

**EFFECT OF MOBILE DISTRIBUTION APPLICATION SERVICES ON SALES OF
FAST-MOVING CONSUMER GOODS: A CASE OF PZ CUSSONS EAST AFRICA
LIMITED**

FINAL PROJECT

**BY
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**An Applied Research Project Report Submitted In Partial Fulfilment Of The
Requirements For The Award Of Master Of Business Administration Degree In The
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DECLARATION

Declaration by the student

I declare that this applied research report is my original work and that it has not been presented in any other university for academic credit.



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SUPERVISOR'S DECLARATION

This applied research report is submitted for examination with my approval as the university supervisor



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DEDICATION

I dedicate this project report to everyone who worked with me to complete it. My supervisor Dr. Mbogori and the team at PZ Cussons for the support given. Special dedication to my parents, my children and significant one for your persistent encouragement to complete this work.

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ABSTRACT

The Fast-Moving Consumer Goods industry is employing technology to solve some of its most pressing needs with the goal of remaining sustainably profitable. One of the areas of focus recently has been the potential of mobile apps services as a solution to overcome low levels of infrastructure development, that hinder full exploitation of business opportunities in developing countries like Kenya. It was with this in view the researcher chose to study the Effect of Mobile Distribution Application On Sales Of Fast-Moving Consumer Goods: A Case Of PZ Cussons East Africa Limited, with the primary objective of the study being to investigate the effect of mobile distribution applications services on sales of fast-moving consumer goods produced and sold by PZ Cussons. Specifically, the objectives of this study were: to determine the influence of memory support services on sales of fast-moving consumer goods; to examine the influence of transaction-based mobile app services on sales of fast-moving consumer goods; to examine the influence of location-based app services on sales of fast-moving consumer goods and establish the influence of information sharing services on sales of fast-moving consumer goods. The research design for this study was descriptive survey research design. The study was carried out at PZ Cussons East Africa along Baba Dogo Rd, Off Outering Rd, in Nairobi County. The study employed a census sampling method. The target population was small enough to conduct a census survey of 80 employees working in sales, finance, and supply chain at PZ Cussons East Africa. The Primary data was gathered through use of questionnaires. Quantitative data was analyzed through use of descriptive statistics such as mean, standard deviation, frequency and percentage and inferential statistics, Pearson correlation and regression analysis. Pearson correlation showed the effect of memory support services and regression depicted the nature of its significance. Data was presented in tables and figures and was analyzed using SPSS version 25.0. Out of 80 issued questionnaires, 45 (accounting for 55.25 percent) were filled and returned. Piloting was carried out and reliability coefficients were computed, and all were greater than 0.7 (an average of 0.744) which revealed that the research instrument was reliable. Regression analysis revealed positive and significant effects of memory support ($\beta=0.899$, $t=6.191$, $F(1, 43) = 88.257$, $p<0.05$). Regression analysis revealed positive and significant effect of transaction-based app services ($\beta=0.689$, $t=5.176$, $F(1, 43) = 29.591$, $p<0.05$). Regression analysis revealed positive and significant effect of location-based app services ($\beta=0.796$, $t=15.373$, $F(1, 43) = 47.229$, $p<0.05$). Regression analysis revealed positive and significant effect of information sharing app services ($\beta=0.793$, $t=7.090$, $F(1, 43) = 53.416$, $p<0.05$). It was concluded that data gathered in the sales operation have the highest effect on the growth of Fast-Moving Consumer Goods. The study recommended that Fast Moving Consumer Good industry invest in capturing and retaining data gathered in the sales process, to support and inform future growth. Further research can be carried in other companies that exhibit similar traits, clustered and studied in a manner to provide even better generalised results. These could take the form of consumer goods clusters like food manufacturers, toiletries, personal care and so on.

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LIST OF ABBREVIATIONS

ERP	Enterprise resource planning
FMCG	Fast-moving Consumer Goods
ILO	International Labour Organization
iOS	iPhone Operating Systems
KPMG	Klynveld Peat Marwick Goerdeler
M-apps	Mobile applications
POS	Point of Sale System
RBV	Resource Based View
USD	United States Dollar
In-Store	Products available in a store at the time of reporting
M-Commerce	Business transactions carried out over the mobile phones

DEFINITION OF TERMS

Availability	product availability the ability for a consumer to find the products they demand at the time they demand them
Brand	name of a product as identified by customers and consumers
Distribution	part of the selling process that involves the movement of goods and services from originator to consumer
Inventory	material, raw materials, work in progress product and finished goods available at a point in time
Retail	the final customer in the distribution value chain, who interacts with a consumer
Fast Moving Consumer Goods	consumer goods produced by industry for daily consumption. Due to the fact they are consumed daily, they tend to have high demand and there for are referred to as Fast Moving Consumer Goods. Examples are bread, milk, soap, airtime scratch cards and so on

CHAPTER ONE

1.1 INTRODUCTION

The chapter gives background of the study showing the global, regional, and local perspectives. It further highlights the problem statement, general and specific objectives, significance, scope, limitations, delimitation, and conceptual framework.

Industries and businesses are finding ways to adopt to opportunities new technologies are availing in easing ways of doing business, lowering operating costs and improving analytics for better decision-making. Many, Fast-Moving Consumer good companies, are adopting Mobile App services as an added tool of business, in their business operation such as product and services distribution.

1.2 Background of the Study

The FMCG (Fast-Moving Consumer Goods) industry, like other sectors, is being reformed by newly trundled out technology and devices. Business profit sustainability motivation drives innovation on the aspects of business that manifests bottlenecks. Distribution is a very significant function of goods manufacturing companies. Manufacturing relies heavy on a strong distribution backbone to remain low cost and profitable. With this understanding FMCG companies are employing Mobile App services to bridge the chasm left by the lack of developed infrastructure and retail market in most developing countries.

Mobile App services are Android or iOS applications that are proprietary to the business using them as a distribution tool. They offer various services build into them from design. They may include but not limited to memory support services, transaction-based services, location-based services, information sharing services, customer database services, products databases services, promotions databases services, marketing activities and so on. They are designed to ‘condense’ the real-time data collection and management services that are otherwise handled

manually. They capture the name of the sales personnel, the quantity and type of products sold, the amount of money received, the name of the customer, the location and so on. They also carry historical purchase patterns of the customer and any promotions that may have been extended. The data is relayed to the main database at the company headquarters on a real-time basis. The back-office staff are then able to analyse and keep track of sales performance as the day progresses. Gaps can be addressed by close of business day. Some of the outcomes that are analysed are route or geographical coverage, products of focus, new outlets opening and old ones closing, competitor activity and so on.

Safaricom realized the potential of mobile distribution apps in the local Kenyan market and partnered with PZ Cussons East Africa Limited and Virtual City in 2013, to launch a mobile application that targeted Fast-Moving Consumer Goods (FMCG) industry. The brand name of the app is M-Distributr, available on android platform. This app empowers sales teams and businesses to track sales transactions and deliveries, place orders and collect returns on real time basis. It also incorporates built-in mobile money payments capability through M-PESA while in the field. The application is currently being used by PZ Cussons and Safaricom airtime dealers. It is integrated into their supply chain systems and processes (Africa, 2014). The FMCG industry in Kenya represents a significant portion of Kenya's manufacturing and retail revenue. Examples of FMCGs in Kenya are Unilever, PZ Cussons, KETEPA, Sasini, Del Monte, Menegai Oil, Kapa Oil Refinery, Eveready, Kenafric and so on.

According to KPMG, the dominant FMCG company in personal care in Kenya is Procter & Gamble with a 44% market share, led by the popular brand Gillette. In the bath & shower division, PZ Cussons leads with a share of market of 30% in some categories, with Unilever coming a very close second. PZ Cussons East Africa has developed a robust distribution network in the country and several East and Central African Markets. PZ Cussons manufactures several popular brand names such as Joy, Imperial Leather, and Premier.

Revenue has steadily increased as product availability has improved, which indicates a direct correlation between increased availability at the store level and increased demand for home care products (kpmg.com/africa, 2016). To keep track and continuously improve value chain response to the market demands, the mobile distribution application was introduced in 2013. The pilot project of M-distributr mobile application demonstrated how mobile money can be integrated with mobile apps to enhance the sales and distribution process for PZ Cussons, tracking sales orders and payments right in the field enabled the sale team to cover a wider radius in distribution area from the head offices in Nairobi. The opportunity behind adoption of mobile apps exists in the increased use of real-time data created through the digitalization of the customer relationship. From such data it is easy to derive customers' and consumer behaviour. The M-distributr app presents an opening for the researcher to analyse how FMCG companies can leverage collected app data to make strategic decisions that will positively influence sales outcomes. Most of researchers including the Kenya National Bureau of Statistics agree that most of the population in Kenya and by extension Sub Saharan Africa is under 35 of age representing a significant online market for local retailers.

In Kenya many of these potential consumers are still in rural areas or communities lacking modern infrastructure. Approximately 15 million new retail stores in the form of supermarkets, mini supermarkets (mom and pop shops), dukas and kiosks effectively tap into the rural economic potential and represent new consumers who will likely require their localized tastes met at very competitive pricing (Accenture, 2014). To effectively address such challenges digital technology is one of the few economically viable solutions available to FMCG companies. Digital technology including mobile applications can generate useful data that can narrow down products and services communities prefer. It would be economically unfeasible to meet such challenges with brick-and-mortar retail stores, regardless of price of real estate. The motivation of most businesses to retain and grow their market share converge in digital

applications to achieve both, for this reason FMCG companies should evolve to a digital operating model (Chikweche, 2013). This study posits that the use of mobile apps is a key strategy in selling and distribution of FMCG goods particularly in infrastructure challenged areas of Kenya.

1.2.1 Sale Growth

The focus of the study was to examine the effect of distribution mobile apps on PZ Cussons Sales growth. The study analyze the overall influence of Mobile distribution app services on the sales out of PZ Cussons. According to (Proactive Worldwide, 2019) ‘Companies today must marry a wealth of consumer demographic data with larger cultural and social shifts to position their brands for relevance in the future. Investing in the right technology and tools will be critical to capturing, then leading, that charge.’ PZ Cussons in this recognition chose to employ distribution mobile apps.

1.2.2 Distribution Mobile Apps

Distribution Mobile app are services available on smart phone devices that are employed by businesses to capture data and organize the distribution function in a coherent and efficient way. The goals being to reduce cost of selling and increase sales growth by addressing availability gaps. All this is down in a systematic and measurable way that ensures proper resource utilization and accountability (Prakash, 2020).

These apps are build-in with features critical to the success of their application in the distribution function. These features are: Memory Support app services, Transaction-Based app services, Location-based app services and Information sharing app services. PZ Cussons employed the Distribution Mobile app – M-Distributr with these features.

1.2.2.1 Memory Support

Memory Support in the App acts as data collection warehouse of all the information gathered as the individual and collective team carries out the distribution function. They gather

information on type of customer, historical purchases, location of store, payment terms per customer, preferred mode of payment, inventory of products in the distribution van and so on. This information builds progressively. The data then equips the business to make critical decisions for the operations of certain part and routes at its disposal. The data is also able to inform what biased activities can be performed on certain sections and types of customers in the form of introductory offers for product not available to the customers and so on.

1.2.2.2 Transaction-Based services

Transaction-based services act as enablers of commerce in the process of trade engagement by the sales team. This function addresses any business's pain point, which is security of cash collected by the team. Since PZ Cussons distribution deals with small and medium enterprises, the terms of trade are small in nature. The Transaction-Based enable the business to collect mobile money transactions which in themselves reduces the instances of cash payments and the possible insecurity. The information gathered under this service is rolled up into the repository in the memory service.

1.2.2.3 Location-Based Services

Location-based services enable the business to locate the customers they intend to service and target certain products per location. The information about certain regions can be analyzed by other app services and therefore provide a map of gaps in product distribution when superimposed on the Location-based service. The gaps identified can inform the business to improve its full portfolio availability. Location-based services serves a secondary function in ensuring team performance, by placing individual team members designated on specific routes. By so doing the business is able to efficiently deploy its available team resources and also verify that the team is attending to each existing and potential customer. The information is automatically backed up in the memory service repository.

1.2.2.4 Information Sharing services

Information sharing ability built into the app allows for team collaboration. Team collaboration has the effect of improving overall productivity. Each location a team is deployed manifests various opportunities and barriers. This new information can be shared within the team on a real time basis with a view to improving team output and safety. The new information is rolled up into the memory repository for further processing.

1.3 Statement of the Problem

Fast-moving consumer goods (FMCG) tend to be low in trade margin, relatively high turnover in value and volumes, availability, high operation mechanics and variable cost. The industry previously fully relied on end of day reporting to capture performance progress. The reporting was done by the personnel performing the task. The nature of reports was basic and manual. They comprised sales data (quantities or volume sold and reconciled inventory and value or cash received). This process had many challenges, the largest of which was data integrity. The lack of data integrity meant that much of the information was not reliable in making critical decisions.

The effect of mobile apps in FMCG industry in Kenya has hardly been documented due to the relatively low adoption rate which can be attributed to limited information on the prospects mobile apps present for local brands.

1.4 Objectives of the Study

The study was guided by general and specific objectives.

1.4.1 General Objectives

The general objective was to investigate the effect of mobile distribution applications services on sales of fast-moving consumer goods with focus on memory support services, transaction-based services, location-based services, and information sharing services.

1.4.2 Specific Objectives

The study was guided by the following specific objectives:

- i. To determine the influence of memory support by mobile app on sales of fast-moving consumer goods
- ii. To examine the influence of transaction-based app services on sales of fast-moving consumer goods
- iii. To examine the influence of location-based app services on sales of fast-moving consumer goods
- iv. To establish the influence of information sharing on sales of fast-moving consumer goods

1.5 Research Questions

The study answered the following research questions:

- i. Does memory support by mobile applications influence the sales of fast-moving consumer goods?
- ii. Do transaction-based app services influence the sales of fast-moving consumer goods?
- iii. How do location-based app services affect the sales of fast-moving consumer goods?
- iv. What is the influence of information sharing on the sales of fast-moving consumer goods?

1.6 Research Hypotheses

The study tested the following hypotheses:

1. **H₀**: Memory support by mobile app has no significant influence on sales of fast-moving consumer goods.
2. **H₀**: Transaction-based App services has no significant influence on sales of fast-moving consumer goods.
3. **H₀**: Location-based App Services has no significant influence on sales of fast-moving consumer goods.

4. **H₀**: Information sharing has no significant influence on sales of fast-moving consumer goods.

1.7 Significance of the Study

The study's findings hope to be useful to scholars and researchers as they hope to make contributions to the body of knowledge in the field of mobile distribution applications for fast-moving consumer goods companies in Kenya. The study might add to the body of knowledge by reviewing the relevant theories. The exploration of the linkage between signalling theory, Economic distribution theory and marketing theory in mobile distribution apps for FMCGs firms in developing countries will not only provide significant contribution to the literature but may also enable managers to employ the right distribution strategies for their firms to enhance sales.

The study hopes to act as a guide for top management and decision makers in fast-moving consumer goods companies including PZ Cussons with the most appropriate digital strategies to increase market share. The firms will better understand the effect of using the mobile distribution app on sales outcomes of consumer production goods and how available data affects the distribution value chain.

The study may also be fundamental to the government and other policy making units in the formulation of policy decisions that might help to mitigate the barriers encountered in sales of fast-moving consumer goods. Online distribution increases competitive advantage of fast-moving consumer goods firms while taking advantage of the improved sales and distribution process.

