

UNIVERSITY
OF
LUSAKA

SCHOOL OF POSTGRADUATE STUDIES

**EXPLORING THE INFLUENCE OF THE ELECTRONIC QUEUE
MANAGEMENT SYSTEM ON CUSTOMER SATISFACTION: CASE STUDY
OF ABSA BANK LUSAKA**

**A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES,
UNIVERSITY OF LUSAKA IN PARTIAL FULFILLMENT OF THE AWARD OF THE
MASTER OF BUSINESS ADMINISTRATION**

BY

KABAMBA CHIMFUTUMBA

MBAGEN21210667

@2023

DECLARATION

I, **KABAMBA CHIMFUTUMBA**, hereby declare that this dissertation is submitted in partial fulfillment for the award of the degree of Masters of Business Administration General that the work contained is my own except where explicitly stated otherwise in the text.

AUTHOR: KABAMBA CHIMFUTUMBA


Signature:



Date: 23/01/2024

SUPERVISOR: MR BRIVEN SIMAUNDU

Signature:



Date: 23/01/2024

DEDICATION

This dissertation is dedicated to my family members and my close friends. First and foremost, I would want to thank my family, my brothers and sisters for their love, support, and encouragement. It kept me going and made a significant contribution to my academic achievement. Second, I would want to thank my mother for her unwavering support and belief in me from the start of my academic journey and throughout. I would further want to dedicate my thesis to my late father, who always valued education and I believe this is the path you would have wanted me to take. Lastly, I would want to express my sincere appreciation to my friends for their encouragement, and support.

ACKNOWLEDGEMENTS

I thank God for giving me the courage, wisdom and strength to complete the writing of my dissertation. My supervisor, Mr. Briven Simaundu, who offered invaluable guidance towards the completion of this dissertation. Deeper thanks go to the University of Lusaka, students and staff in general for the knowledge and experience imparted, as well as providing me with this opportunity to becoming a professional. Lastly, I would like to express my gratitude to the participants in the study for granting me their time and allowing me to carry out the data collection successfully.

Table of Contents

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix
LIST OF ACRONYMS/ ABBREVIATIONS.....	x
ABSTRACT.....	xi
CHAPTER ONE.....	1
INTRODUCTION AND BACKGROUND OF THE STUDY.....	1
1.0 Introduction.....	1
1.1 Background of the problem	1
1.1.1The importance of banks in general.....	1
1.1.2 Zambia’s banking industry.....	2
1.2 Statement of the problem	10
1.3.1 Specific Objectives.....	11
1.3.2 Research questions	11
1.4 Scope of the study.....	12
1.5 Significance of the study.....	12
1.6 The organization of the report.....	13
1.7 Definition of key terms and concepts.....	14
1.8. Chapter summary	15
CHAPTER TWO.....	18
LITERATURE REVIEW	18
2.0 Introduction.....	18
2.1.1 Different types of queues	18
2.1.3 The four forms the queue management system.....	21
1. Single channel, single-phase:.....	23
2. Single Channel, Multi-Phase:	23
3. Multi-Channel, Single Phase:	23
4. Multi-Channel, Multi-Phase:.....	23
2.2 Empirical Literature review	24

2.2.1 Queue management systems.....	24
2.2.5 Overall critique of the literature.....	34
2.3 Theoretical Framework review.....	35
2.3.1 Queuing Theory.....	35
2.3.2. Technology Acceptance Model (TAM)	37
2.3.3 Diffusion of Innovation Theory.....	38
2.3 Conceptual Framework.....	40
2.4. Development of hypotheses	41
2.5 Chapter summary.....	43
CHAPTER THREE.....	44
RESEARCH METHODOLOGY	44
3.0 Introduction	44
3.1 Research Approach.....	44
3.2 Research Design.....	45
3.3 Study Population	45
3.4 Sampling design	46
3.4 Data Collection instruments.....	46
3.5 Measurement of variables	47
3.6 Data Analysis.....	49
3.8 Ethical Considerations.....	49
3.9 Chapter summary.....	49
CHAPTER FOUR.....	50
PRESENTATION AND ANALYSIS OF RESULTS.....	48
4.0 Introduction.....	50
4.1 Response rate.....	50
4.2 Demographic Variables	51
4.4 Multiple regression.....	57
4.5 Correlation analysis.....	58
4.6 Inferential Statistics (Hierarchical Regression Analysis)	59
4.7 Summary of the hypothesis test	62
4.8 Chapter summary.....	64
CHAPTER FIVE.....	65
DISCUSSION OF FINDINGS	65
5.0 Introduction.....	65

