

**THE EFFECT OF DIGITAL TECHNOLOGIES ON OPERATIONAL EFFICIENCY
IN MEDIUM ENTREPRISES: A CASE STUDY OF PARIS CORNER
SUPERMARKET, MUKONO**

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**A DISSERTATION SUBMITTED TO THE SCHOOL OF BUSINESS IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF BACHELOR OF
PROCUREMENT AND LOGISTICS MANAGEMENT OF UGANDA CHRISTIAN UNIVERSITY**

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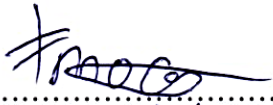


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Declaration

I, NIWAMANYA INNOCENT, hereby declare that this research is my original work and has been submitted in partial fulfilment of the requirements for the award of Bachelor of Procurement and Logistics management degree at Uganda Christian University. It has not been submitted to any other academic institution for any award. Where the work of others has been used. It has been duly acknowledged through proper citations and references.

Signature.....

Date: 30th / April / 2026

Approval

This is to certify that the research report by NIWAMANYA INNOCENT, Registration Number M23B12/106 entitled “*The Effect of Digital Technologies on Operational Efficiency in Paris Corner Supermarket*” has carried out under my supervision and is hereby approved for submission to the School of Business in partial fulfillment of the requirements for the award of Bachelors of Procurement and Logistics Management degree at Uganda Christian University

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Date: *30th April 2026*

MS. NASSUUNA RACHEAL KWAGALA

Dedication

I would like to dedicate my study to all Supermarkets around the country.

Acknowledgement

First and foremost, I thank the Almighty God for enabling me to complete my study successfully. I extend my sincere gratitude to Paris Corner Supermarket, specifically the Procurement and Disposal Unit, for the cooperation and suggestions, and to my family and Lecturers for their advice.

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List of Abbreviations

Abbreviation	Full Form
AI	Artificial Intelligence
CVI	Content Validity Index
DCT	Dynamic Capability Theory
ERP	Enterprise Resource Planning
POS	Point-of-Sale
RBV	Resource-Based View
SME	Small and Medium Enterprise
SPSS	Statistical Package for the Social Sciences
TAM	Technology Acceptance Model
UCC	Uganda Communications Commission

Abstract

This paper investigated how the digital technologies have influenced the operational efficiency of Paris Corner Supermarket, a medium-sized retail business in Mukono Municipality, Uganda. Although the use of the Point-of-Sale (POS) systems, computerized inventory management, electronic payments, and digital communication tools started in 2020, the long queues, stockouts, and inaccurate data remained some of the concerns, whether these technologies could have provided the desired speed, accuracy, and cost-effectiveness.

The study embraced a descriptive cross-sectional case study design. A census-based sample of 30 out of 32 staff (management, cashiers, and inventory personnel) provided primary data collected using structured Likert-scale questionnaires and interviews. Thematic analysis, Pearson correlation, and descriptive statistics (means and standard deviations) were used to analyse the data.

The results showed the significant positive effect of digital technologies on operational efficiency (the overall mean = 3.85). The strongest influence on accuracy and reliability was on POS systems (mean = 3.90; $r = 0.78$) and then inventory systems on real time tracking (mean = 3.89; $r = 0.72$). The intermediate impact was on the speed of service using digital communication tools (mean = 3.63; $r = 0.58$). Nevertheless, infrastructural obstacles (network and power instability), technical hiccups, and lack of staff digital skills were significant hindrances to full benefits.

The research concludes that digital technologies have significantly improved the working efficiency of Paris Corner Supermarket, but the most significant benefits can be achieved with the additional investments into the effective infrastructure and constant training. The suggestions are two-WAN internet backup, digital skills training (once a month), and cycle counting. The results will have practical implications to medium sized supermarkets, as well as, policy implications in terms of the digital transformation of the Uganda retail industry.

Keywords: *digital technologies, operational efficiency, POS systems, inventory management, medium enterprises, Uganda.*

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter presents the background of the study, problem statement, study objectives, research questions, scope of the study (content, time, and geographical scope), significance of the study, and the conceptual framework that will be used for analysis in this study.

1.1 Background

The modern world has been characterized by rapid changes and technology has taken center stage in the way organizations conduct their day to day operations. The use of digital tools and systems is now important to nearly all business processes. To enhance the mode of operation, supermarkets, retail shops and other organizations have resorted to using digital technologies like Point-of-Sale (POS) systems, electronic payment systems, computerized inventory management and usage of digital communication tools the world over. Laudon and Laudon (2020) state that digital technologies can assist organizations in delivering services faster, minimizing human mistakes, and utilizing the available resources more effectively. Technology makes running of business to be easier, and information is readily shared across departments.

Digital systems are wholly adopted by the supermarkets in developed nations like the United States, the United Kingdom, and Japan. Such systems are used to monitor the goods between the supplier and the shelf of the shop and eventually through the customer. They also enable managers to be in a position to know which products are selling swiftly and those which have to be reordered. Through digital technologies, time is saved, sales are improved and customer trust is boosted due to good and fast delivery of their services. Practically, all supermarkets in these countries rely on electronic data management systems, digital marketing and online payment systems in order to stay competitive.

The development of retail business based on digital technologies is also growing in Africa. Most of the businesses are coming to understand that technology is not just exclusive to the big business but is also

applicable to small and medium sized businesses. As an example, mobile payment systems, self-service checkout machines, and online delivery have been launched in Kenya, South Africa, and Nigeria in supermarkets (Muriithi, 2021). Such innovations make shopping easier and quicker to the customers besides assisting businesses to cut down operational expenses.

The retailing industry in Uganda is developing at a great pace due to the development of urbanization and the increased migration of the population to modern modes of shopping. Supermarkets have been a significant contribution to the economy and have provided people with a source of employment as well as adding revenue to the economy. In recent years, digital solutions like computerized cash registers, barcode scanners, and mobile money payment solutions have been adopted by the Ugandan supermarket like Paris Corner in Mukono. These technologies simplify the process of stock management, serving the customers, and maintaining the correct financial records (Mwesigwa & Ssekakubo, 2021). As an illustration, in case a supermarket operates with a POS system, it is able to automatically reflect and update the stock level after every sale and, this way, it is able to avoid stockouts and overstocking.

Owing to these developments, there are still a number of supermarkets in Uganda experiencing difficulties in their operations. Some of them report on delays in the service of the customers, inadequate control of inventory, data inaccuracy, and human error losses (Nakato, 2022). In other instances such inefficiencies are due to lack of knowledge on how to use digital systems or lack of sufficient investment in technology. At other moments, the management might exceedingly comprehend the application of technology in the daily operations. This has rendered others among the supermarkets to use manual systems, which are time consuming and they make errors.