1.8 Scope of the Study

The study sought to establish the effect of the M-distributr mobile app on sales of consumer goods by PZ Cussons East Africa. The study population of 80 respondents were recruited from employees of PZ Cussons East Africa in Baba Dogo, Nairobi. The sampling method utilized

was a census since the number of respondents was small, since PZ Cussons operations utilize a flat organization model. Which means only few employees are engaged with multiple tasks. The respondents were selected from Nairobi Sales team, Nairobi Supply Chain and Nairobi Finance teams since they deal directly with the effects of distribution. All other employees were excluded. Nairobi County was chosen since PZ Cussons East Africa manufacturing plant and their headquarters are situated in Nairobi. This enabled the researcher to have access to the respondents who deal directly with the M-distributr mobile app data every day. Nairobi County was selected to represent the sales team that works in a market that serves the middle class FMCG consumers since it is the capital city of Kenya, hence a good representative sample. The period of data collection was 4 weeks. Each respondent was asked to complete the questionnaire presented and return it in the period.

1.9 Delimitation of Study

This research relied primarily on information reported by employees at PZ Cussons since the company's financial information is not publicly available. Respondents were chosen based on their involvement in formulation and implementation of mobile application distribution strategies in the company. The researcher preferred to anchor this research on PZ Cussons financial data but the information to be obtained from the knowledgeable respondents was sufficient to form meaningful conclusion.

The research analysed the latest and to an extent, highly sustainable mobile applications, and their effect on the sales. Although technology is evolving every day, mobile applications continue to be a core feature of the telecommunication industry and currently there are no better options on the horizon. The strategies applicable to mobile apps analysed in this study will not only be applicable to a rigid technology, but they may be adapted and repurposed for use with other digital technologies.

Use of a single case study may present a bias in the research process. However, considering the research objective and the use of novel technology in the Kenyan FMCG industry, it was necessary to use a firm that has prior experience using technology to drive FMCG sales outcomes. Therefore, the researcher opted to analyse a single firm in Kenya, with the view that they can provide a blueprint that can be used not only in FMCG sector but also be applicable in other industries e.g., agriculture and education sector.

1.10 Limitation of the Study

The limitation of this study was that the conclusion and recommendations of this research might only be applicable in the short-term. The main reason for the short half-life of these results is the dynamic nature of modern technology, and hence by extension, digital marketing strategies. It was highly likely that technology continues to rapidly evolve rendering these strategies outdated in the next 3-5 years. However, unless there is a very sudden and radical transformation in the market, results of this research should still be pertinent.

The study was limited to one organization - PZ Cussons. The mobile application distribution strategies that are employed by PZ Cussons may not be the same as those ones employed by other Fast-Moving Consumer Goods companies. But since PZ Cussons is a major market participant in the FMCG industry, the study results can be generalized.

1.11 Theoretical Framework

Firms in the Kenyan FMCG sector are currently operating in a highly competitive business environment hence the urgent need to develop successful sales strategies that will put them ahead of the competition. Globalization and massive leaps in technology has enhanced competitiveness and forced FMCG's to rethink their selected strategic sales and distribution channels to surmount infrastructural challenges in the Sub-Saharan market, which is a major source of consumers. The study was anchored on the The Signalling theory, The Economic Distribution Channel theory and The Relationship Marketing theory.

1.11.1 The Signalling Theory

The signalling theory is the study of asymmetric distribution of information (Brian L. Connelly, 2010). This model in principle illustrates how two parties, i.e., the sender and the receiver use information as a tool to communicate. This theory describes communication between a manager and stakeholders. It was expounded by (D. Chen, 1992) to include communication between wholesalers and retailers. In this theory the two parties, the sender and the receiver are always involved (Schoviah, 2012). Highly competitive environments such as the FMCG sector are always subject to signalling.

In the FMCG sector, company's use demand signalling (D. Chen, 1992), to convince retailers that their brand will sell. Based on private information the company will invest a substantial amount of money in the advertising and marketing of a new product to signal their confidence that their product would 'fly off the shelves'. Signalling models have previously been applied to channels of distribution. (Wujin Chu, 1994) examined signalling of product quality through retailers. In the model the FMCG holds the bargaining power to set a 'take it or leave it' wholesale price in the market based on the company's knowledge of the market and its marketing expertise. It is therefore useful in this study since the model postulate that underlies our signalling model are an informed FMCG company which has private information about crucial aspects of demand about its products, can set a 'take it or leave it' wholesale price (K. Tindano, 2017).

However, it should be noted that the signalling theory is basically concerned with what keeps the signal reliable. The signal's reliability depends on its ability to deliver the anticipated outcomes. Costs linked with reliability spur from production costs and punishment advanced to those caught cheating (Mulky P. A., 2017). The theory was applicable to the study since it demonstrates the usefulness of information in setting both wholesale and by extension retail prices based on expected demand. The model was therefore useful in explaining how mobile

application distribution strategy affects sales through information interchange between FMCG companies and other relevant distribution network stakeholders including customers. Mobile distribution application incorporates important features including location-based services, and information sharing tools that present the company with an opportunity to increase their sales using generated mobile application data.

1.11.2 The Economic Distribution Channel Theory

The Economic Distribution Channel theory propounds that each company in the channel must charge enough to pay expenses and leave a profit (Johnston, 2019). By extension the most suitable distribution system is one that is established through exploration what the customer wants in relation to service outputs from distribution channels, the amount of money they're willing to pay for a certain level of service, the way the provision of services will be done as well as the cost of alternative channels of distribution (Lawrence, Zank, Jennings, & Stading, 2001). For use in our model this theory was used to analyse how transaction-based services provided by mobile distribution applications enhance sales of FMCGs.

On further examination, it can be argued that the sales system that meets the wants of the customer in the most efficient way should be established. The sales channel strategy which an FMCG company adopts must consider customer's view and analyse output from the commercial part of the varying sales channels and associates it to the costs and benefits of the customer from the varying service output levels which sales and distribution channels available offer (Ritu Mehta, 2021). Mobile distribution apps embody the transaction-based value of distribution channel for consumer goods whether the cost of distribution is shared between FMCG companies and the client more transparently or not.

According to this theory, the distribution system that meets the wants of the customer in the most efficient manner must be established. Therefore, an economic distribution channel model

places the customer's view first, it does an analysis of the output from the commercial perspective of different distribution networks and associates it to the benefits and costs of the consumer from the varying service output levels that the distribution channels available offer (K. Tindano, 2017). This is why this theory is useful to the study. The transparency offered in terms of cost and other transaction services invigorated using mobile apps by FMCG is an important component of customer satisfaction in the sales of consumer goods.

1.11.3 The Relationship Marketing Theory

Relationship marketing theory is a type of marketing created from marketing campaigns that involve direct response and which emphasize on customer retention and satisfaction instead of predominantly focusing on sales transactions (Jared, 2014). Changing times and technological revolution has led to shift in consumer needs, as well as their demands, forcing industries to change their approach to customers. Relationship marketing has been repeatedly fronted as the approach that will support sales by targeting consumers more personally. Relationship marketing as a practice is different from other types of marketing because it principally recognizes long-term customer relationships' value, and it does extend communication past intrusive advertising as well as sales promotional messages (van Heerde, 2017). A key cog in the relationship marketing theory introduced by mobile applications and integral in this study is memory support.

Mobile applications promote relationship marketing by storing customers' preferences, location (location-based services) and some personal data that can be used to target consumers directly. Relationship marketing keeps on evolving and moving forward because of progress of these mobile applications and the internet, this technology brings about communication channels that are more collaborative and social (Mulky P. A., 2017). A key relationship marketing principle is customers' retention, using different means and practices that ensure repeated sales by pre-existing customers. It ensures satisfaction of these customers compared

to competing firms. This is done by promoting an association in which the benefits are mutual (Massoud Moslehpour, 2021).

For FMCGs, stored customer preferences are a major source of competitive advantage since their products are primarily for consumer consumption. This theory is important for our study since its development coincided with the introduction of technology that breaks down infrastructural barriers between a producer and the client like in the case of social media, and in this research, mobile applications. Many classic marketing theories centre on sales channels aimed at attracting customers and create transactions. Profitability increase resulting from customer retention efforts is experienced due to the many factors which take place the moment a relationship with a customer has been created (Tara Rooney, 2020). FMCGs especially, would benefit from applying these theories to reach their customers supported by functionalities provided by mobile applications including location-based services and memory support.

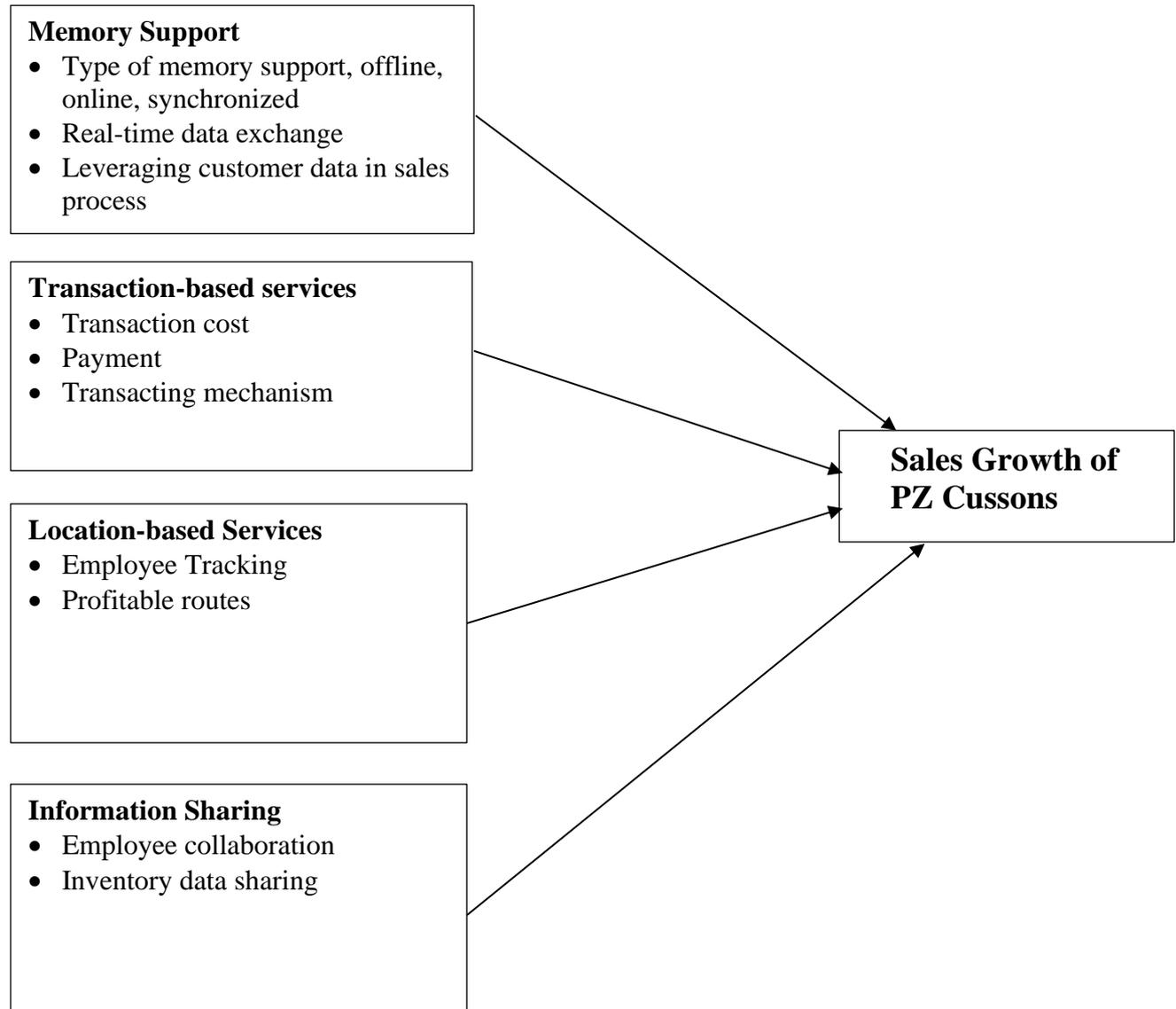
1.12 Conceptual Framework

A conceptual framework is a research tool intended to assist a researcher to develop awareness and understanding of the situation under scrutiny and to communicate this (Jabareen, 2009) The conceptual framework in Figure 1 shows how core features of mobile distribution applications including memory support, transaction-based services, location-based services, and information sharing affect sales of fast-moving consumer goods in Kenya.

Figure 1 Conceptual Framework

Independent Variable

Dependent Variable



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of documented literature that is related to our objective to investigate the influence of mobile distribution applications on sales of fast-moving consumer goods, to provide an empirical framework on how mobile distribution applications are modifying sales of FMCGs.

2.2 Review of Literature

This section provides the review of the studies done in the past that are related to the current study so that the gaps identified in the related studies can be addressed by this study.

2.2.1 Memory Support Services and Sales of Fast-Moving Consumer Goods

Mobile applications now enable brands and companies to connect directly with the consumer, such that few FMCG managers would ignore mobile distribution strategies. A worldwide survey of 2.1 billion mobile phones and 3.2 trillion sessions done by (Lino, 2016) of the USA, demonstrated that there are around 1.5 billion people using mobile apps daily, a 60X increase over the past decade. With customers spending all this time on their mobile phones, companies are leverage users' mobile data to grow their business and increase revenue for their company. The current era of technology has increased information available to companies to better understand consumer buying behaviour, patterns of spending and how they make other vital decisions. Memory support is therefore vital for sales, marketing, and management strategy formulation. The data collected assists FMCGs to recognize and try to align products or experiences with users' expectations.

A dynamic module of memory support is mobile data collected by the mobile application during the sales process. Data that is collected by a mobile app including FMCG sales app is referred to as first party data. Professor Douglas Schmidt of Vanderbilt University in the USA

in his study of Google Data Collection, observed that Google collects data from its users in two ways. The first is through information provided by users and the other is covert. The data collection is used to predict users' behavior and usually utilized in targeted advertising. First party data could be user-centric information for example user profiles, upgrades, installs, processes, location tracking data and even push notifications (Schimdt, 2020). One of the more pressing concerns for managers is the quality mobile apps data collected. Normally, an app activates data at the point where the consumer at a point of purchase. This activation can be from a web interface with software development kit and integrated mobile analytics. The analysed information can be used by the FMCG manager as insights into the sales of the company.

(Robert C. Nickerson, 2016) in their study observed that Mobile apps mostly come with three types of memory support regarding the data stored in the application. Offline apps store their entire data on the mobile device. For some apps, data may already be fully occupied when the app is initially installed, e.g., Maps, or data may be initially installed and be updated with subsequent use by the mobile app user, e.g., contact list. Apps such as these do not require them to be online to function except maybe during initial installation; customers can experience their full functionality even offline. It is important to note that although most of offline apps back up their data to a cloud-based system, it does not constitute a change in the nature of the apps. Secondly, online apps, are dependent on access to a dedicated server for storage of data. Granted there are apps such as will be discussed later that also store their data on the mobile phone, online apps require the data stored on a server to be fully efficient. Data on the server is uploaded from the user's mobile device continuously. It can also be updated by outside entities such as system administrators or 3rd party users directly to the server and the data downloaded from server to the mobile phone. Most FMCG apps and e-commerce apps important for this study fall in this category; the mobile app used by the FMCG in this case

study is an online app. These types of mobile apps require the user to be online to achieve their intended functionality; the mobile app is only fully functional when online.

Research on memory support has been used to identify the most effective mobile application to develop for a particular strategy. (Robert C. Nickerson, 2016) concluded that different approaches to data storage for mobile apps are appropriate depending on the characteristics of the situation in which the app will be used. Offline apps are most effective when data does not need to be updated or only the user updates the data, and all the data is stored on the mobile device. Online apps are most effective in sales since data needs to be updated according to/by external entities and as such require real time access to a data server. The data exchanged during sales is crucial for both the consumer and FMCG company's which is yet another reason for this choice of memory support.