5.1 Hypothesis results discussion	65
5.1.2. Relationship between customer experience and customer satisfaction	65
5.1.3 Relationship between system usability and customer satisfaction.....	68
CHAPTER SIX	72
CONCLUSIONS AND RECOMMENDATIONS	72
6.0 Introduction.....	72
6.1 Summary of findings	72
6.2 Recommendations.....	73
6.3 Recommendations for Further Research.....	75
6.4 Conclusion.....	76
References	77
APPENDICES	90

LIST OF TABLES

Table 1. The ownership structure of Zambian banks

Table 2: Responses rate

Table 3: Socio-demographic profile of respondents

Table 4: Customer satisfaction exploratory factor analysis results

Table 5: System capability exploratory factor analysis results

Table 6: Customer experience exploratory factor analysis results

Table 7: System usability exploratory factor analysis results

Table 8: Multiple regression

Table 9: Correlation of variables

Table 10: Model Summary

Table 11: ANOVA

Table 12: Coefficients

Table 13: Hypothesis Test

LIST OF FIGURES

Figure 1: Example of waiting line systems

Figure 2: Conceptual framework

LIST OF ACRONYMS/ ABBREVIATIONS

CX	Customer Satisfaction
BOZ	Bank of Zambia
EQMS	Electronic Queue Management System
FCFS	First Come, First Serve
FIFO	First In, first out
ZANACO	Zambia National Commercial Bank
EFA	Exploratory Factor Analysis

ABSTRACT

The study looked at the factors that influence the satisfaction of customers at the bank and it covered a sample size of 204 customers at one of the Absa bank branches in Lusaka. Likewise, the study's aim was to specifically explore the influence of electronic queue management systems on the customer's satisfaction. The data was collected using a questionnaire and data was analyzed using the software Statistical Package for Social Sciences (SPSS) and Microsoft Excel. The main subject in this study was to discover how system capability, customer experience and system usability affects the customer's satisfaction of the bank. In addition, the study's goal was to add on to the body of knowledge on customer satisfaction and also to present a different perspective of knowledge which involves different people of different age groups. This study is of importance to the management of the various commercial banks as they can assess the importance of automated queue management systems and the influence this system has on their customers' satisfaction. Similarly, this study can assist bank managers in implementing technological adoptions such as the EQM system to reduce long unbearable queues in the bank, improve productivity, and promote economic development by enhancing customer satisfaction. Customer satisfaction is the dependent variable of the research and the independent variables include system capability, customer experience and system usability. Moreover, the three independent variables were measured against the dependent variable. Ultimately, the research revealed that the independent variables and the dependent variable had a significant strong positive relationship.

CHAPTER ONE

INTRODUCTION AND BACKGROUND OF THE STUDY

1.0 Introduction

This chapter aims at introducing the overview of the research topic by presenting the background to the study, followed by the statement of the problem, the purpose of the study, identifying the objectives and research questions, a discussion on the significance of the study as well as the scope of the study. Lastly, the chapter is concluded by expounding the definition of terms.

1.1 Background of the problem

1.1.1 The importance of banks in general

Banks are intermediaries that operate between creditors and depositors, the former of which loans money to the latter (Gobat, 2012). Consequently, to maintain stability and safeguard the interests of depositors and the financial system as a whole, they are normally governed by government agencies. Banks and other financial Institutions are essential for fostering development and economic success by providing capital and financial services that enable individuals as well as businesses to achieve success (Kondapalli, 2023).

As a customer-centric industry, banking focuses on providing excellent customer service, attract, retain customers and optimize profit while maintaining high standards (Muyendekwa, 2022). They perform various functions like money production and safeguarding, deposit management, investments, and providing financial services like international money transfers. Similarly, they also boost the economic activities by facilitating the flow of money and creating a secure, regulated environment for financial transactions, all of which are essential to the functioning of the economy (Gobat, 2012).