One of the medium-size retail stores that have begun to embrace digital technologies in an attempt to enhance the delivery of services is Paris Corner Supermarket located in Mukono Municipality. The supermarket has also established POS systems, online payment systems, and computerized inventory systems to assist in managing the store and capturing the day-to-day sales. Nevertheless, there is

uncertainty as to whether on the operations of the supermarket, these technologies have indeed been more efficient. Delays, queuing of customers and stock management can still be occasionally experienced. This brings about a necessity to evaluate the impact of digital technologies on the performance of the supermarket. Thus, this paper will be an attempt to investigate the impact of digital technologies on the operational efficiency in Paris Corner Supermarket, Mukono.

1.2 Statement of the Problem.

It is anticipated that supermarkets will offer fast, precise, and dependable services to the clients. To do this, most people have implemented various types of digital technologies to facilitate work and hasten it. Paris Corner Supermarket is one of those that has attempted to adopt this digital transformation by incorporating the use of technologies like POS, mobile payment methods and keeping records using computer. These systems are purported to lessen human error, accelerate service as well as enhance stock management.

But, still, there are numerous inefficiencies in practice. There are customers who are at times subjected to long queues in the counters, there are delays in making payments and also frequent stockouts. Another issue that managers encounter is the inability to find the correct records on the sales and movement of stock. These issues indicate that the efficiency of operations has not been enhanced like anticipated even after the implementation of digital technologies. This supports the question that whether the technologies are put into good use and whether staff possess the right skills to use them or whether the systems use are adequate to serve operational requirements of the supermarket.

Other studies that have been conducted in the past have concentrated mostly on large organizations or industries like the banking, telecommunication and manufacturing industries. In Uganda, very few studies have been conducted on the impacts of digital technologies on the efficiency of small and medium supermarkets. Such knowledge deficit renders managers and policymakers hard to get to know the actual effect of technology on retail performance. Thus, the research will examine how digital technologies have impacted the level of operational efficiency within Paris Corner Supermarket

in Mukono, with a view to offering a workable information to enhance the application of technology in the retail operations.

1.3 Purpose of the Study

This paper aims to discuss how the digital technologies have influenced the operational efficiency at the Paris Corner Supermarket, Mukono. The research is set to determine the effect of the use of digital device like the point of sale system (POS), computerized inventory management system and computerized payment system in determining the speed, precision and cost effectiveness of the operations. It also aims to establish how much these technologies improve the delivery of the services, minimize the errors, and improve the overall productivity. In this way, the study aims at offering information on how a supermarket can successfully adopt digital systems to realize greater operational performance and surmount obstacles that restrain their effectiveness.

1.4 Specific objectives of the study.

- i. To determine the impact of the adoption of P.O.S system on accuracy and reliability.
- ii. To find out the impact of inventory systems in actual time tracking.
- iii. To establish the influence of Digital communication tools on speed of service.

1.5 Research questions of the study.

- i. How does using P.O.S systems affect accuracy and reliability of Paris corner Supermarket?
- ii. How does inventory systems impact on real time tracking in Paris Corner Supermarket?
- iii. How do the digital communication tools influence speed of service delivery in Paris Corner Supermarket?

1.6 Scope of the Study

The scope of the study is categorized into three terms: content, geography as well as time scope.

1.6.1 Content Scope

The research question is based on the consideration of digital technologies as the independent variable and operational efficiency as the dependent variable. Digital technologies involve the POS machines,

inventory management software, electronic payment systems, and digital communication equipment. The measure of operational efficiency will be done based on the speed of service delivery, precision in operations, cost, and the level of productivity.

1.6.2 Geographical Scope

The research will be carried out in Paris Corner Supermarket in Mukono Municipality in Uganda. Mukono was chosen as it is among the emerging urban centers which have a number of retail stores which are undergoing modernization of technologies. Paris Corner is a good example of learning the way technology can enhance the operation of the supermarkets in a semi-urban environment.

1.6.3 Time Scope

The research will be centered on the years 2020-2025. This period is chosen as it was at this time when the supermarket started embracing significant technological systems, including the POS and electronic payments. It is thus suitable in the analysis of the efficiency changes that have been experienced since the development of these technologies.

1.7 Justification of the Study

This study is justified by the lack of academic, practical, and policy research on the digital technologies usage in the supermarket operations, especially among the medium-sized businesses in Uganda.

To begin with, there is a lack of empirical research on the specific implications of digital technologies (such as Point-of-Sale or POS systems, inventory management systems, and digital communication tools) to indicators of operational efficiency like accuracy, real-time tracking, and speed of service delivery despite their growing acceptance among supermarkets. Majority of the existing studies are conducted on big organizations/ industries including banking and telecommunications and there is gap in knowledge on middle-sized supermarkets in semi-urban settings like Mukono. This research thus fills in the academic understanding through researching the relationship between certain digital technologies and efficiency in operations within a retail structure.

Second, in a pragmatic view, more often than not, such supermarket managers invest in digital systems with no clear indication of the benefits they actually have. This study, through the analysis of the POS system and its influence on accuracy and reliability, inventory system and its contribution to real-time tracking, and the digital communication system and speed of service, offers some practical advice that can inform the management decision on the usage of these technologies and staff education, and their improvement in Paris Corner Supermarket and similar enterprises.

Third, the research is policy and development justified. The Government of Uganda has been encouraging changes towards digitalization among the small and medium-sized enterprises as a tactic of enhancing productivity and competitiveness. Nonetheless, the development of policies needs evidence-based studies. The results of the present research will give valuable insights to policymakers, business development agencies, and regulators on how the digital technologies can be tapped well in enhancing efficiency in operations in the retail sector.

Hence, the study is valid since it fills the gaps in previous studies, assists managers to make decisions, and adds to the national agenda of facilitating digital transformation and operational efficiency of medium sized businesses in Uganda.

1.8 Significance of the Study

This research is significant to a number of groups of people and organizations.

1.8.1 To Policy Makers and Regulators.

The results can inform government bodies and business development agencies in making decisions that would facilitate the digitalization of retail businesses. They can utilize the findings to develop policies that support the adoption of cost-effective and efficient digital tools by small and medium enterprises.

1.8.2 To Academicians and Researchers.

The study will be part of the current body of literature on the relationship between digital technology and operational efficiency. It can be valuable to other researchers as a source of information to investigate similar problems in other supermarkets or industries.

