposes. You are expected to maintain the confidentiality of all information obtained and ensure that your research activities do not disrupt normal business operations. All information gathered should be used strictly for academic purposes.

Kindly submit a copy of your final research report to Mashwede Holdings upon completion.

MASHWEDE DIESEL SERVICES
(PRIVATE) LIMITED
20 APR 2026
18226 Culverwell Road, Arcadia
Harare, Zimbabwe
Tel: 0242 772 872
Email: sales@mh.co.zw

Yours faithfully,

.....

For and on Behalf of Mashwede Diesel Services

Directors: A.E. Mashamhanda, I. Maribha, T. Mashamhanda

EX0029

STATISTICS AND MATHEMATICS DEPARTMENT

BINDURA, Zimbabwe
Mobile No: +263 77 432 4963
WhatsApp: +263 77 432 4963
E-mail: mmagodora@buse.ac.zw

BINDURA UNIVERSITY OF SCIENCE EDUCATION

CHAIRPERSON'S OFFICE

21 October 2025

The Manager
Mashwede Holdings,
18226 Culverwell road,
Arcadia,
Harare.

Dear Sir/ Madam

REF: SPECIAL REQUEST FOR TERRENCE MASHAMANDA (B223694B) TO BE GRANTED SPECIAL PERMISSION TO ACCESS YOUR INSTITUTION'S DATA FOR EDUCATIONAL PURPOSES.

This letter serves to inform you that **Terrence Mashamanda (B223694B)** is a student at Bindura University of Science Education. He is pursuing a Bachelor of Science Degree (Hons.) in Statistics and Financial Mathematics and is now at a level where the University requires him to produce a dissertation of his choice.

We are kindly requesting for your assistance wherever possible, with the information that he may need from your organization. For further information and clarification, please feel free to contact the undersigned.

Yours Faithfully

Magodora

M. Magodora (Dr.)
Chairperson, Statistics and Mathematics Department.

CHAIRMAN
BINDURA UNIVERSITY OF SCIENCE EDUCATION
PHYSICS AND MATHEMATICS DEPARTMENT
P. BAG 1020, BINDURA

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