1.1.2 Zambia's banking industry

The banking industry contributes substantially to the economy by giving individuals, households, and businesses access to resources for transactions and investments (Indeed Editorial Team, 2023). Additionally, a well-run banking system attracts investors locally as well as internationally, which boosts the bank's productivity as a whole. Therefore, it's critical that banks maintain a good reputation and use effective management systems to tackle problems such as the one mentioned above. Concerning Zambia's economy, the banking industry plays a significant role. According to (Simpasa, 2013), the Bank of Zambia (BOZ) is said to supervise the banking industry and reports to the Ministry of Finance. The banking industry in Zambia has had an opportunity of reestablishing itself after over two decades of financial repression with the advent of financial liberalization. As a result, significant barriers in the banking industry were eliminated, opening the door for banks to enter the market and promoting competition and efficiency among financial intermediaries (Simpasa, 2013).

Prior to Zambia's independence, the banking industry consisted of three international commercial banks namely Barclays Bank, Standard Chartered Bank, and Grindlays Bank (Maimbo & Mavrotas, 2004).

A few other banks were founded soon after Zambia gained its independence in 1965, including ZANACO and Non-Bank Financial Institutions like the Zambia State Insurance Corporation and the Zambia National Provident Fund (Joshi, 2018). Currently, Zambia's commercial banking industry consists of nineteen local and international banks (International Trade Administration, 2022).

The following table below is an illustration of the Banks operating in Zambia and their ownership structure in both year 2006 and 2011 (Simpasa, 2013).

No.	Name of Bank	Type of ownership (2006)	Type of ownership (2011)
1	Indo -Zambia Bank	Joint venture	Joint venture
2	First Alliance Bank	Domestic Bank	Domestic Bank
3	Cavmont Bank	Domestic Bank	Domestic Bank
4	Finance Bank	Domestic Bank	Domestic Bank
5	Investrust Bank	Domestic Bank	Domestic Bank
6	Zambia National Commercial Bank	Public Sector	Domestic Bank-mixed ownership
7	Intermarket Bank	Subsidiary of a foreign bank	Subsidiary of foreign bank
8	African Banking Corporation	Subsidiary of a foreign bank	Subsidiary of foreign bank
9	Bank of China	Subsidiary of a foreign bank	Subsidiary of foreign bank
10	Barclays Bank	Subsidiary of a foreign bank	Subsidiary of foreign bank
11	Citibank	Subsidiary of a foreign bank	Subsidiary of foreign bank
12	Stanbic Bank	Subsidiary of a foreign bank	Subsidiary of foreign bank
13	Standard Chartered Bank	Subsidiary of a foreign bank	Subsidiary of foreign bank
14	AB Bank	N/A	Foreign financial institutions
15	Access Bank	N/A	Subsidiary of foreign bank
16	Ecobank	N/A	Subsidiary of foreign bank
17	First National Bank	N/A	Subsidiary of foreign bank
18	International Commercial Bank	N/A	Subsidiary of foreign banking group
19	United Bank for Africa	N/A	Subsidiary of foreign bank

Table 1: The ownership structure of Zambian banks

As per (Simpasa ,2013), Zambia had 13 commercial banks in existence of which including seven foreign bank subsidiaries, one joint venture with majority foreign ownership, four domestic private banks, and one public sector bank. Consequently, since 2008, six more subsidiaries of foreign-owned banks have been registered, while the number of domestic private banks remains unchanged. Overall, this has led to a total of 19 banks in the whole industry.

1.1.3 Statistical and empirical evidence highlighting the problem of long queues in African and foreign banks

Despite the fact that banks worldwide are an essential part of any nation's financial system and attract customers by facilitating transactions between surplus and deficit sectors, their inability to promptly assist and manage long queues without delay is a major problem (Gabriel , 2011). Over the years, businesses and banks worldwide have experienced the widespread problem of long queues which has significant implications on the customer satisfaction and revenue. Some statistics and findings that highlight the global nature of the queue problem and its adverse effects on customer experience and business performance include:

- **Statistical evidence highlighting the problem of long queues at international banks and businesses**
 - A 2018 article in Hong Kong showed that excessive queues lead to 9 out of 10 customers abandoning purchases, resulting in retailers losing over \$2.35 billion (Inside Retail Asia , 2018).