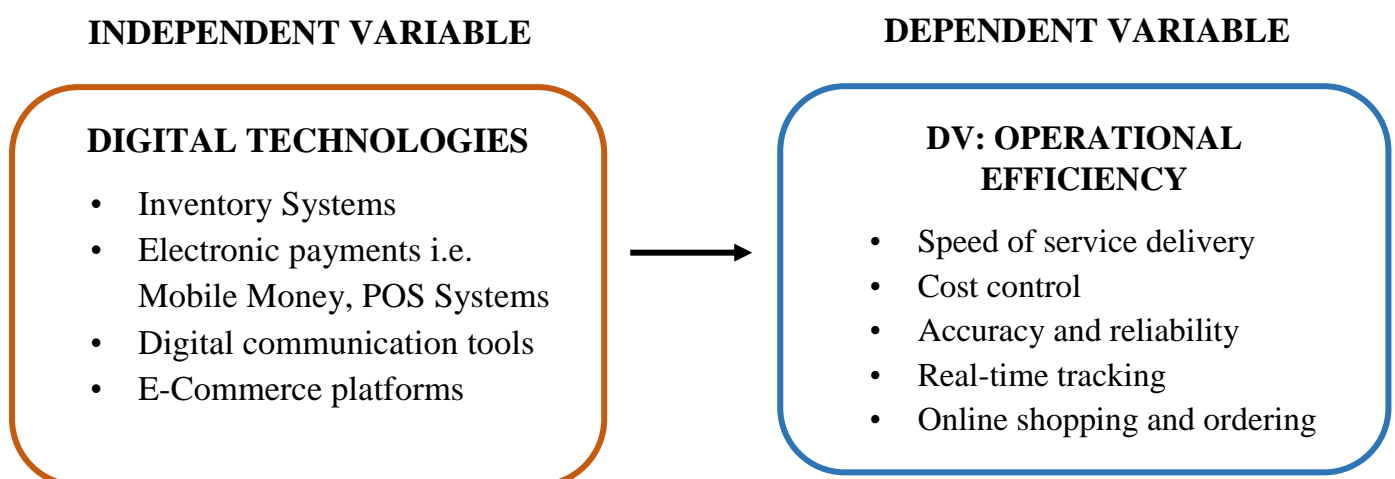
1.8.3 To Practitioners.

The results will help managers and staff in the supermarkets to know how the current digital systems are affecting the day to day operations. It will show where efforts can be enhanced, including training of personnel, integrating the systems or additional technological enhancement, and also show the benefits of adopting technology to make operations more efficient and facilitate training requirements.

1.9 Conceptual Framework

The theoretical framework in this paper relies on the fact that the digital technologies among the most important stakeholders in the procurement process have a substantial impact on the efficiency of operations. Digital technologies is considered as an independent variable and operational efficiency as a dependent variable. The theory is based on the ideas of the supply chain management, stakeholder theory.

Figure 1: Conceptual Framework Diagram



Source: This has been borrowed as part of Technology Acceptance Model (Davis, 1989) and Resource Bases View (Barney,1991) and adjusted by the researcher 2026.

The conceptual framework shows that the independent variable (digital technologies) affects the dependent variable (operational efficiency) in Paris Corner Supermarket. Examples of digital technologies are inventory, electronic payments like mobile money and POS systems, electronic communication tools and e-commerce.

These technologies are expected to improve different aspects of operational efficiency, such as speed of service delivery, cost control, accuracy and reliability, real-time tracking, and online shopping or ordering. The framework demonstrates that all forms of digital technology are relevant in ensuring that the operations of the supermarket are faster, more precise, and more convenient to the staff and customers.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter will examine the books, articles, and theories that will guide this study. The primary objective of the research is to observe the influence of digital technologies on the efficiency of the functioning of Paris Corner Supermarket in Mukono. A massive, paradigm shift in the operation of retail supply chains is the replacement of the old manual processes based on hand written ledgers, physical counts of cash and visible stock inspection with new computerized digital processes. The contemporary business world dictates that to survive, an organization must be fast in conducting business and also in the management of its resources.

This chapter describes the way in which researchers perceive this technological change, what particular obstacles small and medium enterprises (SMEs) in developing countries have to overcome, and how this digital transformation occurs in the real world. It is thematically reviewed literature that investigates the effect of the point-of-sale (POS) systems, computerized inventory control and digital communication tools on the efficiency of a retailing enterprise.

2.1 Theoretical Review

Various theories are applied in this study, which are the Technology Acceptance Model (TAM), the Resource-Based View (RBV), and the Dynamic Capability Theory (DCT). Combined, the theories assist in elucidating the reasons and methods why medium-sized supermarkets need to embrace digital technologies so that they can enhance their day-to-day operations and why certain businesses thrive and others fail. The first main theory is the Technology Acceptance Model (TAM), which was created by Fred Davis in 1989. The principal point of this theory is that, in case users get a new technology at their disposal, two primary variables have a role to play in determining whether they will really use it or not; perceived usefulness and perceived ease of use. The theory is very suitable to the operation of Paris Corner Supermarket. The supermarket employees are not simply attempting to employ computers because it appears modern; they are endeavoring to serve the customers more efficiently

and have a better stock management. Provided that a cashier or a store manager finds a new Point-of-Sale (POS) system simple to operate and really beneficial to minimize the number of his or her daily calculation errors, TAM will be happy to accept it. But when the system is very complex, has a lot of technical skills, or even the system keeps breaking down during the peak times the staff will be against it and they will automatically go back to their manual paper system. This theory helps to remember that the efficiency of digital systems is not only based on the software but on a great part relies on the human resources in the supply chain departments of the supermarket. The second theory is the Resource-Based View (RBV) developed by Jay Barney in 1991. According to this theory, organizations win and outperform their rivals because they acquire and utilize resources that are valuable, are rare and difficult to imitate by others. Using RBV to digital retail, there is a fundamental shift in our perception of technology and staff. Rather than merely viewing computers and barcode scanners merely as tools that any shop can purchase, this theory sees a fully digitalized system along with a digitally trained workforce as a very valuable and rare asset. This is very important for Paris Corner Supermarket. The supermarket will develop a formidable, secure platform of operation by deciding to invest in trusted POS and inventory software and educating their personnel to use them impeccably. The same computers can be purchased by competitors, but the internal efficiency, the seamless flow of data, the assurance of the workforce that Paris Corner will create are factors that cannot be easily copied by competitors. The third one is the Dynamic Capability Theory (DCT). According to this theory, an organization should not be judged on its success by the things it already owns but rather on its capability to integrate, build, and restructure its internal competences to make its way out in the fast changing environment. This is their reality as far as a medium enterprise in Uganda is concerned. The retail market is ever changing with consumer preferences shifting abruptly, inflation rising high and the enormous burst of mobile money. In the selection of digital tools, the DCT theory indicates that a supermarket has to be very flexible. As an example, dynamism in order picking, receiving, and storage with the help of digital systems is likely to reduce lead times and maximize space. Nevertheless, a close examination of the way things operate in developing nations

reveals that it is in most cases difficult to adjust because of ineffective infrastructure. By applying the DCT in this paper, we will need to determine whether Paris Corner Supermarket is indeed dynamically responding to these new digital requirements, or they are languishing in obsolete inefficiencies.