Offline apps, with all data stored on the mobile device, are best when the data does not need to be updated or is only updated by the user. Online apps, where the app has real time access to the data on a server, are best when the data is updated by external entities and the currency of the data is critical. The third type of app synchronized apps which store all data on the mobile device but require intermittent access to the server where data is uploaded (downloaded) is useful in areas with low internet access such as border (rural) areas. Empirical research has determined some decision factors that affect the choice of memory support by app developers and app users but not extensively in the context of its effect on the sales of FMCGs. There is need to examine the effect of the memory support selection on the main user of the app, in our study FMCG companies to confirm the factors based on which the decision is made.

2.2.2 Transaction-based App Services and Sales of Fast-Moving Consumer Goods

Transaction costs are a significant part of the FMCG sales and are a significant part of transaction-based services provided by mobile apps.

(Rajiv Lal, 2015) of Harvard Business School, in their study in various Middle Income and Less Developed Countries titled 'Mobile Money Services - Design and Development for Financial Inclusion', observed that the most important part of a transaction-based service is the issue of trust. Trust in a transaction-based service means trust in the brand owner for example MPesa or Airtel Money. This is critical because customers must be comfortable trusting their money transactions to it, secondly trust in the reliability of service for example, is the mobile network reliable, will it function when I need it, thirdly trust that Agents have integrity in how they handle customer funds and transactions, and finally trust that transactions will be completed and paid to the target parties.

FMCGs and Customers have an asymmetrical vested interest in ensuring the security of every transaction taking place in the marketplace. Therefore, the trust that all transaction-based services are secure is of utmost importance.

(White, 2012) in her study among women fish traders around Lake Victoria in Kenya concluded that, the rural economy is largely informal, underdeveloped road system, and low credit market form reasons for less attraction of formal banking in similar areas, and these are not aspects of Kenya that can be changed easily or quickly. However wireless communication has managed to penetrate the very remote areas providing for mobile money services like MPesa which are convenient. The study also observed that the benefits of Transaction-based services, MPesa in particular, had a huge impact on the economic well-being of the women fish traders. They had income that was securely held.

FMCGs transact in highly informal settings in rural parts of Kenya. If they were to collect their receipts in cash, the security of both the money and the sales personnel would be in question. The introduction of Transaction-based services has greatly improved how transactions are handled while in the trade.

(Ndung'u, 2021) in his study in Kenya titled 'A Digital Financial Services Revolution in Kenya: The M-Pesa Case Study', observed that the remaining challenge of the transaction-based services is interoperability. In the study the researcher noted that MPesa with a share of market standing at 64.2% presents a problem for areas without good connectivity to MPesa services. Interoperability would provide for connectivity with other Transaction-based services which will introduce seamless transactions regardless of service provider. FMCG companies and their customers would greatly benefit from interoperability once its fully implemented.

2.2.3 Location-based App Services and Sales of Fast-Moving Consumer Goods

Location-based services for mobile apps exploit the knowledge of the user's geographical location to provide services tailored to that location. These apps provide personalized services to their users based on their current location. The knowledge of the user's location provides companies with the prospect of value addition to the user experience, e.g., providing real time weather or traffic updates, location of nearest retail outlet stocking their product.

'Android Application for Farmers', a study by Singhal, Manav and Shukla. (2019) in India, identified different types of constraints to the implementation of location-based services including technological constraints caused by inadequate mapping under the geographical information system (GIS). GPS handsets have become more accessible and cheaper than ever, and this proliferation is vital to the growth of location-based services. The low infiltration of Wi-Fi in rural areas of Kenya and comparative high cost of internet bundles is another major constraint to the use of location-based services. These failures cannot be corrected in the short time due to the underlying market failures, in particular the losses of infrastructure caused by the lack of competition in the telecommunication industry, a key essential for location-based service delivery.

Most apps already have location-based services integrated within their service delivery model although the market is not yet established. It is important for FMCG managers to note that location is merely a necessary piece of data that can be used to filter access to various types of geographical information services (GIS). “The Development of Location Based Services in Mobile Commerce,” by (Brigitte Preissl, 2005) in Berlin Germany posits that knowledge of the user’s location is especially effective when it is combined with saved user data to offer personalized, location sensitive services to the consumer, e.g., location of nearest store with baby products for new mothers. Privacy was predicted as a major issue for location-based services especially for online apps preferred by FMCGs since it is very possible to track movements of the user with the information sent to the server. The abuse of information can range from the irritating such as unsolicited texts from businesses in the user’s location to the more serious including companies using employee’s movement to excessively monitor their job performance and to the criminal, including releasing of private home information to hackers. Despite the common “opt-in” compromise used by companies to justify the use of user’s data where information is only released to companies the user subscribes to, research and innovation is still required to guarantee the safety of location-based services.

For FMCGs, tracking their sellers and distributors may be an essential component of location services in any mobile applications they decide to adopt. Managers may insist, to the employee’s disagreement, that location services are essential for real time decision making that have a huge effect on productivity. Managers can adjust distribution points, plan new routes, locate staff, receive accurate sales reports directly from the field remotely and sales staff can log in and out of work remotely. (McEldowney, 2019) in the National Consumer Empowerment Conference in 2019 in Chicago, Illinois, USA demonstrated that there are deep pitfalls in tracking employee location information including the amount of personal data gathered even when the employee is off duty. It may not be possible to turn off employee

tracking for a mobile application after hours and the app may divulge sensitive information such as sexual orientation, religious or political affiliation that may damage the relationship between employee and employer. In some countries, employers' who track their employees after hours are liable to prosecution in court. Managers face various challenges and benefits when considering the use of mobile location services to track their on-site employees, but further research is required particularly within the boundaries of the Kenyan Constitution and business environment.

2.2.4 Information Sharing and Sales of Fast-Moving Consumer Goods

Ideally, a retailers' mobile app when developed solves two 'tensions', the retailers want to collect as much information through the mobile app as possible to focus their customer relation management strategies while the customer wants to engage in word-of-mouth activities regarding an actual or intended purchase. (David G. Taylor, 2014) in their study titled 'Predicting Mobile App Usage for Purchasing and Information-Sharing', in the USA discuss that when trying to predict the use of mobile apps for information sharing, concluded that there is a strong correlation in a consumer's interest in a retailer's mobile app and the customer's intention to purchase or to participate in information sharing activities. Managers were assured of a return on investment in the use of mobile apps since the study found a significant relationship between the use of mobile apps and anticipated customer behaviour. Correspondingly, the authors found that customer desire fewer information sharing features in a retailer's mobile application. It was observed that consumers also desire less of these features like posting videos and pictures on blogs and some social media sites. This study was however done with a homogenous study population (consumers) in a single retail store in U.S. with self-reported data and this may present some gaps and limitation in this study that can be filled.

FMCGs are a customer focused business and therefore information sharing within the organization is central to empower employees be more inspired and share ideas which boost sales. In principle, a mobile app for FMCG companies should augment employee creativity (by exposing workers to a broader pool of ideas and holding them accountable for formulation of new ideas) and employee engagement (by increasing the perceived impact of their work and by encouraging effort in information acquisition and understanding of the most profitable sales process). (Shelley Xin Li, 2018) in their study titled 'Effects of an Information Sharing System on Employee Creativity, Engagement, and Performance', done in the USA, examined the effect of information sharing in retail stores in relation to employee creativity, work engagement and financial performance of the outlet. The researchers found that in their current sales process, information sharing was not found to have a significant effect on the outlined outcomes in the retail outlets. However, they found that under certain circumstances information sharing had positive effects on the quality of work done by employees. Information sharing was especially significant when employees in different stores do not have frequent contact with the job process of other employees in different stores of the same retail chain. Information sharing was also significant where employees had lower natural selling ability and had more to learn from other employees in a bid to increase value of creativity. This study analysed information sharing through different channels but for our study we are analysing the benefits of information sharing for employees via mobile applications.

It is evident that empirical literature on the value of information between retailers and suppliers is divided based on the collection of historical time series data to predict end user demand. (Cui, 2015) in the study of the service rating website called Yelp in the USA titled 'An Evaluation of Yelp Dataset', said a demand process model used in previous research that demonstrated 'no value in information sharing'. These researchers found that there is value in

information sharing of time series data used in inventory management with the end goal being aligning the supply chain and selling process. (Tingyu Weng, 2019) examined this research and other empirical data to determine the value of sales forecast information sharing in the FMCG supply chain. It was discovered that full information sharing along the supply chain gives the best sales forecast. However, information supplied by only the retailers gives almost the same value of information as full information sharing along the supply chain. Retailers may only give information relating to sales forecasts instead of sharing pricing and promotional strategies that are considered proprietary. In this research the author posits that mobile applications are a prodigious strategy to filter out information retailers pass on to suppliers for optimal reconciliation. Optimal reconciliation improves the sales by providing more accurate information throughout the supply chain.

2.4 Summary of Literature and Research Gaps

From the theoretical review of the Signalling theory FMCG Companies in explaining how mobile application distribution strategy affects sales through information interchange with distributors, wholesalers, retailers and other relevant distribution network stakeholders including consumers, can benefit the value chain by involving available and future technology in their operations. Mobile application distribution is only a first of such steps and should be improved by inculcating feedback from the market.

In examining the Economic channel distribution theory, it is apparent that FMCG companies like PZ Cussons can benefit from the distribution system that meets the wants of the customer in the most efficient manner. By analysing of different distribution location, the companies can plot the costs and benefits of each customer and path/route to service and develop the most economic channels using the data collected from location-based services in the Mobile application, in combination with transaction-based services.

The relationship marketing theory in Mobile applications in distribution is promoted by storing customers' unique needs, location, and some personal data and much more. A company can then use these data to analyse and forecast future sales, based on the patterns of customer purchase and targeted marketing campaigns relevant to the customers it services. This is very useful in establishing efficiency in how to hold inventory, what to manufacture on time, in the case of sales and how to allocate resources, in the case of marketing. The overall impact of this theory in application is better working capital management.

2.5 Knowledge Gap

Empirical research on the use of mobile applications especially in FMCG sales in underdeveloped areas is sorely lacking. Current research on the use of mobile apps has developed various models that can be used in the implementation of online business development strategies, but these models keep on evolving with the evolution of technology bringing about uncertainty on a model that works. Businesses recognize the importance of adapting the work process to the digital space where customers are found, even though the companies may not be clear on a feasible roadmap to ensure profitability. FMCGs primarily operate in a business to business archetypal, nonetheless are no strangers to the retail space where they interact directly with the consumer. Mobile applications need to incorporate the features outlined in the objectives including transaction efficiency, memory support, and information sharing and location-based services into their sales in order to increase utility for the entire value chain. There is no published research into the application of mobile apps as a tool for FMCG sales in Kenya even though the use of the same is ubiquitous. This research has attempted fill the gap by examining transaction efficiency, memory support, information sharing and location-based services and their effect on sales.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The study followed a descriptive research design incorporating both qualitative and quantitative data in fulfilling the research objectives. The chapter was organized as follows: research design, target population, sampling procedures, data collection methods, data analysis, research quality and ethical considerations.

3.2 Research Design

A research methodology is the way in which research is done scientifically, emphasizing the steps that are considered in the research process to get insight or identify a solution to a problem, along with the logic behind those steps (Kothari, 2004). This study focused on investigating the effect of mobile distribution applications on sales of fast-moving consumer goods. The study employed a mixed methods research methodology as it allows for the collection of both qualitative and quantitative data which will be used to enhance the findings for this study (Cresswell, 2014).

A research design is a detailed outline of how an investigation will take place. It typically includes how data will be collected, what instruments will be employed, how they will be used and the intended means for analysing collected data (Cresswell, 2014). The research design for this study was descriptive survey research design. Based on this design the research study adopted a pragmatic worldview of the phenomena, the effect of mobile distribution applications on sales of fast-moving consumer goods, by gathering information from employees of an international FMCG company with offices in Kenya, PZ Cussons, operating in different socio-economic environments across Kenya. The findings are descriptive of a certain phenomenon, that of understanding the expanded role of mobile distribution applications and their effect on sales of fast-moving consumer goods.

The researcher applied tools of philosophical analysis to the findings and made recommendations. Philosophical analysis, more specifically concept analysis, involves clarifying the complex meaning of a term or concept by stating its simpler component meanings (Daly, 2010). The findings were analysed to identify key concepts raised by the respondents and discussed them from the perspective of management and various stakeholders including the society.

3.3 Research Site

The study was carried out at PZ Cussons East Africa Limited, Baba Dogo Rd, Off Outering Rd, Nairobi.

3.4 Target Population

A target population is the total collection of elements about which one wishes to make some inferences (Mugenda, 2003). This study was conducted at PZ Cussons East Africa Head office at Baba Dogo Rd, Off Outering Rd, Nairobi. Data was collected from the following departments, Finance, Supply Chain, and Sales. The target population is presented in Table 3.1.

Table 3.1: Target Population

Category	Frequency	Percentage (%)
Finance	10	13
Supply Chain	20	25
Sales	50	62
Total	80	100

3.5 Study Sample

3.5.1 Sampling Procedure

The study employed the census method since the population was small enough to accommodate and sufficient to provide the information required.

3.5.2 Study Sample Size

From the target population of 80, the researcher worked with the entire team consisting of employees from supply chain, Finance, and Sales department.

3.6 Data Collection

3.6.1 Data Collection Instruments

Primary data was collected for the study. Primary data was collected from primary sources in the field. Questionnaires were used as data collection instruments. The questionnaire was designed for respondents. The questionnaire consisted of open and closed ended questions that allowed the researcher to obtain extra information from the respondents. The questionnaire consisted of five sections: Section A addressing the demographic characteristics of the respondents while section B contained specific information about the study based on the variables and the research questions.

The design of the questionnaire was such that it captured the relevant information necessary to answer the research questions. According to (Sarantakos, 2005) a questionnaire is a method of survey data collection in which information was gathered through oral or written questionnaires. Structured questionnaires were also used in the collection of primary data, and these were self-administered.

3.6.2 Pilot Testing Research Instruments

Based on the recommendation of scholars, a pilot test was carried out on the study as a critical pre-test for establishing the reliability and validity of the instrument for data collection to determine and improve the reliability and validity of the instruments (Prof. R. Srinivasan, 2017). (Prof Mark N. K. Saunders, 2012) remarked that the number of respondents to be chosen for piloting a questionnaire should be sufficient to include any major variations in the

population. (Andreas Fink, 2013) suggested a minimum of 10 for small surveys whilst between 100 and 200 responses was suggested for large surveys (Don A. Dillman, 2014).

In line with the recommendations of scholars (Don A. Dillman, 2014), a 10% of the sample size totalling 8 employees working in other FMCG firm excluded from this study were contacted randomly to respond to the instruments to unveil the weaknesses of the questionnaire for improvement. Their responses were subjected to statistical analysis to ascertain the reliability and validity of the instruments using Statistical Package for Social Sciences (SPSS). The results obtained from the pilot study were discussed with the supervisors which lead to the improvements of the questionnaire. The corrections agreed upon were adopted into the research instrument before the instrument was used for data collection.

3.6.3 Instrument Reliability

Reliability is a measure of consistency of the research instrument when administered to respondents drawn from different populations but exhibiting similar characteristics. The reliability of data collection instruments was determined from a pilot study where the researcher administered the research instruments to the respondents of an FMCG company not included in the sample.