- According to (Ganguly & Prasanna, 2023), In India, long queues develop outside Reserve Bank India branches as early as 4 am for the purpose of depositing or exchanging Rs 2,000 notes.
- An article done by (Santamaria, 2019), revealed UK retailers losing £11.3 billion due to long queues, with 66% of consumers abandoning purchases, and only 22% returning or making a purchase.
- In 2018, Singapore's retailers incurred over \$1.6 billion annually due to mismanaged queues, with 89% of shoppers leaving stores within six months (Tsernov, 2023).
- **Evidence highlighting the problem of long queues in African banks**

Although many African country contexts such as Zambia are under-researched and there is a lack of direct statistical evidence related to queue problems in banks, the section below will provide a brief integration of few reported cases across Africa which highlight and emphasize the severity of the problem of long queues and waiting times in banks.

- A survey for instance was conducted among three selected banks in Ogun State, Nigeria, to estimate the average waiting time and length of queues (Bishop, et al., 2018). The study utilized descriptive statistics to analyze the data and the results revealed significant differences in customer waiting time and queue length which indicated a serious issue of long queues that need to be addressed (Bishop, et al., 2018).
- Long queues at Absa Bank branches in South Africa, Botswana and

Zambia, formerly known as Barclays Bank, have been a significant concern for customers. According to a study titled "Internal Lean Diffusion on Streamlined Service Absa bank branches continue to face issues of slow service which leads to experiences of long queues despite technological investments to enable self-service (Nzama, 2014).

- Comparably, a survey carried out in Ghanaian banking halls revealed that customers wait in queue for 19.46 minutes before being assisted and that it takes them a total of 23.17 minutes to make their way out of the bank system (Nkrumah, 2014).
- A study published in Texila International Journal of Management reported that customers of the Zambian commercial bank (ZANACO) frequently complain about long wait times to be assisted (Chilufya, 2022). Similarly, another case study focused on employee–customer communications at Zambia National Commercial Bank revealed that long queues and concerns about customer service are persistent issues for ZANACO’s customers (Chishala, 2021).

1.1.4 Comparison of the problem of long queues in both local and international banks

Although queues are a common concern for banks, different local and global contexts provide various factors that affect the nature and management of the queue issue. Local banks might prioritize relationships with individuals, while global banks may use technology to provide their diverse customer base with effective services. Hence, when comparing the problem of long queues in Zambian local banks to global banks, there is a need for assessing the various factors that may firstly contribute to the levels

and complexity that the banks experience. For instance, factors such as the consumer base, infrastructure and resources, use of technology and diversity of services provided by banks.

- **Technology and efficiency**

Very few banks, particularly those in Africa make use of modern technology; hence, the lack of access to modern technology may affect how efficiently services are provided (Nyantakyi & Sy, 2015). In addition, these outdated systems could cause longer queues and slower processing times. Whereas, global banks, particularly those in developed countries, have a competitive edge over local banks due to their advanced technology and modern processes. Thus, when compared to international banks, the problem of long queues is managed better and there are generally fewer queues than you would find in local banks.

The world as we perceive it is evolving quickly and becoming more digitized, as a result, almost every sector has been impacted by this change, and the banking industry has been no exception (Klimenko, 2023). Moreover, financial institutions must improve their traditional systems to keep up with customers' demands, be productive and remain competitive. Furthermore, when it comes to technological advancements, global banks often make significant investments in innovative technologies, whereas local banks may prioritize adopting technology to satisfy local demands (Liu, 2021). It is for this reason that most global banks have lower levels of queues as compared to our local banks. Consequently, there is a need for local banks to adopt modern technology to be more efficient and productive as well as help eradicate problems such as unsatisfied customers and long unbearable queues.

1.1.5 Background on Absa Bank Zambia Plc and the bank's adoption of the queue management system

- **Brief overview of Absa Bank Zambia Plc**

Zambia's commercial bank, Absa Bank Zambia Plc, formerly known as Barclays Bank of Zambia has a rich history dating back to 1918 as a branch of Barclays Bank Plc, U.K. Absa is a leading Zambian financial institution licensed by the national banking regulator, the central bank, and the Bank of Zambia (Pandawa, 2020). Moreover, the bank is a large financial institution in Zambia, meeting the financial requirements of small and medium-sized businesses as well as medium sized enterprises (Development aid, 2021). As a subsidiary of Absa Group Limited, Absa Bank Zambia Plc is one of the largest diversified financial services firms in Africa, operating in 12 countries and employing around 42,000 individuals with over 47 branches. Lastly it is listed on the Johannesburg Stock Exchange (JSE) in South Africa and it offers a wide range of products such as Retail banking, corporate and investment banking and business banking solutions for SMEs among other products and services (Zambia Development Agency, 2021).