2.2 Review of Related Literature (Thematic)

2.2.1 The Impact of Point-of-Sale (POS) Systems on Accuracy and Reliability

The former goal examines the extent to which the POS systems are being utilized in the real world to enhance financial accuracy and reliability as opposed to being discussed as a modern upgrade. Research around the globe indicates that retailing businesses are now fully dependent on digital check out systems to exist. Out of the organizations using the sophisticated POS software, huge operational benefits are stated in the global studies. In its turn, a large survey conducted by the National Retail Federation (2023) indicated that those stores employing high-tech POS software have noted a 25% rise in accuracy within the inventory, and a 30% growth in the productivity of the staff due to the fact that the systems helped to automate routine procedures and minimize the number of mistakes. The transaction processing technologies are modern, reliable, accurate, faster and secure and totally eliminates the human errors that are involved in the manual mental arithmetic. When we however take a closer look at the research, however, the difference between the rich and the developing countries is quite big when it comes to what happens on the ground. Whereas international retailers can readily add such a sophisticated functionality to their POS as Artificial Intelligence, researchers in East Africa indicate a far more complex situation. Ahumuza et al. (2025) examined the operation of small retail ventures in Kampala Central Business District. They discovered that companies that utilized POS systems and digital payments recorded a colossal growth in their revenues of 47.6 percent and a significantly larger customer base than cash-only companies. Brian et al. (2024) concur, stating that retailers in Kampala that have incorporated advanced POS systems registered significant gains in terms of net income margin and customer retention quotas. However, in spite of these great advantages, there is always an issue of what we may term as symbolic adoption, or surface digitization. According to research, even though the hardware may be installed, 60 percent of the retail

businesses in Kampala continue to use a manual system partially to record keeping and the provision of transactions, thus, causing constant inefficiency and high cost of operation. Most of the small businesses purchase the hardware of the POS and still experience inefficiencies in their transactions due to the fact that their employees are not digital enough to utilize the system effectively. Also, power outages and unreliable internet services are rampant in semi-urban regions that greatly reduce the reliability of POS. There is a huge gap in this research because business owners understand the importance of using POS systems to improve accuracy but the reality is that the practice is weak since the cost of setting up the system is high, technical skills are lacking, and there is no profound digital skills.

2.2.2 The Impact of Computerized Inventory Systems on Real-Time Tracking

The comparison between computerized inventory systems and the traditional manual counting is very important in terms of real time tracking of goods. The inventory is the money that the business has at the shelves and the poor use of it will cause the business to collapse financially. Researchers indicate that computerized inventory management is considered as the top priority in developed international retail industry. As Nweje et al. (2025) emphasize, such systems result in optimizing the stock levels, improving the demand forecasting, and significantly decreasing the stockouts and overstocking due to the real-time visibility of stock. The automated systems are capable of tracing a product since it enters the warehouse and until it comes out of the check out counter. However, studies conducted in East Africa present a rather different account of the way these systems are enacted and believed in. Mpirirwe, Tinali, and Singogo (2025), who researched on warehouse management in Ugandan retail supermarkets, discovered that computerised order picking, receiving accuracy and storage accuracy had a positive and significant impact on the overall performance of the supermarket. This is consistent with the results of Kogei and Gachengo (2025) regarding the research of Naivas supermarkets in Kenya. They discovered that electronic inventory management saved a lot of time that was used in stock-taking and minimized stock shortages. The relocation of manual checking to automated systems in these environments serves as a huge safety net to the business in case of supply chain disruption.

The various findings however when compared reveal a massive contradiction in the process of adapting the retail technology locally. Large supermarket chains are able to afford complex Enterprise Resource Planning (ERP) systems that are able to track in real-time, but medium-sized businesses find it difficult. The nature of the business operations in the local Ugandan supermarkets compels the owners to use alternatives that are less expensive and at times manual due to extreme budget limitations. Surprisingly, Kogei and Gachengo (2025) even discovered that a substantial percentage of the supermarket employees continue to believe that manual inventory practices are more effective than electronic ones and the level of doubt and reluctance to complete automation is high. Thus, as the global studies indicate that the retailing world is totally automated, the local studies indicate that in East Africa, the real-time tracking remains to be partially automated through the use of manual process, the distrust in the software and the fear of the system collapse.

2.2.3 The Influence of Digital Communication Tools and Electronic Payments on Speed of Service

Digital tools exist in large numbers and they are used by organizations to accelerate the process of service delivery and this is important since current customers detest long queues. Other scholars dwell on the strength of online communications and social trading. According to Othware (2024), the retail industry in Uganda is experiencing an enormous mobile-based shift where applications like the WhatsApp Business are used to provide real-time customer support, order in a few seconds, and direct messaging. Combined with the mobile money, these tools enable supermarkets to attend to the customers in a fast and efficient way where in some cases the customer does not need to form a physical queue at all. According to other researchers, the most important aspect in relation to efficiency in the operations of a store is the rate of the checkout queue in the store. In a study on entrepreneurs in Nairobi, Fowzia (2024) has shown that mobile applications and fintech applications simplify business operations, there are significant operational delays, and there is a positive correlation with financial literacy and business growth ($r = 0.929$). Ahumuza et al. (2025) concur with this, showing that the use of digital payments, in this case, mobile money platforms enhanced the efficiency of transactions by an astounding 62.8 percent in the case of retail business in Kampala. In this

perspective, until a supermarket completes its mobile money and electronic payment integration, it will not be able to truly measure speed of service, given that mobile transactions in such destinations as Kenya have reached the equivalent of half the GDP of the country.

But taking all these various perspectives together, Udo et al. (2024) present an extremely powerful sobering argument about the African situation. They think that the absence of desire is not the largest issue to prevent operational efficiency, but the digital divide and poor digital infrastructure. Although the WhatsApp and mobile money are brilliant in theory, the local market is strongly impacted by the undependable telecommunication systems and deficit of digital skills of employees. When a network fails on a hectic Saturday afternoon, a supermarket that has fully adopted mobile money will abruptly suffer huge delays, furious clients, and sales. The most challenging decision in this literature is that supermarkets must decide whether to take on high-speeding digital payments to upgrade or to have slow and manual cash registers as a fall-back option since the local internet infrastructure is by no means ready to be completely dependable.

2.3 Summary of Literature and Identification of Gaps

This is well reflected in the literature, which states that the implementation of digital technologies (including POS systems, computerized inventory tracking, and electronic payments) is crucial to the development of robust retail activities and the fulfillment of contemporary consumer expectations. The theories applied in the present study, Technology Acceptance Model, Resource-Based View, and Dynamic Capability Theory provide very solid academic justifications as to why supermarkets have to abandon slow and manual processes. Rather, they should work on profound digital integration to enhance accuracy, real-time tracking of goods and accelerate service delivery.