Data was collected from eight respondents working at Unilever distributor known as Mesora, an FMCG company competing same business environment in Kenya. Test method was used to obtain two scores for the pilot test data. The two scores from the pilot test data were subjected to Cronbach's reliability coefficient formula to compute reliability coefficient. As a rule, a value of $\alpha > 0.7$ is considered reliable enough for each of the data sets where α was the item being tested for reliability. Table 3.2 presents the reliability coefficient of the variables.

Table 3.2: Reliability Coefficients of the Variables

Variables	Items	Cronbach Alpha Coefficient result
Memory Support by Mobile App	6	0.761
Transaction-based app services	7	0.749
Location-based app services	6	0.768
Information Sharing	5	0.713
Sales of Fast-moving consumer goods	6	0.732
Combined mean		0.744

3.6.4 Instrument Validity

Validity is the extent to which an instrument measures what it is supposed to measure and performs as it is designed to perform. It is rare, if nearly impossible, that an instrument be 100% valid, so validity is generally measured in degrees. As a process, validation involves collecting and analysing data to assess the accuracy of an instrument. There are numerous statistical tests and measures to assess the validity of quantitative instruments, which generally involves pilot testing.

External validity is the extent to which the results of a study can be generalized from a sample to a population. Establishing external validity for an instrument, then, follows directly from sampling. An instrument that is externally valid helps obtain population generalization, or the degree to which a sample represents the population (Patton, 2015). The study ensured that external validity by targeting a sample that was representative of the general population.

Content validity refers to the appropriateness of the content of an instrument. In other words, do the measures (questions, observation logs, etc.) accurately assess what you want to know? The study ensured content validity by carrying out a thorough literature review which ensured that the study covered broad perspectives of the study.

Construct validity refers to how well you translated or transformed a concept, idea, or behaviour that is a construct into a functioning and operating reality, the operationalization

(Trochim, 2006). This study ensures construct validity by formulating operationalization and measurement of variables.

3.6.5 Data Collection Procedures

Data collected was both qualitative and quantitative. The questionnaire method used to collect data contained both open ended and closed ended questions. Open ended questions asked for unprompted opinions. In other words, there were no predetermined set of responses, and the participant was free to answer however he chose. Open ended questions are good for soliciting subjective data or when the range of responses is not tightly defined.

Closed ended questions on the other hand restrict the respondent to several options or alternatives from which one can select. The basic data collection method used was the ‘drop and pick later’ as it gave the respondents the required opportunity to fill in the questionnaires as the time to pick the questionnaires was given to the respondents.

3.7 Data Analysis and Presentation

The collected data was coded for grouping purposes and further categorization. The researcher used quantitative data analysis using electronic spreadsheet SPSS Program version 25.0. Qualitative data was analysed thematically. Frequency distribution tables were used to present the descriptive data analysis. Percentages were used for the demographic characteristics which included level of education and economic factors, level of awareness and their influence on sales of mobile distribution apps.

To determine the relationship between independent variables and the effect of mobile distribution applications on sales, the researcher employ simple linear regression model as follows:

$$Y = \beta_0 + \beta_1 X_1 + e$$

$$Y = \beta_0 + \beta_2 X_2 + e$$

$$Y = \beta_0 + \beta_3 X_3 + e$$

$$Y = \beta_0 + \beta_4 X_4 + e$$

Dependent variable Y (sales)

β_0 is the coefficient of regression. It predicts the relationship between sales and the respective variable.

X_1 – Memory support by mobile app

X_2 – Transaction-based app services

X_3 – Location-based app services

X_4 – Information Sharing

Y will be the mean sales

$\beta_1, \beta_2, \beta_3, \beta_4$, – Each represented the change in marginal effect that follows variation in unit change in the respective corresponding variable (X_1, X_2, X_3, X_4) holding other variables constant.

e = Error term

Co-efficient of Correlation. Correlation was used to find out if there was any correlation or covariance between the variables under the study.

3.8 Legal and Ethical Considerations

To this study, approval was sought from Africa Nazarene University and a letter was granted to allow the researcher to carry out the research. The researcher further sought approval from the management of PZ Cussons to carry out the study. The researcher explained the purpose of the study to the respondents and assured them of confidentiality of their responses and identities. The researcher adhered to appropriate behaviour in relation to the rights of the

respondents who voluntarily participated in the study. A verbal consent was sought from the respondents before questionnaires were administered. The findings of the study were not doctored to meet any preconceived or commercial ends. Materials and citations from other scholars were duly acknowledged by the researcher.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, AND INTERPRETATION

4.1 Introduction

This chapter focuses on data analysis, presentation, and interpretation of findings. The chapter analyses the demographic characteristic of the respondents and addresses the themes for each specific objective alongside the dependent variable. Each theme was analysed, presented, and interpreted as per the findings obtained.

4.2 Questionnaire Return Rate

The researcher administered 80 questionnaires to the respondents at PZ Cussons East Africa of which 45 were duly filled and returned. The research obtained a response rate of 56.25% as shown in Table 4.1. Of the total, 35 questionnaires were not returned despite elaborate efforts to have them completed and returned. The Table 4.1 presents the questionnaire return rate.

Table 4.1: Questionnaire Return Rate

Responses	Frequency	Percentage
Responded	45	56.25
Non-response	35	43.75
Total	80	100.00

Pilot of 8 respondents was drawn from Unilever

This response rate was deemed good and representative as the return rate conforms to (Mugenda, 2003) statements that a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of over 70% is excellent. The return rate at 56.25% was deemed adequate for analysis and reporting.

4.3 Demographic Characteristics of Respondents

In this section, the researcher sought to obtain information on the respondent's age, highest academic qualification, and experience in terms of the years worked at the organization and the departments the respondents work under. The findings are presented in Table 4.2.

Table 4.2: Distribution of Respondents Characteristics

Variable	Frequency	Percentage
Gender		
Male	25	55.5
Female	20	44.5
Total	45	100.0
Age Bracket of respondent		
20 – 30 years	4	8.9
31 – 40 years	19	42.2
41 – 50 years	14	31.1
Above 51 years	8	17.8
Total	45	100.0
Level of Education		
Diploma	13	28.9
Bachelors' Degree	21	46.7
Master	7	15.6
PhD	1	2.2
Other level	3	8.9
Total	45	100.0
Years of Experience		
Less than 5 years	7	15.6
6 – 10 years	16	35.6
11 – 19 years	17	37.8
Over 20 years	5	11.1
Total	45	100.0
Department		
Finance	7	15.6
Supply chain	23	51.1
Sales	15	33.3
Total	45	100

The respondents were required to indicate their gender; the results show that 25 (55.5%) of the respondents were males while 20(45.5%) of the respondents were females. This implies that there were more male respondents than females in the company.

On the distribution of respondents by age, the findings of the study indicated that out of the 45 respondents who participated in the study, respondents between the ages of 20 – 30 years represented 4(8.9%), between 31 – 40 years were 19(42.2%), between 41 – 50 years were 14(31.1%) while those above 50 years 8(17.8%). The findings indicate that the respondents from the different demographics were involved majority being between the ages of 31 – 40 years.

On the distribution of respondents by highest level of education, the findings showed that most of the respondents had attained bachelors' degree 21(46.7%) followed by diploma holders being represented by 13(28.9%). Respondents with graduate level masters' degree were represented by 7(15.6%) whereas only one respondent holds a doctorate degree 1(2.2%). Other levels of education were represented by 3(6.7%) which could either be secondary school level or certificate level of education as the highest level of education.

The fourth characteristic sought to obtain information of distribution of respondents by years of experience. The findings obtained showed that respondents with less than 5 years of experience were represented by 7(15.6%), those between 6 – 10 years 16(35.6%), between 11 – 19 years being represented by 17(37.8%) and finally respondents with more than 20 years of experience 5(11.1%).

The last demographic characteristic sought to obtain information on the distribution of respondents by department. The findings showed that majority of the respondents were from the supply chain department being represented by 23(51.1%), sales 15(33.3%) and finance department being represented by 7(15.6%).

4.4 Sales of Fast-Moving Consumer Goods

The data collected on the dependent variable; sales of fast-moving consumer goods was descriptively analysed in quantitative forms. The respondents were required to give their feedback on the statements provided. To measure the response variable, the study employed the use of a 5-point Likert scale where 1= Strongly Disagree (SD), 2= Disagree (D), 3= Neutral (N), 4= Agree (A) and 5= Strongly Agree (SA). The findings are presented in Table 4.3.

Table 4.3: Sales of Fast-Moving Consumer Goods

Statement	5	4	3	2	1	Mean	SDV
	F	F	F	F	F	n	
	(%)	(%)	(%)	(%)	(%)		
1. Daily sales are collected and recorded using portable devices such as mobile phones and tablets.	33 (73.3)	9 (20.0)	2 (4.4)	1 (2.2)	0 (0.0)	45	4.21 0.625
2. Daily sales by the company are attributed to the level of technology advancement in sales.	33 (73.3)	10 (22.2)	0 (0.0)	2 (4.4)	0 (0.0)	45	4.26 0.598
3. Data collected in the sales is crucial for inventory management for the company.	30 (66.7)	14 (31.1)	1 (2.2)	0 (0.0)	0 (0.0)	45	4.25 0.594
4. Data on inventory management is easily retrieved for decision making in sales and marketing for the company.	28 (62.2)	17 (37.7)	0 (0.0)	0 (0.0)	0 (0.0)	45	4.19 0.611
5. Recorded data from the sales can be used for predictability and sales forecasting.	26 (57.8)	6 (13.3)	3 (6.7)	6 (13.3)	4 (8.9)	45	3.95 0.874
6. Profitability is easily achieved when performance of sales is automated.	24 (53.3)	14 (31.1)	3 (6.7)	2 (4.4)	1 (2.2)	45	3.96 0.823
Composite Mean							4.15 0.686

Table 4.3 shows the results from the analysis on sales of fast-moving consumer goods at PZ Cussons in Nairobi County, Kenya. The researcher computed a composite mean and standard deviation for comparison with the mean line item of each statement developed from the indicators of the response variable. Where the line-item mean was found to be lower than the composite mean, the statement contributed negatively to the outcome of the variable and where the line-item standard deviation compared to the composite standard deviation was found to be lower, there was an indication of divergent views on the statement.

On whether daily sales are collected and recorded using portable devices such as mobile phones and tablets; 33(73.3%) of the respondents indicated strong agreement, 9(20.0%) agreed, 2(4.4%) were neutral, 1(2.2%) disagreed whereas 0(0.0%) of the respondents strongly disagreed. The mean score obtained was 4.21 and standard deviation 0.625. The results show that most of the respondents agreed with the statement being represented by 93.3%.

On whether daily sales by the company are attributed to the level of technology advancement in sales. The results indicate that 33(73.3%) strongly agreed, 10(22.2%) agreed, 0(0.0%) were neutral, 2(4.4%) disagreed and none of the respondents strongly disagreed with a mean and a standard deviation of 4.26 and 0.598 respectively. The findings show that majority of the respondents agreed with the statement being supported by 95.5% of the respondents who agreed.

Data collected in the sales is crucial for inventory management for the company; 30(66.7%) strongly agreed, 14(31.1%) agreed, 1(2.2%) were neutral, none of the respondents 0(0.0%) disagreed or strongly disagreed with a mean and a standard deviation of 4.25 and 0.594 respectively. The findings indicate that those who agreed and strongly agreed with the statement aggregated to 97.8% of the respondents who participated in the study.

Data on inventory management is easily retrieved for decision making in sales and marketing for the company; the line item mean indicated 4.27 with standard deviation of 0.533. The findings show that majority of the respondents (100%) agreed on the statement. The results indicate that 28(62.2%) strongly agreed, 17(37.7%) agreed, whereas none of the respondents were either neutral, disagreed or strongly disagreed. The mean and standard deviation of the line item were greater than the composite mean ($M=4.27 > 4.15$). This implies that most of the respondents agreed that the statement was important in influencing sales of fast-moving consumer goods.

On whether recorded data from the sales can be used for predictability and sales forecasting. The findings were as follows; 26(57.8%) strongly agreed, 6(13.3%) agreed, 3(6.7%) were neutral, 6(13.3%) disagreed and 4(8.9%) strongly disagreed with a mean and a standard deviation of 3.95 and 0.874 respectively.

Data on the profitability is easily achieved when performance of sales is automated; Respondents who strongly agreed were represented by 24(53.3%), 14(31.1%) agreed, 3(6.7%) were neutral, 2(4.4%) disagreed and those who strongly disagreed 1(2.2%) with a mean and standard deviation of 3.96 and 0.823 respectively. This indicates that a significant majority of the respondents supported by view being represented by 84.2% of the respondents.

4.5 Memory Support by Mobile App and Sales of Fast-Moving Consumer Goods

This section focused on the first objective of the study which sought to determine how memory support by mobile applications influence sales of fast-moving consumer goods at PZ Cussons in Nairobi County, Kenya.

4.5.1 Descriptive Analysis of Memory Support by Mobile App and Sales of Fast-Moving Consumer Goods.

Memory support by Mobile App was determined by type of memory support online, offline and synchronized; real-time data exchange and leveraging consumer data in sales process on influence sales of fast-moving consumer goods. To measure the extent, the study employed the use of a 5-point Likert scale where 1= Strongly Disagree (SD), 2= Disagree (D), 3= Neutral (N), 4= Agree (A) and 5= Strongly Agree (SA). The data is presented in the Table 4.4.

Table 4.4: Memory Support by Mobile App and Sales of Fast-Moving Consumer Goods

Statement	5	4	3	2	1	Mean	SDV
	F (%)	F (%)	F (%)	F (%)	F (%)	n	
1. Recorded data by mobile apps can be used to provide insights for decision making	28 (62.2)	14 (31.1)	3 (6.7)	0 (0.0)	0 (0.0)	45	4.10 0.623
2. Mobile apps Memory Support is effective for use for the company in storing time series data	30 (57.8)	12 (26.7)	2 (4.4)	1 (2.2)	0 (0.0)	45	4.14 0.618
3. Data collected in the sales is crucial for the company which is a key reason for this choice of memory support	25 (55.6)	17 (37.8)	1 (2.2)	1 (2.2)	1 (2.2)	45	4.07 0.711
4. Apps with all data stored on the mobile device, (offline) are not efficient for the company since data needs to be updated by the company	15 (33.3)	23 (51.1)	3 (6.7)	4 (8.9)	0 (0.0)	45	3.94 0.819
5. Recorded data from the mobile app enables the company to better understand consumer buying behaviour	20 (44.4)	20 (44.4)	2 (4.4)	1 (2.2)	2 (4.4)	45	3.90 0.842
6. Real-time data is easier to leverage into existing sales than offline data uploaded by the user	28 (62.2)	16 (35.6)	0 (0.0)	1 (2.2)	0 (0.0)	45	4.08 0.640
Composite Mean							4.02 0.709

Memory support by mobile app obtained the following descriptive statistical findings; 28(62.2%) strongly agreed, 14(31.1%) agreed, 3(6.7%) were neutral and no respondent either disagreed or strongly disagreed with the statement respectively. The statement drew a mean of 4.10 and a standard deviation of 0.623 respectively. The findings indicate that the statement was supported by 93.3% of the respondents.

On whether mobile apps memory support is effective for use for the company in storing time series data, obtained the following 30(57.8%) strongly agreed, 12(26.7%) agreed, 2(4.4%) were neutral, 1(2.2%) disagreed and no response on those who strongly disagreed. The mean and standard deviation of the line item was 4.14 and 0.618 respectively. This implies that the statement contributes positively to the variable as supported by 84.5 % of the respondents.

The findings obtained on the data collected on whether sales are crucial for the company is vital for the choice of memory support. The findings gathered were 25(55.6%) strongly agreed, 17(37.8%) agreed, 1(2.2%) were neutral, 1(2.2%) disagreed and 1(2.2%) strongly disagreed.