- **Absa Bank Zambia 's adoption of queue management systems at the various branches globally**

Absa Bank Limited Plc is known for continuously deploying innovative and digital banking solutions that promotes customer convenience. As a result, in 2022, the bank received four consumer choice awards, including the most advanced digital banking service in Southern Africa, the most preferred international bank at customer service, and the most extended and accessible bank (The Guardian reporter, 2022). The bank has taken on a range of projects at its various branches in the countries to address the

problem of long queues such as the SEDCO queue management solution. This system is operating in 48 of Absa's branches across Kenya, as well as other bank branches in Ghana, Botswana and Mauritius (SEDCO, 2023). A report from the UKZN Research Space mentioned that some Absa bank branches in Zambia were characterized by long queues and that they were taking time addressing in-house customer queries (Chitamba, 2023).

In response to this problem Absa Bank Zambia branches have put into effect a digital smart queuing solution that considers online ways to shorten lengthy bank queues (IMD, 2021). The bank adopted this system in response to the problem of the disorganized queues at the Zambian Absa bank branches which frequently resulted in a 35-minute wait (IMD, 2021). The installed digital smart queuing system enables customers to make appointments through the bank app which makes it more convenient for the customers and eliminates the need for customers to wait in long queues. (SEDCO, 2023). On the other hand, walk-in clients can join virtual queues upon arrival by obtaining a printed ticket from the bank's entrance kiosks. Similarly, customers may monitor their queue's progress via digital screens, mobile devices notifications, or audio announcements in the bank by the system. While they wait, screens also provide tailored advertisements for new bank services (SEDCO, 2023). Also, with the intention of addressing the problem of congestion Absa Bank installed one of their first Queue management systems (QMS) in 2009 at the entrance of their two branches in Mutaba house branch and another installed at Long Acres. In the section that follows, the research's problem statement will briefly be discussed, which covers the issue of long queues experienced by most Zambian banks, including Absa Bank Zambia.

1.2 Statement of the problem

The problem of long unbearable queues and congestion in banks is a prevalent issue in many banks worldwide, particularly in Zambia. Banks offer a secure environment for businesses and individuals to conduct personal and business transactions (Kasa, 2023). Any bank's corporate goal is to maximize shareholder wealth, a goal that can only be done through maintaining and satisfying its clientele. (Abdulle, 2021), discovered that in the service industry, such as banks and hospitals, queuing continues to be one of the leading causes of customer repulsion. Without good customer satisfaction, the bank does not only suffer loss of profits and brand impairment but also loses loyal customers to competing banks (Belas & Gabcova, 2016).

Prior to 2010, internet banking was not common in Zambia but after majority of the banks became all-inclusive in 2010, it became common and accessible to anybody subscribed to the service as well as other technological advancements (Hussain, et al., 2017). However, despite the numerous investments in technology by most banks and the many advantages that online banking provides, most customers still prefer in-person interactions when receiving service from banks (Shanthi & Desti, 2015). Therefore, queuing is unavoidable for almost all the services provided, thus it is important to consider the installation of automated queue management systems and how they may be customized to improve bank operations and ultimately satisfy consumers (Lungu, 2020). This study focuses on the electronic queuing management systems and how these systems influence customer satisfaction in general, with Absa Bank Lusaka as a case study. This will be done by looking more closely at a few components such as how the electronic queue system installed at the bank works, the customer experience while at the bank and how the installed system impacts the customer satisfaction.

1.3 General Objective

To explore the influence of the electronic queue management system on customer satisfaction in response to long queues at Absa bank Zambia.

1.3.1 Specific Objectives

From the general objective the following specific objectives will guide the study:

1. To assess the capability of the electronic queue management system and its efficiency on customer satisfaction.
2. To determine whether the customers' experience while receiving services has an effect on the customer satisfaction.
3. To explore how the system usability impacts customer satisfaction.