Nevertheless, a closer examination of the research shows that there is a huge issue. Although much has been said and celebrated about digital transformation in the world in general, in the Ugandan medium enterprises, a lack of digital skills, high set up costs, resistance to change among employees, and poor internet infrastructure are some of the reasons why it is not happening. Although we had

extensive information about digital retail all over the world, a close examination reveals that there are three significant blank spaces or, to be more exact, gaps that cannot be found and will be attempted to be addressed in this particular study:

First, it has an obvious **Contextual Gap**. The bulk of the good, experimented research on digital retail systems (such as the work by Nweje et al., 2025, and Kogei and Gachengo, 2025) was conducted in wealthy, developed nations or centred on huge, dominant supermarket chains such as Naivas in capital cities. Limited real, empirical data exists that can demonstrate the functionality of digital tools within medium-sized, indigenous supermarkets within the process of transition in semi-urban zones such as Mukono. The situation that organizations such as Paris Corner Supermarket operate in is highly distinctive as the pressure of modern technology collides directly into the face of semi-urban infrastructural limitations and localized customer behavior. The existing literature lacks sufficient clarity on how these particular medium enterprises manage these conflicting forces in trying to become operationally efficient. Second, the research that has been conducted in this region to date has a colossal **Methodological Gap**. Previous research efforts aiming to examine technology adoption in the East African retail context were mainly based on a large-scale quantitative survey that lumped hundreds of different businesses in a single study, including general SMEs within the Kampala Central Business District (Ahumuza et al., 2025; Brian et al., 2024). These older studies are not always able to reflect the operational realities on the ground, day-to-day, of a single, particular retail setting, although statistics play their role. This paper fills that gap by applying a narrow case study analysis on Paris Corner Supermarket. This study reveals the true, unseen obstacles to operational efficiency that a survey of this nature would entirely fail to discover by collecting direct, specific operational information through the systems daily on the actual staff. Last but not least, **Time Gap** is also essential in the present research. Digital commerce, mobile money integrations, and retail software world has been evolving at an extremely rapid pace in the recent past. Due to this, the older studies entirely overlook the colossal technological transformation brought by the recent post-COVID digital explosion, the hypergrowth of AI analytics in the retail sector, and the new 2024/2025 realities of

omnichannel trade in Uganda. The current research directly fills this time gap since it specifically concentrates on the period between 2020 and 2025. This enables the study to present the present realities, the new influences of the modern cloud based systems, and the daily trials taking place in the check out counters in the present day.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter describes the research methodology that was employed to carry out the research and data collection procedures. The research design, research area, and the population, sampling procedures, sampling size and composition, data collection procedures, data analysis methods and data quality control, reliability and ethical considerations are inclusive.

3.1 Research Design

A research design is simply the overall guideline on how a researcher will collect and analyze data to respond to the research questions (Creswell and Plano Clark, 2018). The case study method was employed in this study, and the chosen location was Paris Corner Supermarket in Mukano, Uganda. The case study was selected due to the possibility of the researcher to have a very close, in-depth examination of how digital technologies actually work in the real world and not merely examine the general theories. In order to achieve the optimal outcome, the proposed study used the descriptive cross-sectional survey research design. The design used is suitable as it allows the researcher to gather quantitative data at one time using structured questionnaires, via Google Forms. It is also possible to conduct a study of the correlation between operational efficiency and digital tools.

3.2 Study Population

The target population refers to the entire population that the researcher desires to research on. In this study, the entire population was made up of 32 individuals who are directly or indirectly engaged in the day-to-day operations, check-outs and stocking of Paris Corner Supermarket. It consisted of 4 management employees (the top administrators who make the technological and operational decisions), 18 employees working in the cashiers and sales offices (who operate the POS systems and mobile payments 24/7), and 10 employees working in the inventory rooms and real-time tracking (attendants). This was a well-selected mixed group since they are the individuals who are experiencing the reality of the digital procurement and sales process on a daily basis. The management gives the

internal perspective of the expenditures and choices of implementing the digital systems. Conversely, the cashiers and inventory personnel give the front picture on the level of the challenge to utilize these new systems at the peak shopping time. The combination of these various groups will present an overall picture of efficiency in operations of a medium enterprise.

3.3 Study Area

The study was conducted in Paris Corner Supermarket, which is within the Mukono Municipality of Uganda. The choice of this particular place was determined by the fact that Mukono is a fast developing semi-urban transit center, and the supermarket is an ideal example of a medium-sized business that is struggling to strike the balance between the usage of the modern digital means and the local infrastructural limitations. Moreover, this was a convenient place that was well accessible and this was effective in collecting data in a cost effective manner without incurring unnecessary expenses on traveling.

3.4 Sample Size and Selection

Due to the fact that it is too complicated and time-consuming to interview all the 32 people during the time when the supermarket is functioning, a smaller representative sample, referred to as a sample was selected. The size of this sample was calculated using the famous sample size mathematical formula created by Krejcie and Morgan (1970). According to the scientific formula, for a total population of 32 people, a sample size of exactly 30 people is mathematically strong enough to represent the whole group with a 95% confidence level.

The standard Krejcie and Morgan formula is:

$$s = \frac{\chi^2 NP(1 - P)}{d^2(N - 1) + \chi^2 P(1 - P)}$$

Where:

- s = The required sample size.
- N = The total population size, which is 32.

- χ^2 = The table value of chi-square for 1 degree of freedom at the 95% confidence level, which is a constant mathematical value of 3.841.
- P = The population proportion. Krejcie and Morgan assume a standard value of 0.50 (or 50%) because this provides the maximum possible sample size, ensuring the highest accuracy.
- d = The acceptable margin of error. For a standard 95% confidence level, the margin of error is 5%, which is written as 0.05.

Step 1: $3.841 \times 32 \times 0.5 \times (1 - 0.5) = 30.728$

Step 2: $0.05^2 \times (32 - 1) + 3.841 \times 0.5 \times (1 - 0.5) = 0.0025 \times 31 + 0.96025 = 1.03775$

Step 3: $s = \frac{30.728}{1.03775} = 29.61$

Because you cannot interview a fraction of a person, we always round up to the nearest whole number.

Therefore, the required sample size is $s = 30$.

To make sure every group was fairly represented, the sample of 30 was broken down proportionally as shown in the table below:

Table 1: Sample Size and Selection

Category	Population	Selected Sample Size
Management / Admin Staff	4	4
Cashiers / Sales Staff	18	17
Inventory / Store Attendants	10	9
Total	32	30

Source: Adapted from Krejcie and Morgan (1970)

3.5 Sampling Techniques

There were two methods that we employed to select the sample people. In the case of the management and administration employees, there was the use of purposive sampling. Our sample of individuals was selected by hand, who possess specialized and expert information about the purchase of the digital software and measurement of operational efficiency. In the case of the cashiers and the inventory staff, the simple random sampling was applied. It is comparable to a lottery system. All the employees in these departments were assigned numbers and the numbers were randomly selected up to the point of obtaining the required sample. This guaranteed that all the personnel were given equal and fair opportunity of being selected in the study, which serves to eliminate any bias or favoritism (Sekaran, 2003).