The statement drew a mean and a standard deviation of 4.07 and 0.711 respectively. The findings indicate that the statement contributed to the variable when as supported by majority of the respondents (42) representing 93.4%.

The findings obtained on whether apps with all data stored on the mobile device are efficient for the company established that 15(33.3%) strongly agreed, 23(51.1%) agreed, 3(6.7%) were neutral, 4(8.9%) disagreed whereas none of the respondents strongly disagreed. The statement obtained a mean and a standard deviation of 3.94 and 0.819 respectively. The descriptive findings indicate that majority of the respondents 38(84.4%) supported the statement.

The study recorded the following results on whether recorded data from the mobile app enables the company to better understand consumer buying behaviour; 20(44.4%) agreed and strongly agreed respectively, 2(4.4%) were neutral, 1(2.2%) disagreed and 2(4.4%) strongly disagreed with a mean of 3.90 and a standard deviation of 0.842 respectively.

On whether real-time data is easier to leverage into existing sales than offline data uploaded by the user. The descriptive statistics obtained were as follows; 28(62.2%) strongly agreed, 16(35.6%) agreed, and disagreed with 1 (2.2%) with a mean and standard deviation of 4.08 and 0.640 respectively. The findings imply that the line item positively contributes to the variable memory support by mobile app when the line-item mean is compared to the composite mean (M=4.02) and the line item (M=4.08).

Further, the study sought to obtain view on the extent to which memory support offered by mobile application influence sales of fast-moving consumer goods. To measure the extent, the study employed the use of a 3-point scale where 1= Great Extent (GE), 2= Moderate Extent (ME) and 3= Low Extent (LE). The data is presented in the Table 4.5.

Table 4.5: Extent to which Mobile Application influence Sales of Fast-Moving Consumer Goods

Responses	Frequency	Percentage
Great Extent	41	91.11
Moderate Extent	3	6.67
Low Extent	1	2.22
Total	45	100.00

The findings obtained from the Table 4.5 sought to determine the extent to which mobile application influence sales of fast-moving consumer goods. The findings were as follows; 41(91.11%) who indicated great extent, 3(6.67%) indicated moderate extent while 1(2.22%) indicated low extent. The findings indicate that mobile application influence sales of fast-moving consumer goods as most of the respondents indicated great extent to the statement. This implies that the statement contributes positively to the predictor variable.

4.5.2 Correlation Analysis between Memory Support by Mobile App and Sales of Fast-Moving Consumer Goods

The researcher sought to determine the relationship between memory support by mobile app and sales of fast-moving consumer goods using the Pearson Correlation Coefficient. This enables in establishing the strength and direction of the relationship between memory support by mobile app and sales of fast-moving consumer goods. The correlation results are presented in the Table 4.6.

Table 4.6: Correlation Analysis between Memory Support by Mobile App and Sales of Fast-Moving Consumer Goods

Variable		Memory Support by Mobile App	Sales of Fast-Moving Consumer Goods
Memory Support by Mobile App	Pearson Correlation	1	0.861**
	Sig. (2-Tailed)		0.007
	n	45	45
Sales of Fast-Moving Consumer Goods	Pearson Correlation	0.861**	1
	Sig. (2-Tailed)	0.007	
	n	45	45

The results of the correlation on Table 4.6 between memory support by mobile app and sales of fast-moving consumer goods. The results revealed that there is a strong positive correlation of 0.861 between memory support by mobile app and sales of fast-moving consumer goods, which indicates a significant relationship with p-value of 0.007 which is less than the test level of significance 0.05. This indicates that memory support by mobile app influences sales of fast-moving consumer goods.

4.5.3 Regression Analysis for Memory Support by Mobile App and Sales of Fast-Moving Consumer Goods

Regression analysis was done to determine the relationship between memory support by mobile app and sales of fast-moving consumer goods. The hypothesis was tested using simple linear regression model to satisfy requirements of the first objective of the study.

1. H₀: Memory support by mobile app has no significant influence on sales of fast-moving consumer goods.

H₁: Memory support by mobile app has a significant influence on sales of fast-moving consumer goods.

The first hypothesis was tested using the following model:

$$y = \beta_0 + \beta_1 x_1 + e$$

Where:

y = Sales of fast-moving consumer goods:

β_0 = constant,

β_1 = beta coefficient,

x_1 = Memory support by mobile app

e = error term

Table 4.7: ANOVA between Memory Support by Mobile App and Sales of Fast-Moving Consumer Goods

Factor	Sum of Squares	df	Mean Square	F	Sig.
Regression	862.392	1	862.392	88.257	0.007 ^b
Residual	420.167	43	9.771		
Total	1282.559	44			

a. Dependent Variable: Sales of Fast-Moving Consumer Goods.

b. Predictors: (Constant) Memory Support by Mobile App

Analysis of variance was used to establish the goodness of fit of the regression model on Table 4.7. It was established that the F-significance value of 0.000 was less than 0.05 ($p < 0.05$). The F-ratio was significant, $F(1, 43) = 88.257$ was significantly larger than the critical value of $F = 4.07$. This shows that the model was significant.

Table 4.8: Model Summary for Memory Support by Mobile App and Sales of Fast-Moving Consumer Goods

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.861 ^a	0.741	0.738	1.171

The study results shown in Table 4.8 provides an explanation on the extent to which the predictor variable accounts for the overall variability of the model. The R Square is given as 0.741 indicating that memory support by mobile app contributes to 74.1% of the variations of the dependent variable sales of fast-moving consumer goods. This indicates that other factors which were not considered in this model accounted for 25.9%. The study concluded that

memory support by mobile app has a significant influence on sales of fast-moving consumer goods.

Table 4.9: Coefficients of Memory Support by Mobile App and Sales of Fast-Moving Consumer Goods

Variables	Un-standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.899	0.198		4.540	0.000
Memory Support by Mobile App	0.873	0.141	0.861	6.191	0.007

a. Dependent Variable: Sales of Fast-Moving Consumer Goods

The results in Table 4.9 gave a standardized beta value of 0.861 indicating that a unit increase of memory support by mobile apps contributed to 86.1% increase in the variations of sales of fast-moving consumer goods. Overall model was fit to predict sales of fast-moving consumer goods given memory support by mobile apps at $p < 0.05$. The regression model would be as such:

$$\text{Sales of Fast-Moving Consumer Goods} = 0.899 + 0.861 (\text{Memory Support by Mobile App}) + e;$$

$t = 6.191; p < 0.05$.

The findings of the study demonstrated that memory support by mobile apps has a significant influence on sales of fast-moving consumer goods. Hence, the null hypothesis of the study was rejected.

The findings of the current study on the first variable memory support by mobile apps ($R^2 = 0.741$) explains 74.1% of the variations in sales of fast-moving consumer goods. The model was deemed significant.

4.5.4 Qualitative Information on Memory Support by Mobile App and Sales of Fast-Moving Consumer Goods.

The study further gathered information on qualitative information from the open-ended questionnaires and key informant interviews to address the need for triangulation of the

gathered information for the study. The respondents were further asked to indicate the type of memory support offered by mobile application support the data collection as intended. The findings are as shown in Table 4.10.

Table 4.10: Qualitative Information on Mobile Application Support in Data Collection

Responses	Frequency	Percentage
Yes	41	91.11
No	4	8.89
Total	45	100.00

The results in Table 4.10, the respondents were asked their opinion on whether the type of memory support offered by mobile application support the data collection intended. The respondents were asked to share their opinion on the type of memory support offered by mobile applications. A respondent had the following opinion that was captured by the researcher:

The use of mobile application for memory support has revolutionized the world of sales and marketing. Many our clients are techno savvy and therefore reaching out to them becomes easier with the use of mobile applications that are evolving on a daily. The use of mobile applications also enables companies to gather data on their sales and customer feedback to enable continuous improvement.

The findings from the qualitative and quantitative data information indicate that there is a significantly strong and positive correlation between memory support by mobile apps and sales of fast-moving consumer goods. The adopting of the mixed methods research design. It further shows that the company utilizes technology at advanced levels to attain maximum productivity and profitability.

4.6 Transaction-based App Services and Sales of Fast-Moving Consumer Goods

The second section sought to examine how transaction-based app services influence sales of fast-moving consumer goods at PZ Cussons in Nairobi County, Kenya.

4.6.1 Descriptive Analysis for Transaction-based App Services and Sales of Fast-Moving Consumer Goods.

Transaction-based app services was measured by the following indicators: transaction costs; instant payment; merchant costs and optimum transacting mechanisms. The study employed the use of a 5-point Likert scale where 1= Strongly Disagree (SD), 2= Disagree (D), 3= Neutral (N), 4= Agree (A) and 5= Strongly Agree (SA). The findings are as shown in Table 4.11.

Table 4.11: Transaction-based App Services and Sales of Fast-Moving Consumer Goods

Statement	5	4	3	2	1	Mean	SDV
	F (%)	n					
1. Having payment capability on the Mobile App improves overall sales performance	25 (55.6)	14 (31.1)	3 (6.7)	3 (6.7)	0 (0.0)	45	3.91 0.912
2. Consumers demand greater speed and accessibility from firms with the advent of instant payments	23 (51.1)	18 (40.0)	1 (2.2)	0 (0.0)	3 (6.7)	45	3.95 0.694
3. Companies releases goods and products faster with instant payment by retailers	18 (40.0)	24 (53.3)	0 (0.0)	2 (4.4)	1 (2.2)	45	3.96 0.689
4. Mobile Apps ability for non-cash payment reduces the opportunity for fraud and shrinkage, therefore improving sales productivity	31 (68.9)	12 (26.7)	1 (2.2)	1 (2.2)	1 (2.2)	45	4.14 0.543
5. End Day Reconciliation of inventory and cash is improved using Mobile Apps and thereby reducing shrinkage and improve sales	29 (64.4)	16 (35.6)	0 (0.0)	0 (0.0)	0 (0.0)	45	4.16 0.540
6. Non-Cash ability built into the Mobile App improves the security of the personnel, and therefore improves sales by eliminating downtime	27 (60.0)	15 (33.3)	2 (4.4)	1 (2.2)	0 (0.0)	45	3.93 0.721
7. Mobile Apps ability to receive payment improves credit management, improves working capital, and therefore ensures optimum stocks for sale	33 (73.3)	12 (26.7)	0 (0.0)	0 (0.0)	0 (0.0)	45	4.25 0.501
Composite Mean							4.04 0.657

The first item on the second variable obtained information on the payment capability on the mobile app improves overall sales performance. The results were as follows; 25(57.8%) strongly agreed, 14(31.1%) agreed, 3(6.7%) were neutral, 3(6.7%) disagreed. The statement drew a mean and a standard deviation of 3.91 and 0.912 respectively. This indicates that the statement drew a significant number of respondents who supported the statement 88.9%.

On whether consumers demand greater speed and accessibility from firms with the advent of instant payments; the study obtained the following results: 23(51.1%) strongly agreed, 18(40.0%) agreed, 1(2.2%) were neutral, 0(0.0%) disagreed and those who strongly disagreed 3(6.7%) with a mean and standard deviation of 3.95 and 0.694 respectively. The findings

indicate that majority of the respondents agreed with the statement as supported by 91.1% of the respondents.

The findings on whether companies release goods and products faster with instant payment by retailers observed that 18(40.0%) strongly agreed, 24(53.3%) agreed, nonneutral about the statement, 2(4.4%) disagreed and 1(2.2%) strongly disagreed with a mean and standard deviation of 3.96 and 0.689 respectively.

The study found out on whether mobile apps ability for non-cash payment reduces the opportunity for fraud and shrinkage, therefore improving sales productivity. The results indicate that 31(68.9%) strongly agreed, 12(26.7%) agreed, 1(2.2%) were neutral, disagreed and strongly disagreed respectively. The line item drew a mean and a standard deviation of 4.14 and 0.543 respectively. The statement drew a support of 95.6% from the respondents who agreed.

On whether end day reconciliation of inventory and cash is improved using mobile apps and thus reducing shrinkage and improve sales. The results were as follows; 29(64.4%) strongly agreed, and 16(35.6%) agreed to the statement with a mean and standard deviation of 4.16 and 0.540. The findings imply that majority of the respondents agreed that inventory management with the utilization of mobile apps improved sales. This is also supported by majority of the respondents who agreed (100%).

The study sought to find out whether non-cash ability built into the mobile app improves the security of the personnel which in turn improves sales by eliminating downtime. The results indicate that 27(60.0%) strongly agreed, 15(33.3%) agreed, 2(4.4%) were neutral, 1(2.2%) disagreed with a mean and a standard deviation of 3.93 and 0.721 respectively. The findings imply that the respondents agreed with the statement as supported by 93.3% of the respondents.

The last statement gathered data on mobile apps ability to receive payment improves credit management, improves working capital, and therefore ensures optimum stocks for sale. The

results were as follows; 33(73.3%) strongly agreed, 12(26.7%) agreed with no respondent being neither neutral, disagreeing nor strongly disagreeing with a mean and standard deviation of 4.25 and 0.501 respectively. These findings imply that a significant number of the respondents agreed being supported by 100% of the respondents who agreed.

The study further sought to gather views on the level to which transaction-based mobile application services influence sales of fast-moving consumer goods. To measure the level, the study used a 3-point scale where 1= High Level (HL), 2= Moderate Level (ML) and 3= Low Level (LL). The data is presented in the Table 4.12.

Table 4.12: Level to which Transaction-Based Mobile Application Services Influence Sales of Fast-Moving Consumer Goods

Responses	Frequency	Percentage
High Level	45	100.00
Moderate Level	0	0.00
Low Level	0	0.00
Total	45	100.00

The statement level to which transaction-based mobile app services influence sales of fast-moving consumer goods was subjected to the respondents. The results from Table 4.12 indicate that 45(100.0%) of the respondents indicated high level, whereas no respondent indicated either moderate or low level. The statement implies that there were convergent views on the level to which transaction-based mobile applications influence sales of fast-moving consumer goods at PZ Cussons. The statement implies that most of the respondents 45 (100.0%) indicated a high level thus the responses contributed positively to the predictor variable.

4.6.2 Correlation Analysis between Transaction-based App Services and Sales of Fast-Moving Consumer Goods

The researcher sought to determine the relationship between transaction-based app services and sales of fast-moving consumer goods. This enables in establishing the strength and

direction of the relationship between transaction-based app services and sales of fast-moving consumer goods. The correlation results are presented in the Table 4.13.

Table 4.13: Correlation Analysis between Transaction-based App Services and Sales of Fast-Moving Consumer Goods

Variable		Transaction-based App Services	Sales of Fast-Moving Consumer Goods
Transaction-based App Services	Pearson Correlation	1	0.638**
	Sig. (2-Tailed)		0.013
	n	45	45
Sales of Fast-Moving Consumer Goods	Pearson Correlation	0.638**	1
	Sig. (2-Tailed)	0.013	
	n	45	45

** . Correlation is significant at the 0.05 level (2-tailed)

The results of the correlation on Table 4.13 between transaction-based app services and sales of fast-moving consumer goods. The results revealed that there is a strong positive correlation of 0.638 between transaction-based app services and sales of fast-moving consumer goods, which indicates a significant relationship with p-value of 0.000 which is less than the test level of significance 0.05. This indicates that transaction-based app services influence sales of fast-moving consumer goods.

4.6.3 Regression Analysis for Transaction-based App Services and Sales of Fast-Moving Consumer Goods

Regression analysis was done to determine the relationship between transaction-based app services and sales of fast-moving consumer goods. The hypothesis was tested using simple linear regression model to satisfy requirements of the second objective of the study.