1.3.2 Research questions

- I. Does the system's capability affect how satisfied the bank's customers are?
- II. How does the customer experience while at the bank influence the customer's satisfaction?
- III. What impact does the system usability have on the level of customer satisfaction?

1.4 Scope of the study

The study was geographically limited to Lusaka and primarily targets the customers of Absa Bank Zambia Plc operating in Lusaka and does not extend to banks in other regions or sectors outside the designated scope. The data to be collected from the customers of the bank will give this study reliable information.

1.5 Significance of the study

This study seeks to explore the influence of electronic queue management systems Absa uses and how this system affects customer satisfaction. The results from this study will be significant to numerous industries and organizations, especially other banks in Zambia that struggle with the problem of long queues. Furthermore, the study will raise awareness and impart people to understand the significance of the electronic queue management systems and how its adoption can help their organizations to be more productive, gain competitive advantage and generally achieve their set strategic goals. Additionally, individuals such as bank managers can benefit from this study and use this study to apply such technological adoptions in their various banks, thereby reducing the amount spent by their customers in queues which will lead to customer satisfaction and improve the overall organization's productivity. Furthermore, this study will benefit any sectors that appear to have a system of one- to-one service delivery, not just the banking industry. The sectors listed below are a few instances of how each could benefit in the manner that the study illustrates:

1.5.1 Private sector:

This study will be utilized by banks, schools, and other establishments where human personnel oversee service delivery to efficiently optimize queues.

1.5.2 Public sector:

Government offices such as immigration and home affairs offices, ministry of lands, local councils and several offices. They will especially benefit from this because they often deal with long lines that lack organization and order.

1.6. The organization of the report

This study has been divided up into the following six chapters: the introduction, which covers the problem statement, research objectives, research questions, scope and significance of the study, and the organization of the study. The literature and empirical reviews that are pertinent to the study, together with the theoretical and conceptual framework, will all be covered in Chapter two. Chapter three discusses the research methodology and the data analysis will be presented in the fourth chapter followed by the discussion of findings in chapter five. The research's conclusions and recommendations are then presented in the sixth chapter.

1.7 Definition of key terms and concepts

1.7.1 Queue

A row of people or items waiting for a something, one behind the other
e.g. a service functions.

1.7.2 Queue system

The queuing system involves customers arriving at a service facility, waiting for service, waiting for a call, and eventually leaving the facility after receiving services (Bronson, 1996).

1.7.3. Queue management systems

This is a set of tools or processes that manage and analyze the flow of customers (Tsernov, 2023).

1.7.4 Technology adoption

This is a sociological concept that explains how new innovations or products are embraced or accepted based on the psychological and demographic traits of certain adopter groups. (Kumbar, 2017).

1.7.5 Server

A server is a computer or software system that offers services to clients over a network, including web pages, email, file management, and application running (Monteclaro, 2023).

1.7.6. Productivity

This is a measure of economic performance that compares the quantity of products and services produced (output) to the quantity of inputs consumed in their production. (Perry, 2023).

1.7.7 Customer satisfaction

This is the level which a customer's specific expectations are met by a product or service. (Hill, et al., 2007).

1.7.8 Organizational productivity

This relates to evaluating and enhancing the effectiveness and efficiency of organizations in either public or private sectors. (Alman, 2012).

1.8. Chapter summary

The chapter gave an overview of the background of the study and included the problem statement, research questions, the research objectives, scope, and significance of the study. The next chapter will review the existing literature on the various types of the queue management systems by other authors. The literature review will explore diverse sources, presenting authors' perspectives and opinions to provide a comprehensive understanding of the research topic.

CHAPTER TWO LITERATURE REVIEW

2.0 Introduction

The previous chapter provided an overview of the research background, problem statement, objectives, study scope, significance, and chapter organization. By analyzing the work of existing researchers and authors, this review of the literature may help researchers generate and enhance research ideas. Therefore, this chapter offers a thorough literature review to aid researchers in developing and refining research ideas on the topic of the impact of queue management systems on customer satisfaction. Even though the majority of the articles where the literature was taken had diverse backgrounds and contexts, they nonetheless made a substantial contribution to the success of the study.