3.6 Data Sources

This study involved the use of primary sources of data. Primary data refers to new data, and it is one which is collected first hand and collected directly by the individuals involved in the process. This information could be gathered by the researcher through the issuance of survey questionnaires and face to face interviews. This allowed us to receive the real, live opinions, emotions and day to day struggles of the supermarket employees in dealing with digital tools. The data collection instrument is the survey questionnaire.

3.7 Instrument of Data Collection

The information gathering instrument was a 32-item short-answer questionnaire which provided a standardized format in which the respondents were filling the form. The tools that were used to collect the information were the interview guides and structured survey questionnaires.

3.7.1 Questionnaires

These were spread among the larger population (the cashiers and store attendants). The questions of the questionnaires were closed-ended and easy to understand with reference to the 5-point Likert scale (where 1 = Strongly Disagree to 5 = Strongly Agree). This eased the process of collecting hard and

quantitative information at an extremely rapid pace. The tools were also piloted to a small group of people to make sure that the questions were rather short and understandable to the actual study.

3.8 Quality Assurance

In order to ensure that the information obtained was credible and sound, we relied on two criteria: reliability and validity.

3.8.1 Reliability

Reliability means that the tool will give the same results whenever it is utilized. Cronbach's Alpha is a mathematical formula that the researcher used to test reliability. A tool whose score is more than 0.7 can be described as highly reliable (Sekaran, 2003).

3.8.2 Validity

Validity implies that the tool actually measures what it is meant to measure. The Content Validity Index (CVI) was used to check the validity. The researcher required retail technology experts to go through the questions. Amin (2005) cites a CVI score of 0.7 or higher to be considered as valid questions. Piloting the questions also served to rectify any words that would bring about confusion when the queries were given out to the ultimate sample.

3.9 Measurement of Variables

Two key variables were measured during the study:

3.9.1 The Independent Variable Digital Technologies was the independent variable. It was measured through questioning the use and efficiency of POS system, computerized inventory control system and electronic payment/communication systems.

3.9.2 The Dependent Variable It was measured by asking questions on the degree in which the digital systems have been effective in achieving the goals of the supermarket such as the minimization of financial error, increased checkout time, and real-time stock visibility. Both variables were recorded on the simple 1-to-5 Likert scale in order to simplify the process of converting the answers into data.

3.10 Presentation and Data Analysis

The data was analyzed in two forms after all of the surveys and interviews were gathered. The quantitative data (the numbers from the surveys) was inputted into computer software such as Advanced Excel or SPSS. To summarize the responses, the researcher applied descriptive statistics (such as averages and percentages), and to demonstrate mathematically whether digital technologies in fact alter operational efficiency, inferential statistics (such as regression analysis) were applied.

Thematic analysis was employed in analyzing the qualitative data (the spoken words of the interviews). We read all the interview notes and categorized closely similar opinions into groups of major themes, e.g., "Fear of system crashes" or "Lack of training for the software." The target conclusion will be given in the form of summary tables, the numbers will be provided on bar charts, and the human stories will be presented directly.

3.11 Ethical Considerations

Moral and ethical guidelines were strictly adhered to throughout the study. First, informed consent was received. This implies that the researcher clearly informed all individuals of the purpose of the study, and all of them signed a form consenting to take part willingly. Nobody was pressured, and no money was paid to purchase responses. Second, complete confidentiality was assured. Staff were not forced to give their real names to secure their jobs. Rather, all the documents were written with a fake code (such as Cashier 12 or Manager 2). Lastly, the ethics committee of the university officially approved and reviewed the study as it was considered safe and respectful to all.

3.12 Study Limitations

This study had a couple of difficulties like any other research. The busy schedules of the supermarket employees formed one of the biggest limitations, since an interview could be postponed or rescheduled at any time if there was a sudden rush of customers, consuming more time than expected. Another issue was that not all staff were initially willing to give their real views on the technology due to the fear that criticizing the systems might upset the management. The researcher addressed this

issue by taking time to establish trust with the respondents and continuously reminding them that their responses were confidential and anonymous. Since this is a case study limited to Paris Corner Supermarket only, the findings may not accurately represent all retail spaces in Uganda, but the lessons learned are very lucrative to the medium enterprise sector as a whole.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION OF THE FINDINGS

4.0 Introduction

It is a chapter that reports, discusses and draws conclusions of the primary data collected through questionnaires that were administered to the respondents at Paris Corner Supermarket, Mukono. The information was gathered using both the physical forms and Google forms.

4.1 Response Rate

The questionnaire was designed to target 30 respondents who would include management staff, cashiers/sales staff and inventory/storekeepers as was calculated in Chapter Three using the Krejcie and Morgan (1970) formula. Of these 30 questionnaires, 30 of them were also duly filled and sent back resulting in an 100 per cent response rate. The high response rate is because of the direct and personal contact with the participants during work hours that the researcher gained through the use of follow-up reminders and the convenient method of the questionnaire. The 100 per cent response rate gives the best strong representation of data practically eliminating the non-response bias and making the inferences very strong in this case study.

4.2 Demographic Characteristics of the Respondents

This part provides a summary of the background features of the respondents to put the results into perspective. The frequency distributions analyzed the demographic data in the following way.

Table 2: Distribution of Respondents by Position Level

Position Level	Frequency	Percentage (%)
Storekeeper / Inventory Staff	11	36.7
Cashier / Sales / Customer Service	10	33.3
Manager / Procurement Officer	9	30.0
Total	30	100.0

Source: Primary Data (2026)

The sample was very representative of the working floor with most of the Storekeepers (36.7%), Cashiers/Sales personnel (33.3%), and Management/Procurement personnel (30.0%). Such balance means that the incorporation of digital systems is considered in a variety of different perspectives. The frontline opinions on the use of POS systems obtained by the operation personnel are realistic whereas the management offers strategic opinions on procurement and efficiency.

Table 3: Distribution of Respondents by Gender

Gender	Frequency	Percentage (%)
Male	17	56.7
Female	13	43.3
Total	30	100.0

Source: Primary Data (2026)

The proportion of the gender distribution was relatively equal with 56.7 and 43.3 per cent of males and females respectively. This will make sure that the views on the ease of use of technology will not be so skewed by a particular group of people, i.e. one gender.

Table 4: Distribution of Respondents by Age Bracket

Age Bracket	Frequency	Percentage (%)
18–25	18	60.0
26–35	11	36.7
46 and above	1	3.3
Total	30	100.0

Source: Primary Data (2026)

Paris Corner Supermarket has an overwhelming number of young people comprising 60 percent of the respondents who are between 18 and 25 years and 36.7 percent who are between the 26 and 35 age bracket. It implies a very tech-native workforce, which, in theory, would work with digital technologies much more easily, which resonates with the postulates of the Technology Acceptance Model (TAM).