H₀: Transaction-based services has no significant influence on sales of fast-moving consumer goods.

H₁: Transaction-based services by mobile app has a significant influence on sales of fast-moving consumer goods.

The second hypothesis was tested using the following model:

$$y = \beta_0 + \beta_2 x_2 + e$$

Where:

y = sales of fast-moving consumer goods:

β_0 = constant,

β_2 = beta coefficient,

x_2 = Transaction-based App services and

e = error term

Table 4.14: ANOVA between Transaction-based App Services and Sales of Fast-Moving Consumer Goods

Factor	Sum of Squares	df	Mean Square	F	Sig.
Regression	522.821	1	522.821	29.591	0.013 ^b
Residual	759.738	43	17.668		
Total	1282.559	44			

a. Dependent Variable: Sales of Fast-Moving Consumer Goods.

b. Predictors: (Constant) Transaction-based App Services

Analysis of variance (ANOVA) was used to establish the power and goodness of fit of the regression model on Table 4.14. It was established that the F-significance value of 0.000 was less than 0.05 ($p < 0.05$). The F-calculated ratio was significant, $F_{(1, 43)} = 29.591$ and was significantly larger than the F-critical value = 4.07. This indicates that the model was significant.

Table 4.15: Model Summary for Transaction-based App Services and Sales of Fast-Moving Consumer Goods

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.638 ^a	0.407	0.402	1.257

a. Predictors (Constant), Transaction-based App Services

The study results shown in Table 4.15 provides an explanation on the extent to which the predictor variable accounts for the overall variability of the model. The R Square is given as 0.407 indicating that transaction-based app services contribute to 40.7% of the variations of the dependent variable sales of fast-moving consumer goods. This indicates that about 59.3% of other factors were not accounted for in this model. The study concluded that transaction-based app services have a significant influence on sales of fast-moving consumer goods.

Table 4.16: Coefficients of Transaction-based App Services and Sales of Fast-Moving Consumer Goods

Variables	Un-standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.689	0.208		3.313	0.000
Transaction-based App Services	0.647	0.125	0.638	5.176	0.013

a. Dependent Variable: Sales of Fast-Moving Consumer Goods

The results in Table 4.16 gave a standardized beta value of 0.638 indicating that a unit increase in transaction-based app services contributed to 63.8% increase in the variations of sales of fast-moving consumer goods. Overall model was fit to predict sales of fast-moving consumer goods given transaction-based app services at $p < 0.05$. The regression model derived was as follows:

$$\text{Sales of Fast-Moving Consumer Goods} = 0.689 + 0.638 (\text{Transaction-based App services}) + e;$$

$t = 5.176; p < 0.05$.

Thus, the study deduced that transaction-based app services influence sales of fast-moving consumer goods, hence the null hypothesis of the study was rejected.

The current findings of the study indicated that the predictor variable transaction-based app services significantly influence sales of fast-moving consumer goods at PZ Cussons. These findings ($R^2 = 0.407$) can be used to explain 40.7% of the variations in the response variable sales of fast-moving consumer goods.

4.6.4 Qualitative Information on Transaction-based app services and Sales of Fast-Moving Consumer Goods.

The study further gathered information on qualitative information from the open-ended questionnaires and key informant interviews to address the need for triangulation of the gathered information for the study. The respondents were further asked to indicate whether transaction-based mobile application services support increased sales. The findings are as shown in Table 4.17.

Table 4.17: Transaction-Based App Services support on sales of FMCG

Responses	Frequency	Percentage
Yes	44	97.78
No	1	2.22
Total	45	100.00

The results in Table 4.17, the respondents were asked their opinion on whether the type of transaction-based app services on sales of fast-moving consumer goods. The results indicated the following: 44(97.78%) were of the affirmative that Transaction-based app services support sales whereas those of the different opinion were 1(2.22%) of the respondents. This implies that majority of the respondents rely on Transaction-based applications to conduct their sales for the company. The researcher captured the following opinion from a respondent:

In my opinion, the adoption of Transaction-based application services makes it easier for customers and even the company to account for any payments and transactions in business. The company partnering with mobile money companies makes it convenient for its clients to transact.

These findings from the quantitative and qualitative data information indicate that there is a significant correlation between transaction-based app services and sales of fast-moving consumer goods. It further shows that the company has made business easy for its clients and for accountability purposes.

4.7 Location-based App Services and Sales of Fast-Moving Consumer Goods

The third section sought to examine how location-based app services influence sales of fast-moving consumer goods at PZ Cussons in Nairobi County, Kenya.

4.7.1 Descriptive Analysis for Location-based App Services and Sales of Fast-Moving Consumer Goods.

The variable location-based app services were measured using the following indicators: value addition; employee tracking; location information risks and strategy formulation and productivity management. The researcher used a 5-point Likert scale where 1= Strongly Disagree (SD), 2= Disagree (D), 3= Neutral (N), 4= Agree (A) and 5= Strongly Agree (SA) using the statements shown on the Table 4.18.

Table 4.18: Location-based App Services and Sales of Fast-Moving Consumer Goods

Statement	5	4	3	2	1	Mean	SDV
	F (%)	F (%)	F (%)	F (%)	F (%)		
1. Knowledge of the consumer's location provides companies with the prospect efficiently deploying sales resources	28 (62.2)	15 (33.3)	2 (4.4)	0 (0.0)	0 (0.0)	45	4.17 0.555
2. The biggest constraints to the location-based services in Kenya is inadequate mapping under the geographical information system	15 (33.3)	16 (35.6)	7 (15.6)	4 (8.9)	3 (6.7)	45	3.80 0.897
3. The common "opt-in" compromise is sufficient to justify the use of user's location data	17 (37.8)	20 (44.4)	6 (13.3)	2 (4.4)	0 (0.0)	45	3.97 0.623
4. Location of employees with mobile app services is essential for real time decision making that influence productivity	27 (60.0)	14 (31.1)	3 (6.7)	1 (2.2)	0 (0.0)	45	4.02 0.612
5. The pitfalls of tracking employee location information using mobile application are offset by increase in productivity	28 (62.2)	11 (24.4)	1 (2.2)	2 (4.4)	3 (6.7)	45	4.01 0.614
6. Location services are used by managers to plan new routes and receive accurate sales reports directly from the field and by sales staff to log in and out of work remotely	31 (68.9)	13 (28.9)	1 (2.2)	0 (0.0)	0 (0.0)	45	4.19 0.532
Composite Mean							4.01 0.643

On the third variable, the consumer's location provides companies with the prospect efficiently deploying sales resources. The findings show that majority of the respondents 28(62.2%)

strongly agreed with the statement, 15(33.3%) agreed while 2(4.4%) were neutral, with none disagreeing. The statement drew a mean and a standard deviation of 4.17 and 0.555 respectively. This implies that only 4.4% of the respondents were neutral about the statement whereas 95.5% agreed with the item.

The study obtained responses in relation to the biggest constraints to the location-based services in Kenya being inadequate mapping under the geographical information system. The results indicate that 15(33.3) strongly agreed, 16(35.6%) agreed, 7(15.6%) were neutral, 4(8.9%) disagreed and 3(6.7%) strongly disagreed with a mean and a standard deviation of 3.80 and 0.897 respectively. The statement observed that a significant majority of the respondents agreed with the statement as supported by 68.9% of the respondents.

On whether the common “opt-in” compromise is sufficient to justify the use of user’s location data, the study obtained the following results: 17(37.8%) strongly agreed, 20(44.4%) agreed, 6(13.3%) were neutral, 2(4.4%) disagreed and none strongly disagreed with a mean and standard deviation of 3.97 and 0.623 respectively.

The findings indicating whether location of employees with mobile app services is essential for real time decision making that influence productivity. The descriptive findings from the Table 4.18 indicate that 27(60.0%) strongly agreed, 14(31.1%) agreed, 3(6.7%) were neutral about the statement, 1(2.2%) disagreed. This implies that 91.1% of the respondents agreed with the line-item statement. The statement drew a mean and a standard deviation of (M=4.02) and 0.612 respectively.

The pitfalls of tracking employee location information using mobile application are offset by increase in productivity. The results from the Table 4.18 indicate that 28(62.2%) strongly agreed, 11(24.4%) agreed, 1(2.2%) were neutral, 2(4.4%) disagreed and 3(6.7%) strongly disagreed with a mean and a standard deviation of 4.01 and 0.614 respectively. The had a

significant number of divergent responses that disagreed at 11.1% but most of the respondents agreed with the statement as supported by 86.6% of the respondents.

On whether location services are used by managers to plan new routes and receive accurate sales reports directly from the field and by sales staff to log in and out of work remotely. The results obtained were as follows; 31(68.9%) strongly agreed, 13(28.9%) agreed, 1(2.2%) were neutral, whereas none disagreed or strongly disagreed with the statement. The statement drew a mean and a standard deviation of 4.19 and 0.532 respectively. The findings indicate that the statement has a significant contribution on the variable. This is supported by most of the respondents who agreed (97.8%).

The study also obtained information relating to assessing the level of influence of location-based mobile application services on the sales. The findings were guided by the following 3-point scale where 1= High Level (HL), 2= Moderate Level (ML) and 3= Low Level (LL). The data is presented in the Table 4.19.

Table 4.19: Level to which Location-Based App Services influence Sales of Fast-Moving Consumer Goods

Responses	Frequency	Percentage
High Level	33	73.33
Moderate Level	2	4.44
Low Level	10	22.22
Total	45	100.00

The statement level to which location-based app services influence sales of fast-moving consumer goods was subjected to the respondents. The results from Table 4.19 indicate that 33(73.33%) of the respondents indicated high level, 2(4.44%) indicated moderate level whereas 10(22.22%) indicated low level. The statement implies that there were divergent views on the level to which location-based applications influence sales of fast-moving consumer goods at PZ Cussons. The statement implies that most of the respondents 33(73.33%) indicated a high level thus the responses contributed positively to the predictor variable.

4.7.2 Correlation Analysis between Location-based App Services and Sales of Fast-Moving Consumer Goods

Correlation analysis using Pearson Product Moment Correlation was done to establish the relationship between location-based app services and sales of fast-moving consumer goods. The values obtained from the correlation analysis ranged between +1 and -1 where +1 is a perfect positive correlation and -1 is a perfect negative correlation. This was done to establish the strength and direction of the relationship between the predictor and the response variable. The correlation results are presented in the Table 4.20.

Table 4.20: Correlation Analysis between Location-based App Services and Sales of Fast-Moving Consumer Goods

Variable		Location-based App Services	Sales of Fast-Moving Consumer Goods
Location-based App Services	Pearson Correlation	1	0.788**
	Sig. (2-Tailed)	45	45
	n		
Sales of Fast-Moving Consumer Goods	Pearson Correlation	0.788**	1
	Sig. (2-Tailed)	45	45
	n		

The results of the correlation on Table 4.20 between location-based app services and sales of fast-moving consumer goods, shows that there was statistically significant correlation between location-based app services and sales of fast-moving consumer goods since the p-value of 0.000 was smaller than the alpha value 0.05. The results revealed that there was a strong positive correlation of 0.788 between the explanatory variable location-based app services and the dependent variable sales of fast-moving consumer goods. This indicates that location-based app services influence sales of fast-moving consumer goods.

4.7.3 Regression Analysis for Location-based App Services and Sales of Fast-Moving Consumer Goods

The linear regression model to satisfy requirements of the third objective of the study. The hypothesis was tested using simple linear regression model to satisfy requirements of the third objective of the study.

H₀: Location-Based has no significant influence on sales of fast-moving consumer goods.

H₁: Location-Based by mobile app has a significant influence on sales of fast-moving consumer goods.

The third hypothesis was tested using the following model:

$$y = \beta_0 + \beta_3 x_3 + e$$

Where:

y= sales of fast-moving consumer goods:

β_0 = constant,

β_2 = beta coefficient,

x_3 = Location-based App Services and

e= error term

Table 4.21: ANOVA between Location-based App Services and Sales of Fast-Moving Consumer Goods

Factor	Sum of Squares	df	Mean Square	F	Sig.
Regression	671.342	1	671.342	47.229	0.000 ^b
Residual	611.217	43	14.214		
Total	1282.559	44			

a. Dependent Variable: Sales of Fast-Moving Consumer Goods

b. Predictors: (Constant) Location-based App Services

Analysis of variance was used to establish the goodness of fit of the regression model on Table 4.21. It was established that the F-significance value of 0.000 was less than 0.05 ($p < 0.05$). The F-ratio was significant, $F(1, 43) = 47.229$ was significantly larger than the critical value of $F = 4.07$. This shows that the model was significant.

Table 4.22: Model Summary for Location-based App Services and Sales of Fast-Moving Consumer Goods

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.788 ^a	0.621	0.617	1.102

a. Predictors (Constant), Location-based App services

The study results shown in Table 4.22 provides an explanation on the extent to which the predictor variable accounts for the overall variability of the model. The R Square is given as 0.621 indicating that location-based app services contribute to sales of fast-moving consumer goods by 62.1% and other factors which were not considered in this model accounted for 38%. The study concluded that location-based app services have a positive significant influence on sales of fast-moving consumer goods.

Table 4.23: Coefficients of Location-based App Services and Sales of Fast-Moving Consumer Goods

Variables	Un-standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.796	0.194		4.103	0.000
Location-based App Services	0.784	0.051	0.788	15.373	0.000

a. Dependent Variable: Sales of Fast-Moving Consumer Goods

The results in Table 4.23 gave a standardized beta value of 0.788 indicating that a unit increase of location-based app services contributed to 78.8% increase in the variations of sales of fast-moving consumer goods. Overall model was fit to predict sales of fast-moving consumer goods given location-based app services at $p < 0.05$. The regression model would be as such:

Sales of Fast-Moving Consumer Goods = $0.796 + 0.788$ (location-based app services) + e; $t = 15.373$; $p < 0.05$.

The findings of the study concluded that the null hypothesis of the study was rejected, and the alternative hypothesis accepted. This demonstrates that location-based app services have a significant influence on sales of fast-moving consumer goods.

4.7.4 Qualitative Information on Location-based App Services and Sales of Fast-Moving Consumer Goods

The study further gathered information on qualitative information from the open-ended questionnaires and key informant interviews to fulfil the requirement for triangulation of the gathered information for the study. The respondents were further asked to indicate whether location-based mobile application services influence the sales of fast-moving consumer goods.

The findings are as shown in Table 4.24.

Table 4.24: Location-based application services on sales of FMCG

Responses	Frequency	Percentage
Yes	43	95.56
No	2	4.44
Total	45	100.00

The results in Table 4.24, the respondents were asked their opinion on whether location-based mobile application services influence sales. The findings from the responses indicate that a majority were of the affirmative opinion and agreed that location-based applications influence sales of fast-moving consumer goods as represented by 43(95.56%) who agreed while 2(4.44%) were of the negative opinion. A respondent had the following opinion that was captured by the researcher:

My take on the use of location-based app services is that it has enabled the company to reach its clients with ease although its limitations in terms of the ability and capacity of infrastructure outside cosmopolitan areas such as Nairobi. Similarly, knowledge of the user's location is especially effective when it is combined with saved user data to offer personalized products.

The findings from the qualitative and quantitative data information indicate that there is a significantly strong and positive correlation between location-based app services and sales of fast-moving consumer goods. The adopting of the mixed methods research design has enables justification of research in terms of data triangulation.

4.8 Information Sharing and Sales of Fast-Moving Consumer Goods

The fourth variable of the study sought to establish the extent to which information sharing influence sales of fast-moving consumer goods at PZ Cussons in Nairobi County, Kenya.