Table 5: Distribution of Respondents by Years Worked at the Supermarket

Duration of Service	Frequency	Percentage (%)
1–3 years	18	60.0
Less than 1 year	6	20.0
Above 6 years	4	13.3
4–6 years	2	6.7
Total	30	100.0

Source: Primary Data (2026)

Most of the population (60 percent) has been employed in the supermarket between 1-3 years. It means that the majority of the staffers were working during the main transition into the modern digital integration (2020-25) and have enough working memory to assess the efficiency changes.

4.3 Impact of Point-of-Sale (POS) Systems on Accuracy and Reliability

The section is a response to the first objective where the participants will be asked to provide responses to questions regarding the effects of POS systems on accuracy and reliability of transactions. The measurement of the responses was based on 5-point Likert scale (1=Strongly Disagree, 5=Strongly Agree). The means with more than 3.0 indicates general agreement, whereas the standard deviations indicate the variation of the responses.

Table 6: Descriptive Statistics for POS Systems

Statement	Mean	Std. Dev.
The POS system reduces transaction errors.	3.83	1.29
The POS system ensures correct pricing of products.	3.87	1.14
The POS system improves financial record accuracy.	4.07	1.11
The POS system updates sales records reliably.	3.80	1.24
The POS system minimizes manual calculation errors.	3.93	1.26
Overall Average	3.90	1.21

Source: Primary Data (2026)

The general average of the respondents was very positive with respect to the effects of POS systems (mean=3.90). The greatest consensus was in the fact that the system was able to enhance the accuracy of the financial records (mean=4.07), and this has totally removed the human errors involved in manual mental calculations. Nevertheless, the marginally lower score of the reliable updates (mean=3.80) and greater variability ($SD > 1.0$) indicates the existence of some external problem: as it was found in the qualitative data, the software is correct, but due to the frequent network failure, the reliability becomes a problem. This helps in the literature of Ahumuza et al. (2025) about infrastructural barriers in semi-urban regions.

4.4 Impact of Inventory Management Systems on Real-Time Tracking

The respondents used a rating to assess the influence of the computerized inventory systems on their capability to monitor goods and avert the problem of stock shortages (1=Strongly Disagree, 5=Strongly Agree).

Table 7: Descriptive Statistics for Inventory Management

Statement	Mean	Std. Dev.
The inventory system provides real-time stock updates.	4.03	1.13
The system helps prevent stock shortages.	3.73	1.28
The inventory system improves stock visibility.	3.93	1.20
The system helps in timely reordering of goods.	3.83	1.12
The inventory system reduces stock discrepancies.	3.93	1.11
Overall Average	3.89	1.17

Source: Primary Data (2026)

The data indicates that the inventory system is exceptionally effective in terms of real-time updates on stocks (mean=4.03) and enhancing visibility in general (mean=3.93). But, the lowest score was given to preventing the shortages of stock (mean=3.73). This shows that there is a minor difference between the awareness of the low stock (tracking) and the actual implementation of the replenishment process without any issue, which is consistent with the results of Kogei and Gachengo (2025) who demonstrate the limitations of partial manual processes and automated systems.

4.5 Influence of Digital Communication Tools on Speed of Service

This section evaluates how digital tools (like WhatsApp, digital team channels, and electronic communication) affect the speed at which the supermarket operates.

Table 8: Descriptive Statistics for Digital Communication

Statement	Mean	Std. Dev.
Digital communication tools improve coordination among staff.	3.80	1.06
Communication tools reduce delays in service delivery.	3.53	1.07
Digital tools help respond quickly to customer needs.	3.83	1.12
Staff use digital communication to resolve issues quickly.	3.23	1.22
Digital communication improves workflow efficiency.	3.77	1.10
Overall Average	3.63	1.11

Source: Primary Data (2026)

The lowest total effect of the three independent variables was on the digital communication tools (mean=3.63). Although the respondents concur that it enhances coordination (mean=3.80), the actual implementation of the staff in applying these tools to solve immediate physical store problems fast recorded a very low score (mean=3.23). This implies that although digital payment can assist in quickening the checkout process, internal digital communication might not be effective as in-person problem solving during busy retail times.

4.6 Operational Efficiency (Dependent Variable)

The respondents were asked to reflect on the overall operational efficiency of the supermarket resulting from the adoption of these technologies.

Table 9: Descriptive Statistics for Operational Efficiency

Statement	Mean	Std. Dev.
The supermarket operates with minimal transaction errors.	3.63	1.13
Stock records are accurate and up to date.	3.73	1.01
Customers are served within a short time.	3.97	1.03
There is efficient coordination between departments.	3.93	0.98
Overall operational performance has improved due to digital technologies.	4.00	1.14
Overall Average	3.85	1.06

Source: Primary Data (2026)

The highest consensus was that overall operational performance has indeed improved due to the presence of digital technologies (mean=4.00), and that customers are served in a significantly shorter time (mean=3.97). The overall efficiency mean of 3.85 proves that moving away from manual methods has had a profoundly positive effect on the supermarket.

4.7 Inferential Analysis: Association Among Variables

A basic correlation analysis was structured to understand the strength of the relationship between the digital tools (independent variables) and the ultimate outcome of operational efficiency.

Table 10: Correlation Matrix

Variable	POS Systems	Inventory Systems	Communication Tools	Operational Efficiency
POS Systems	1.00	0.65	0.42	0.78
Inventory Systems	0.65	1.00	0.51	0.72
Communication Tools	0.42	0.51	1.00	0.58
Operational Efficiency	0.78	0.72	0.58	1.00

Source: Primary Data (2026)

The analysis of correlation shows that there are strong positive relationships throughout the board. The highest correlation is between POS Systems and Operational Efficiency ($r=0.78$), which implies that the checkout technology is the most crucial factor to influence an image of efficiency. There is also a strong positive relationship between Inventory Systems ($r=0.72$). There is a moderate correlation between communication tools ($r=0.58$) which supports the descriptive results of the fact that even though they help it is not the main contributor to efficiency in a physical supermarket. These positive relationships are a full affirmation of the conceptualization found in Chapter One.

4.8 Qualitative Analysis: Operational Challenges and Barriers.

Although the quantitative data demonstrated a very positive effect, the open-ended answers of the questionnaires demonstrated the existence of very essential barriers in the infrastructure and human factors which have a crippling effect on maximum efficiency.

- **Network and Power Infrastructure Instability:** The instability of infrastructure was the most frequently referenced (more than any other issue) problem by the respondents (more than 40% of the sample). Some of the problems that were reiterated by cashiers and managers were; *“Network problems, poor internet connection, and lack of power. A vivid cashier had it to say: When an operation is conducted through a POS machine, most of the time network problems occur and the money does not reach the bank... you need to wait more than 30 mins to have the network cleared.”* This validates the literature of Udo et al. (2024), where African environments have a high level of digital divide and absence of infrastructure.
- **Technical Problems and System Freezes:** The respondents regularly mentioned that equipment and software do not meet peak requests. Storekeepers frequently mentioned such opinions as: System slows down, It freezes, System breakdown. These technical hitches go completely against the pace of service that the technology was purchased to offer without appropriate backup strategies.
- **Digital Skills Gap and Resistance to Change:** The human element was a barrier to several of the respondents mainly in management and procurement. The answers like Ignorance, Resistance to change by employees and the answer on technical skills show a lack in digital skills. Failure to comprehend the system by the staff, i.e. un-entered codes in the system at times bother a lot gives rise to frustrations and inaccuracy of data which is an excellent example of the main postulates of the Technology Acceptance Model (TAM).

When it came to proposed improvements, the staff voted overwhelmingly with Better WiFi, Alternative/Backup systems, and Continuous training workshops being their choice to ensure that the staff is actually able to use the digital tools to their full operational extent.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the key findings that were obtained through data presentation in Chapter Four. It gives the concluding remarks made after the research and the recommendations that can be implemented as a result of the research. It also shows that additional research can be conducted in different areas to supplement the work of this study.

5.1 Summary of Major Findings

The study has also given detailed and localized information on the impact of digital technologies on the efficiency of operations with a 100% response rate in a sample of 30 respondents sampled at Paris Corner Supermarket in Mukano. The summarized findings are as follows based on the objectives of the study.

5.1.1 Effect of POS Systems on Reliability and Accuracy.

The data supported the fact that POS systems have a high, positive influence on financial accuracy (mean=3.90). The respondents strongly agreed that the POS system enhances the accuracy of the financial records (mean=4.07) and reduces the number of errors caused by manual calculation. This is a mathematical way of eradicating the losses that were being incurred in the manual cash handling. But the credibility of these systems is mostly undermined by external influences. The qualitative results gave strong emphasis to the fact that network downtime results in freezing or slowing down of the POS terminals on the mobile transactions leading to enormous frustration. This validates the problem statement that even though the technology is present, infrastructural realities at times interfere with the anticipated efficiency.

5.1.2 Effects of the Computerized Inventory Systems on Real Time Tracking.

It was found that inventory systems had a great success in terms of giving real time stock updates (mean=4.03) and enhancing stock visibility. The system is a good tracking system of the supermarket goods. Nevertheless, there was a minor operational gap in the study: the system has been rated well

tracked, but the possibility to avoid physical shortages of stocks was rated slightly low (mean=3.73). This shows that predictive tracking of the software can be as effective as the human supply chain management responding to such alerts. Besides, problems such as missing product codes continue to bring about stock discrepancies.

5.1.3 Effect of the Digital Communication Tools on Speed of Service.

The use of digital communication tools moderately and positively affected the operations (mean=3.63). Although they assist in the coordination of the departments, it is indicated that in a physical and fast-paced retail store, such as Paris Corner Supermarket, digital communication is not as important to immediate speed of service delivery as the POS or inventory systems. This was reflected in the correlation analysis, which included the weakest (but still positive) correlation to operational efficiency ($r=0.58$).

In general, the mean of the dependent variable-Operational Efficiency, was high at 3.85. The respondents unanimously said that the overall performance of the operations is better because of digital technologies (mean=4.00) and that customers are served on a significantly shorter time.

5.2 Conclusion of the Study

The study has reached the conclusion that the introduction of digital technologies, that is, the use of POS systems and computerized inventory control, has an extremely important and beneficial effect on the efficiency of the work of Paris Corner Supermarket. The electronic devices have been able to eliminate manual errors in computation, give the essential real-time insight on stock details, and significantly improve the speed at which shoppers are attended to in the checkout counter.

Nevertheless, the research also ends with the conclusion that the maximum efficiency, which the supermarket achieves now, is not yet absolute enough. Owners of such digital systems have a potential that is severely curtailed by infrastructural hiccups, which are mainly the intermittent nature of internet connections and power interruptions. Moreover, the digital illiteracy gap and resistance to change among the staff which is evident on a periodical basis implies that a certain gap in using the systems is

observed. These findings can be attributed to the theoretic models (TAM and RBV), according to which a competitive advantage with digital tools necessitates their combination with a skilled, embracing workforce and stable internal resources.

In conclusion, the digitization of the manual ledgers to the digital systems was an inevitable and effective survival strategy among the medium enterprise. However, in order to ensure a smooth business flow, the supermarket would have to cease thinking about purchasing the technology and take an active step to ensure the infrastructure and people that run it are in place.

5.3 Recommendations

Based on the results, the following are practical recommendations that the management of Paris Corner Supermarket and other stakeholders related to the case should consider.

5.3.1 To Supermarket Management

Invest in Infrastructure Redundancy: Since network failure was most mentioned obstacle, the management will have to invest in powerful, dual-WAN internet routers (through the use of two telecom providers such as MTN and Airtel simultaneously) in order that in the event of network failure the POS will automatically redirect to the backup. Moreover, making sure that all POS systems have strong offline-first features will make sure to include the stalling of checkout lines in the case of outage.

Adopt Ongoing Digital Training: The management needs to stop using periodic training sessions. They ought to establish compulsory quarterly workshops on cashiers and storekeepers to teach them on how to troubleshoot system freeze, how to code new cafeteria items and how to use the advanced inventory analytics.

Adopt Cycle Counting: Based on the primary data, the inventory team ought to adopt the cycle counting (counting a small portion of the store at a time) instead of using big annual physical inventories. This will align the physical stock accurately with the computerized system and minimise discrepancies by a large margin.

5.3.2 To Policy makers and Telecom regulators.

Stabilize Semi-Urban Networks The Uganda Communications Commission (UCC) and telecom providers should focus on stabilizing the internet bandwidth and reducing the latency of mobile money in fast-growing transit hubs such as Mukono.

Digital Adoption Subsidies Digital citizenship should contemplate offering tax cuts or other digitized technology support grants to medium enterprises trying to digitalize and allowing them to afford expensive early capital investments in buying stable ERP and POS hardware.

5.4 Areas for Further Study

More research can be done on a broader comparative basis of various medium-sized supermarkets in different municipalities in Uganda (e.g., a comparison of Mukono to Jinja or Mbarara) to gain a broader range of generalizability. A relevant study on the financial component alone and the failure rate of Mobile Money API integrations on retail checkout counters would also be of immense contribution to the literature. Lastly, longitudinal study designs can be used by future researchers to observe the effects of Artificial Intelligence (AI) demand forecasting on retail inventory efficiency in East Africa in the next five years.

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Appendix

Appendix 1: Questionnaire

<https://forms.gle/PAEvV6iQGNwkbPvm7>