4.8.1 Descriptive Analysis for Information Sharing and Sales of Fast-Moving Consumer Goods.

The variable information sharing was measured using the following indicators of the study: consumer buying behaviour; employee creativity and empowerment; time data series and sales forecasting. To measure the extent, the study employed the use of a 5-point Likert scale where 1= Strongly Disagree (SD), 2= Disagree (D), 3= Neutral (N), 4= Agree (A) and 5= Strongly Agree (SA). The findings are presented in the Table 4.25.

Table 4.25: Information Sharing and Sales of Fast-Moving Consumer Goods

Statement	5	4	3	2	1		Mean	SDV
	F	F	F	F	F	n		
	(%)	(%)	(%)	(%)	(%)			
1. Data collected during a sales call using Mobile Apps support decision making process with a view to increase sales	29 (64.4)	13 (29.9)	2 (4.4)	1 (2.2)	0 (0.0)	45	4.04	0.721
2. The sales team desires more information sharing features in mobile application including sharing picture or videos for peer review and therefore improve sales	30 (66.7)	10 (22.2)	0 (0.0)	2 (2.2)	3 (6.7)	45	4.02	0.728
3. Information sharing within the organization's mobile application support operational planning to support sales performance	26 (57.8)	16 (35.6)	1 (2.2)	2 (4.4)	0 (0.0)	45	3.98	0.866
4. Information sharing within a company mobile application is important for employees and is a tool for training aimed at supporting teams to sell more	32 (71.1)	13 (28.9)	0 (0.0)	0 (0.0)	0 (0.0)	45	4.27	0.652
5. There is value in information sharing of mobile app time series data used in inventory management with a goal to keep regular supply of products in the market and therefore sustaining improved sales	30 (66.7)	8 (17.8)	3 (6.7)	1 (2.2)	3 (6.7)	45	3.95	0.899
Composite Mean							4.04	0.773

To find out whether data collected during a sales call using Mobile Apps support decision making process with a view to increase sales, the results from the Table 4.25 indicate that 29(64.4%) strongly agreed, 13(29.9%) agreed, 2(4.4%) were neutral, 1(2.2%) disagreed and no respondent strongly disagreed with a mean and a standard deviation of 4.04 and 0.721 respectively. Majority of the respondents agreed with the statement as supported by 94.3% who agreed.

Sales team desires more information sharing features in mobile application including sharing picture or videos for peer review and therefore improve sales. The study obtained the following results: 30(66.7%) strongly agreed, 10(22.2%) agreed, 0(0.0%) were neutral, 2(4.4%) disagreed and those who strongly disagreed 3(6.7%) with a mean and standard deviation of 4.02 and 0.728 respectively. About 40 out of a possible 45 respondents agreed with the statement contributing to 88.9% of the respondents who supported the statement.

The third item under the variable obtained the following results as per the findings on Table 4.19; 26(57.8%) strongly agreed, 16(35.6%) agreed, 1(2.2%) were neutral about the statement, 2(4.4%) disagreed with a mean and standard deviation of 3.98 and 0.866 respectively. The findings indicate that information sharing within the organization's mobile application support operational planning to support sales performance was supported by most of the respondents at 42(93.4%) respectively. This is because the line item negatively contributes to the predictor variable as compared to the composite mean 4.04.

On whether information sharing within a company mobile application is important for employees and is a tool for training aimed at supporting teams to sell more. The line item mean indicated 4.27 with standard deviation of 0.652. The findings however show that majority of the respondents agreed on the statement. The results indicate that 32(71.1%) strongly agreed, 13(28.9%) agreed. The line-item mean was greater than the composite mean ($M=4.27 > M=4.04$).

The findings on whether there is value in information sharing of mobile app time series data used in inventory management with a goal to keep regular supply of products in the market and therefore sustaining improved sales obtained the following descriptive statistics results; 30(66.7%) strongly agreed, 8(17.8%) agreed, 3(6.7%) were neutral, 1(2.2%) disagreed and 3(6.7%) strongly disagreed with a mean and a standard deviation of 3.95 and 0.899 respectively.

The study also obtained information relating to assessing the level of influence of location-based mobile application services on the sales. The findings were guided by the following 3-point scale where 1= High Level (HL), 2= Moderate Level (ML) and 3= Low Level (LL). The data is presented in the Table 4.26.

Table 4.26: Extent to which Information Sharing influence Sales of Fast-Moving Consumer Goods

Responses	Frequency	Percentage
Great Extent	45	100.00
Moderate Extent	0	0.00
Low Extent	0	0.00
Total	45	100.00

The findings obtained from the Table 4.26 sought to find out the extent to which information sharing influence sales of fast-moving consumer goods. The findings were as follows; 45(100%) who indicated great extent while no respondent indicated either moderate or low extent. The findings indicate that information sharing is key in sales of fast-moving consumer goods as all the respondents indicated great extent to the statement.

4.8.3 Correlation Analysis between Information Sharing and Sales of Fast-Moving Consumer Goods

The researcher sought to determine the relationship between information sharing and sales of fast-moving consumer goods using the Pearson Correlation Coefficient. This assists in establishing the strength and direction of the relationship between information sharing and sales of fast-moving consumer goods. The correlation results are presented in the Table 4.27.

Table 4.27: Correlation Analysis between Information Sharing and Sales of Fast-Moving Consumer Goods

Variable		Capacity of local contractors	Sales of Fast-Moving Consumer Goods
Information Sharing	Pearson Correlation	1	0.772**
	Sig. (2-Tailed)		0.000
	n	45	45
Sales of Fast-Moving Consumer Goods	Pearson Correlation	0.772**	1
	Sig. (2-Tailed)	0.000	
	n	45	45

The results of the correlation on Table 4.27 between information sharing and sales of fast-moving consumer goods. The results revealed that there is a strong positive correlation of 0.772 between information sharing and sales of fast-moving consumer goods. The result also indicated a significant relationship with p-value of 0.001 which is less than the test level of

significance 0.05. This indicates that information sharing influence sales of fast-moving consumer goods.

4.8.4 Regression Analysis for Information sharing and Sales of fast-Moving Consumer Goods

Using simple linear regression model to satisfy requirements of the fourth objective of the study. The hypothesis was tested using simple linear regression model to satisfy requirements of the fourth objective of the study.

H₀: Transaction-Based has no significant influence on sales of fast-moving consumer goods.

H₁: Transaction-Based by mobile app has a significant influence on sales of fast-moving consumer goods.

The fourth hypothesis was tested using the following model:

$$y = \beta_0 + \beta_4 x_4 + e$$

Where:

y= Sales of fast-moving consumer goods:

β_0 = constant,

β_2 = beta coefficient,

x_4 = Information sharing

e= error term

Table 4.28: ANOVA between Information Sharing and Sales of Fast-Moving Consumer Goods

Factor	Sum of Squares	df	Mean Square	F	Sig.
Regression	710.560	1	710.560	53.416	0.000 ^b
Residual	571.999	43	13.302		
Total	1282.559	44			

a. Dependent Variable: Sales of Fast-Moving Consumer Goods.

b. Predictors: (Constant) Information Sharing

Analysis of variance was used to establish the goodness of fit of the regression model on Table 4.28. It was established that the F-significance value of 0.000 was less than 0.05 ($p < 0.05$). The F-ratio was significant, $F(1, 43) = 53.416$ was significantly larger than the critical value of $F = 4.07$. This shows that the model was significant.

Table 4.29: Model Summary for Information Sharing and Sales of Fast-Moving Consumer Goods

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.772 ^a	0.596	0.589	1.242

The study results shown in Table 4.29 provides an explanation on the extent to which the predictor variable accounts for the overall variability of the model. The R^2 is given as 0.596 indicating that information sharing contributes to about 59.6% of the variations in the dependent variable sales of fast-moving consumer goods. The findings indicate that other factors which were not considered in this model accounted for 40.4%. The study concluded that information sharing has a positive significant influence on sales of fast-moving consumer goods.

Table 4.30: Coefficients of Information Sharing and Sales of Fast-Moving Consumer Goods

Variables	Un-standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.793	0.134		5.918	0.000
Information Sharing	0.787	0.111	0.772	7.090	0.000

a. Dependent Variable: Sales of Fast-Moving Consumer Goods

The results in Table 4.30 gave a standardized beta value of 0.772 indicating that a unit increase of information sharing contributed to 77.2% increase in the variations of sales of fast-moving consumer goods. Overall model was fit to predict sales of fast-moving consumer goods given information sharing at $p=0.001 < 0.05$. The regression model would be as such:

$$\text{Sales of fast-moving consumer goods.} = 0.793 + 0.772 (\text{Information sharing}) + e; t = 7.090; p < 0.05.$$

The findings of the study show that information sharing ($R^2=0.596$) explains 59.6% of the variations on sales of fast-moving consumer goods. Thus, findings demonstrated that the null hypothesis of the study was rejected, and the alternative hypothesis accepted. This therefore concludes that influence sharing has a significant influence on sales of fast-moving consumer goods.

4.8.4 Qualitative Information on Information Sharing and Sales of Fast-Moving Consumer Goods

To enable deeper and more elaborate understanding in this variable, qualitative information was obtained from opinions through open-ended questions in the questionnaire and interviews. The respondents were asked to indicate whether information sharing using mobile apps influence the sales. The findings are presented in the Table 4.31.

Table 4.31: Information Sharing and Sales of Fast-moving Consumer Goods

Responses	Frequency	Percentage
Yes	45	100.00
No	0	0.00
Total	45	100.00

The results in Table 4.31, the respondents were asked their opinion on whether information sharing using mobile apps influence sales of fast-moving consumer goods. The findings from the responses indicate that all the respondents 45(100%) believed information sharing is instrumental in influencing sales of fast-moving consumer goods. The researcher captured the following opinion from a sales agent of the company:

In my opinion, sharing relevant information about company products is very key. Sometimes clients require pertinent information about specific products and the contents of these products to verify their impact in the clients' health. Customers have become aware of contraband goods in the market and therefore product verification through information sharing by the sales team is key.

The quantitative data corroborated with qualitative data information indicate that there is a significant correlation between information sharing and sales of fast-moving consumer goods. The adoption of mixed methods research design allows for triangulation. It further shows how important information sharing is significant for sales of fast-moving consumer goods at PZ Cussons in Nairobi County, Kenya.

4.9 Summary of Results of the Test of Hypotheses

The Table 4.32 presents a summary of the results of the test of hypotheses from the analysed data.

Table 4.32: Summary of Results of Test Hypotheses

Objective	Hypothesis	Simple linear regression Model	Outcome	Conclusion as an outcome of empirical evidence
i. To determine the influence of memory support by mobile app on sales of fast-moving consumer goods	i. H ₀ : Memory support by mobile app has no significant influence on sales of fast-moving consumer goods	$y = \beta_0 + \beta_1 X_1 + e$	{R=0.861, R ² =0.741, β =0.899, t=6.191, F _(1,43) = 88.257, p<0.05}	Reject H ₀ Accept H₁
ii. To examine the influence of transaction-based app services on sales of fast-moving consumer goods.	ii. H ₀ : Transaction-based app services has no significant influence on sales of fast-moving consumer goods.	$y = \beta_0 + \beta_2 X_2 + e$	{R=0.638, R ² =0.407, β =0.689, t=5.176, F _(1,43) = 29.591, p<0.05}	Reject H ₀ Accept H₁
iii. To examine the influence of location-based app services on sales of fast-moving consumer goods.	iii. H ₀ : Location-based app services has no significant influence on sales of fast-moving consumer goods.	$y = \beta_0 + \beta_3 X_3 + e$	{R=0.788, R ² =0.621, β =0.796, t=15.373, F _(1,43) = 47.229, p<0.05}	Reject H ₀ Accept H₁
iv. To establish the influence of information sharing on sales of fast-moving consumer goods	iv. H ₀ : Information sharing has no significant influence on sales of fast-moving consumer goods	$y = \beta_0 + \beta_4 X_4 + e$	{R=0.772, R ² =0.596, β =0.793, t=7.090, F _(1,43) = 53.416, p<0.05}	Reject H ₀ Accept H₁

The Table 4.32 presents a summary of the test hypotheses. The data analysed obtained the following findings after testing hypotheses at 95% confidence interval. The study revealed the following: a strong positive correlation of R=0.861, coefficient of determination was R²=0.741, the constant value at β =0.899, t=6.191, with the Fishers calculated value at F_(1,43) = 88.257, where the p<0.05. After testing the first hypothesis, the study observed that memory support by mobiles apps has a significant influence on sales of fast-moving consumer goods.

The research tested the null hypothesis of the second variable and found out that there was a moderate correlation between transaction-based app services and sales of fast-moving consumer goods where R=0.638, R²=0.407, β =0.689, t=5.176, F_(1,43) = 29.591, p<0.05. The study then rejected the null hypothesis and accepted the alternative hypothesis that transaction-based application services influence on sales of fast-moving consumer goods.

Analyzed data for the third variable obtained the following findings after testing hypothesis: a strong positive correlation of $R=0.788$, coefficient of determination was $R^2=0.621$, a constant value of $\beta=0.796$, $t=15.373$, and a Fishers' calculated value at $F(1, 43) = 47.229$, where the $p < 0.05$ was significant. The study accepted the alternative hypothesis and rejected the null hypothesis and concluded that location-based app services have a significant influence on sales of fast-moving consumer goods.

The fourth objective of the study sought to establish the influence of information sharing on sales of fast-moving consumer goods. The study found out that there was a strong positive correlation of $R=0.772$, coefficient of determination of $R^2=0.596$, $\beta=0.793$, $t=7.090$, $F(1, 43) = 53.416$, $p < 0.05$. The model was found to be significant since the p-value was less than 0.05. The study concluded that there was a significant influence between information sharing and sales of fast-moving consumer goods.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of findings, conclusions, recommendations, and areas for further studies.

5.2 Summary of the Findings

The summary focused on the key findings obtained from the variables and gave a summary of the findings as per the data analysed variables in chapter four:

5.2.1 Memory Support Services by Mobile App and Sales of Fast-moving Consumer Goods

The first objective of the study sought to determine how memory support by mobile app influence sales of fast-moving consumer goods at PZ Cussons. The mean and standard deviation of the variable were 4.02 and 0.709 respectively. The research tested the null hypothesis of the study which stated as follows; memory support by mobiles apps has no significant influence on sales of fast-moving consumer goods.

The findings indicate that memory support by mobiles apps explained 74.1% of the variations in sales of fast-moving consumer goods in PZ Cussons. Hence, the null hypothesis was rejected, and it was concluded that memory support by mobiles apps has a significant influence on sales of fast-moving consumer goods. These findings are in line with (Robert C. Nickerson, 2016) who observed that memory of mobile applications has an influence on purchase of fast-moving goods and concluded that different approaches to data storage for mobile apps are appropriate depending on the characteristics of the situation in which the app is utilized.

5.2.2 Transaction-based App Services and Sales of Fast-moving Consumer Goods

The second objective of the study sought to establish how transaction-based app services influence sales of fast-moving consumer goods at PZ Cussons. It was established that

transaction-based service apps explained 40.7% of the variations in sales of fast-moving consumer goods at PZ Cussons. From these findings, the null hypothesis was rejected, and it was concluded that transaction-based app services have a significant influence on sales of fast-moving consumer goods.

5.2.3 Location-based App Services and Sales of Fast-moving Consumer Goods

The third objective of the study sought to examine how location-based app services influence sales of fast-moving consumer goods at PZ Cussons. The findings indicate that location-based app services explained 62.1% of the variations in sales of fast-moving consumer goods at PZ Cussons. Hence, the null hypothesis was rejected, and it was concluded that location-based app services have a significant influence on sales of fast-moving consumer goods.

5.2.4 Information Sharing and Sales of Fast-moving Consumer Goods

The fourth variable sought to examine how information sharing influence sales of fast-moving consumer goods at PZ Cussons. It was established that information sharing explained 59.6% of the variations in sales of fast-moving consumer goods. The null hypothesis was rejected, and the study concluded that information sharing has a significant influence on sales of fast-moving consumer goods.

5.3 Conclusions of the Study

The research study focused on investigating the effect of mobile distribution applications on sales of fast-moving consumer goods at PZ Cussons in Nairobi County, Kenya.

5.3.1 Memory Support Services by Mobile App and Sales of Fast-moving Consumer Goods

The first objective sought to determine the extent to which memory support by mobile app services influence sales of fast-moving consumer goods. According to the study findings, it was established that there was a very strong positive correlation between memory support by mobile app services and sales of fast-moving consumer goods. The presence of recorded data

for decision making by mobile apps, effective use of mobile memory in storage of time series data, mobile app data collection and ease of leveraging on real-time data contribute to the sales of fast-moving consumer goods. These the findings corroborate with those of (Robert C. Nickerson, 2016) who concluded that different approaches to data storage for mobile apps are appropriate depending on the characteristics of the situation in which the app will be used.

5.3.2 Transaction-based App Services and Sales of Fast-moving Consumer Goods

The second objective of the study sought to examine how transaction-based app services influence sales of fast-moving consumer goods at PZ Cussons in Nairobi County, Kenya. The study findings revealed the existence of a moderate correlation between transaction-based app services and sales of fast-moving consumer goods. This implied that mobile apps' ability to reduce fraud and shrinkage, improved reconciliation of inventory and cash transfers and mobile app credit management enhance sales of fast-moving consumer goods. The findings of this study coincide with the study done by (Ndung'u, 2021) who observed that though transaction-based services are available in most of the country, interoperability will improve the impact of this variable from a moderate to significant correlation to sales of fast-moving consumer goods.

5.3.3 Location-based App Services and Sales of Fast-moving Consumer Goods

The third objective of the research study sought to examine how location-based app services influence sales of fast-moving consumer goods at PZ Cussons in Nairobi County, Kenya. The results revealed a strong positive correlation between location-based app services and sales of fast-moving consumer goods. The study concluded that knowledge of the consumer's location provides companies with the prospect efficiently deploying sales resources, location of employees with mobile app services is essential for real time decision making and productivity, pitfalls of tracking employee location information using mobile application are offset by increase in productivity and location services are used by managers to plan new routes and receive accurate sales reports directly from the field and by sales staff to log in and out of work

remotely contributes to sales of fast-moving consumer goods. The findings of the study corroborate with those of (B. Preissl, 2004) who observed that online apps were preferred by FMCGs since it was possible to track movements of the user with the information sent to the server. However, the findings contradict those of (Singh, 2015) who identified different constraints to the implementation of location-based services which included technological constraints caused by inadequate mapping under the geographical information system (GIS).

5.3.4 Information Sharing and Sales of Fast-moving Consumer Goods

The fourth objective sought to examine how information sharing influence sales of fast-moving consumer goods at PZ Cussons in Nairobi County, Kenya. The results revealed that there was a strong positive correlation between information sharing and sales of fast-moving consumer goods. This implied that data collected during a sales call using Mobile Apps support decision making process with a view to increase sales and information sharing within a company mobile application is important for employees and is a tool for training aimed at supporting teams to sell more, contributed to sales of fast-moving consumer goods. These findings do not agree with those of (Shelley Xin Li, 2018) who examined the effect of information sharing in retail stores in relation to employee creativity, work engagement and financial performance of the outlet. Their findings indicate that current sales process, information sharing was not found to have a significant effect on the outlined outcomes in the retail outlets. Their findings however, in different circumstances observed that information sharing had positive effects on the quality of work done by employees. It was especially significant when employees in different stores do not have frequent contact with the job process of other employees in different stores of the same retail chain. Information sharing was also significant where employees had lower natural selling ability and had more to learn from other employees in a bid to increase value of creativity. Similarly, the findings were in line with those of (Cui, 2015) who discovered that there was value in information sharing of time data series used in inventory management and

that full information sharing along the supply chain gives the best sales forecast. However, information supplied by only the retailers gives almost the same value of information as full information sharing along the supply chain.

5.5 Recommendations

The study made the following recommendations:

The study established that memory support by mobile apps is a great contributor to sales of fast-moving consumer goods. The study recommends that out of policy commercial businesses should invest in tools that support their gathering critical data during their operations especially when it involves consumer patterns. Such data can be useful in product development, adjustment in their services delivery and so on.

The study established that information sharing influenced sales of fast-moving consumer goods. The study recommends companies should, by practice, inculcate into the corporate culture inter and intra functional information sharing to enhance collaboration and by extension productivity companywide.

5.6 Suggestions for Further Research

The study made the following suggestions for further studies:

Since the study was limited to one company, further studies are needed to companies that exhibit similar traits, clustered and studied in a manner to provide even better generalised results. These could take the form of consumer goods clusters like food manufacturers, toiletries, personal care and so on.

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APPENDICES

Appendix I: Introductory Letter

Dear Respondent

RE: EFFECT OF MOBILE DISTRIBUTION APPLICATIONS ON SALES OF FAST-MOVING CONSUMER GOODS: A CASE OF PZ CUSSONS

I am a postgraduate student at African Nazarene University pursuing. Currently, I'm carrying out research on the factors that effect of mobile distribution applications on sales of fast-moving consumer goods: a case of PZ Cussons. I kindly request you to fill in this questionnaire. The information collected will be used strictly for the purpose of this study and will be treated confidentially.

Thank you for agreeing to participate in the study.

Yours Faithfully

Simon Githae

Appendix II: Research Questionnaire

This questionnaire is divided into four parts. The information obtained will be strictly treated in confidence. Your assistance in completing this questionnaire will be highly appreciated. Please answer all the questions as best as you can.

Please Tick as appropriate

PART 1: Demographic Information

1. Age bracket of the respondent

- a) 20 – 30 []
- b) 31-40 []
- c) 41-50 []
- d) 51 and above []

2. Respondents' level of Education

- a) Diploma level []
- b) Degree level []
- c) Master's degree level []
- d) Doctorate degree level []
- e) Other professional qualifications (specify if applicable)

3. How many years have you worked in PZ Cussons?

- a) 1-5 years []
- b) 6-10 years []
- c) 11-19 years []
- d) 20 +years []

4. What is your department at PZ Cussons?

- a) Finance []
- b) Supply Chain []
- c) Sales []

PART 2- Memory Management and Sales of Fast-Moving Consumer Goods (Dependent Variable)

2.1 In your opinion does the type of memory support offered by mobile application support the data collection as intended?

Yes [] No []

2.2 Explain how online memory support offered by FMCG mobile application influences sales of FMCG companies

.....
.....
.....
.....

2.3 Please tick the numeric value corresponding to your view for each statement using the scale of 1-5, where; 1= Strongly Disagree, 2=Disagree, 3= Neutral, 4=Agree 5= Strongly agree

Statement	5	4	3	2	1
1. Recorded data by mobile apps can be used to provide insights for decision making					
2. Mobile apps Memory Support is effective for use for the company in storing time series data					
3. Data collected in the sales is crucial for the company which is a key reason for this choice of memory support					
4. Apps with all data stored on the mobile device, (offline) are not efficient for the company since data needs to be updated by the company					
5. Recorded data from the mobile app enables the company to better understand consumer buying behaviour					
6. Real-time data is easier to leverage into existing sales than offline data uploaded by the user					

2.4 In your view to what extent does memory support offered by mobile application influence sales of fast-moving consumer goods?

Great Extent [] Moderate Extent [] Low Extent []

PART 3- Transaction-based App Services and Sales of Fast-Moving Consumer Goods

3.1 In your opinion does transaction-based mobile application services support increased sales?

Yes [] No []

3.2 Explain how transaction-based mobile application services influence the sales of FMCGs?

.....
.....
.....
.....

3.3 Please tick the numeric value corresponding to your opinion for each statement using the scale of 1-5, where; 1=Strongly disagree, 2=Disagree, 3= Neutral, 4=Agree 5= Strongly agree

Statement	5	4	3	2	1
1. Having payment capability on the Mobile App improves overall sales performance					
2. Consumers demand greater speed and accessibility from firms with the advent of instant payments					
3. Companies releases goods and products faster with instant payment by retailers					
4. Mobile Apps ability for non-cash payment reduces the opportunity for fraud and shrinkage, therefore improving sales productivity					
5. End Day Reconciliation of inventory and cash is improved using Mobile Apps and thereby reducing shrinkage and improve sales					
6. Non-Cash ability built into the Mobile App improves the security of the personnel, and therefore improves sales by eliminating downtime					
7. Mobile Apps ability to receive payment improves credit management, improves working capital, and therefore ensures optimum stocks for sale					

3.4 In your opinion to what level does transaction-based mobile application services influence the sales?

High [] Moderate [] Low []

PART 4- Location-based App Services and Sales of Fast-Moving Consumer Goods

4.1 In your view does location-based mobile application services influence the sales?

Yes [] No []

4.2. Explain how location-based mobile application services influence the sales of FMCGs?

.....
.....
.....
.....

4.3 Please tick the numeric value corresponding to your view for each statement using the scale of 1-5, where; 1=Strongly disagree, 2=Disagree, 3= Neutral, 4=Agree 5= Strongly agree

Statement	5	4	3	2	1
1.Knowledge of the consumer’s location provides companies with the prospect efficiently deploying sales resources					
2.The biggest constraints to the location-based services in Kenya is inadequate mapping under the geographical information system					
3.The common “opt-in” compromise is sufficient to justify the use of user’s location data					
4.Location of employees with mobile app services is essential for real time decision making that influence productivity					
5.The pitfalls of tracking employee location information using mobile application are offset by increase in productivity					
6.Location services are used by managers to plan new routes and receive accurate sales reports directly from the field and by sales staff to log in and out of work remotely					

4.4 In your opinion does information sharing using mobile apps influence the sales?

High [] Moderate [] Low []

PART 5- Information Sharing and Sales of Fast-Moving Consumer Goods

5.1 In your opinion does information sharing using mobile apps influence the sales?

Yes [] No []

5.2 Explain how information sharing using mobile apps influence the sales of FMCGs

.....
.....
.....
.....

5.3 Please tick the numeric value corresponding to your view for each statement using the scale of 1-5, where; 1=Strongly Disagree, 2=Disagree, 3= Neutral, 4=Agree 5= Strongly agree

Statements	5	4	3	2	1
1.Data collected during a sales call using Mobile Apps support decision making process with a view to increase sales					
2.The sales team desires more information sharing features in mobile application including sharing picture or videos for peer review and therefore improve sales					
3.Information sharing within the organization’s mobile application support operational planning to support sales performance					
4.Information sharing within a company mobile application is important for employees and is a tool for training aimed at supporting teams to sell more					
5.There is value in information sharing of mobile app time series data used in inventory management with a goal to keep regular supply of products in the market and therefore sustaining improved sales					

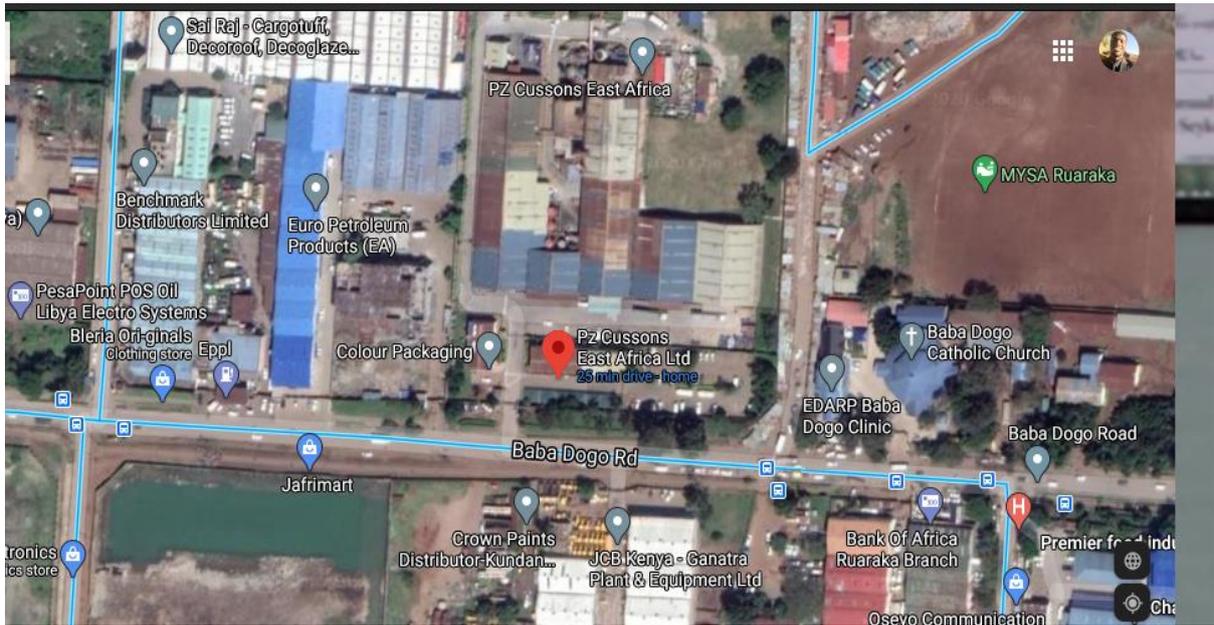
5.4 In your view to what extent does information sharing using mobile apps influence the sales?

Great Extent [] Moderate Extent [] Low Extent []

Appendix III: Activity Calendar

Months	2020			2021								
	10	11	12	1	2	3	4	5	6	7	8	9
General reading around the topic												
Formulating a research question												
More specific background reading												
Drafting the literature review												
Selecting the methodological approach												
Devising the method to be used												
Ethics application												
Recruitment of participants												
Drafting the methods chapter(s)												
Data collection												
Data analysis												
Drafting chapter 4&5												
Editing work												
Final tidying up and handing in												
reading												
planning												
writing												
fieldwork and analysis												
final admin												

Appendix IV: Research Site



Appendix V: ANU LETTER



2nd, November, 2020

E-mail: researchwriting.mba.anu@gmail.com

Tel. 0202711213

Our Ref: 07M/MBA/028

The Director.
National Commission for Science,
Technology and Innovation (NACOSTI),
P. O. Box 30623, 00100
Nairobi. Kenya

Dear Sir/Madam:

RE: RESEARCH AUTHORIZATION FOR: SIMON GITHAE

Mr. Simon is a postgraduate student of Africa Nazarene University in the Master of Business Administration (MBA) program. In order to complete his program, Mr. Simon conducting a research entitled: “**Effect of Mobile Distribution Application on Sales of Fast-Moving Consumer Goods: A Case of Pz Cussons East Africa Limited.**”

Any assistance offered to him will be highly appreciated.

Yours Faithfully,

A handwritten signature in blue ink, appearing to read 'Kagwathi Githii', is positioned above the printed name.

**Kagwathi Githii,
Chair, School of Business,
Africa Nazarene University.**

Appendix VI: NACOSTI


REPUBLIC OF KENYA


**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION**

Ref No: **904559** Date of Issue: **16/November/2021**

RESEARCH LICENSE



This is to Certify that Mr.. Simon Githae of Africa Nazarene University, has been licensed to conduct research in Nairobi on the topic: EFFECT OF MOBILE DISTRIBUTION APPLICATION SERVICES ON SALES OF FAST - MOVING CONSUMER GOODS - A CASE OF PZ CUSSONS EAST AFRICA LIMITED for the period ending : 16/November/2022.

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