2.1 Related existing literature on queues and customer satisfaction

2.1.1 The different types of queues

A queue also known as waiting line is a group system of individuals or items waiting in line for services or attention, including those who are receiving the service (Kumar, 2020). Waiting lines form when a certain service or product's demand exceeds the available capacity (Yifter, et al., 2023). This could potentially be the result of a shortage of servers or readily available merchandise in stock, as well as the limited number of service providers among many other reasons (Matley, 1979). In addition to being inconvenient, waiting aggravates people's routines. Also, unmanaged queues may often lead to unproductivity and a disorganized environment where customers have disputes over simple issues such as who came before the other etc.

As mentioned by (Mithare, 2023) queues can have a single or multiple line and this is frequently used by banks as waiting line systems. Correspondingly, customers line up and wait for a teller to become available before proceeding to that teller's station. When there are several servers available, employing a single queue has the benefit of improving the consumers' impression of fairness in terms of equal wait times (Mithare, 2023). (Amprital & Williamjeet, 2017), states that any queuing system is governed by some specific characteristics such as the type of queues, arrival patterns of the customer. The different types of queues include simple, priority, circular, and double-ended (deque) queues, queue discipline, service processes as well as the decision to wait in the queue (Kaswan, 2023).

On the other hand, the authors (Ochieng & Kegoro, 2021), states that they are two main types of queues, that is, structured queues and unstructured queues. Individuals who are included in the structured queue have a fixed form and a predicted place. This is evident at supermarket pay counters as well as at a number of other retail locations, including banks and customer support centers. These queuing systems are frequently designed to manage the ranking of tickets for identification services, enabling a stress-free waiting experience (Ochieng & Kegoro, 2021). Unstructured queues on the other hand occur where individuals line up in an unpredictable way and at numerous directions and locations. For instance, queues formed when people want to board a taxi or bus (Ochieng & Kegoro, 2021). Furthermore, queues can be implemented in three ways: standard linear queues, single line queues, and dispersed or "digital" queues, which use ticketing systems to disperse waiting lines (Ngugi, et al., 2018). The authors of (Team JRNI, 2020), add on to say that a queuing system may include hardware or software to assist businesses in planning and managing employee and customer flow, make it easier for customers to obtain services, and collect feedback from customers to enhance their overall experience (Team JRNI, 2020). Furthermore, the researchers (Odirichukwu, et al., 2014), state that a designed solution to minimize congestion and queue optimization in banks that could be used is the FIFO-Queue method.

2.1.2 The effects of long queues on customers

Queues are an everyday occurrence in various industries, businesses as well as in daily life activities, such as customers in line waiting for assistance from bank tellers and auto-mobiles queues waiting to for re-filling at a filling station. In the retail banking sector, queues continue to be a major concern and source of consumer dissatisfaction. Although (Queue.it Team, 2023), states that queuing is an essential and fair method of handling customer flow when resources are scarce. If not managed properly these queues become problematic because long and unbearable queues experienced by customers leads to customer dissatisfaction and in the long run affect the organizations' productivity among several other consequences.

In addition, long lines also serve as an indicator of the quality of services provided and the efforts made by businesses to improve the customer experience (Suha, 2015). According to research on waiting queue management, consumers find it inconvenient to wait in a queue, and both people and businesses incur economic costs by doing so (Desta & Belete, 2019). Another researcher agrees with this notion and adds on to say that customers are not prepared to spend more cost of waiting and that the time wasted waiting in line can be utilized elsewhere (the opportunity cost of time spent in queuing) (Onoja & Kembe, 2018).

2.1.3 The four forms of the queue management systems

As per (Tsernov, 2023), understanding consumer behavior and queue discipline (the order of servicing) is essential for queue management. In its most basic form, a queue management system will issue a client who arrives with a queue ticket when services are available, sparing them from having to wait in a long queue. In this sense, by enabling customers to hold their place in the line while they are seated comfortably (Pattawi, 2016). As stated by (Augustine, 2013), in terms of waiting times, a system with a single queue and several servers operates more efficiently than the same system with a queue for each served.

On the other hand, a multiple-line setup is suitable when servers specialized are being utilized or when a single line setup inconveniences a customer. This section will provide a brief description of the different queue management systems based on the numerous characteristics such as the number of channels, servers and the number of operation phases. The channels and stages under this system represent accessing stations and steps to service, with single or multi values. Stream and process combinations and create four queue management forms, which all fall under the single and multiple servers.

The following diagram is an illustration of the four distinct forms of queue management.

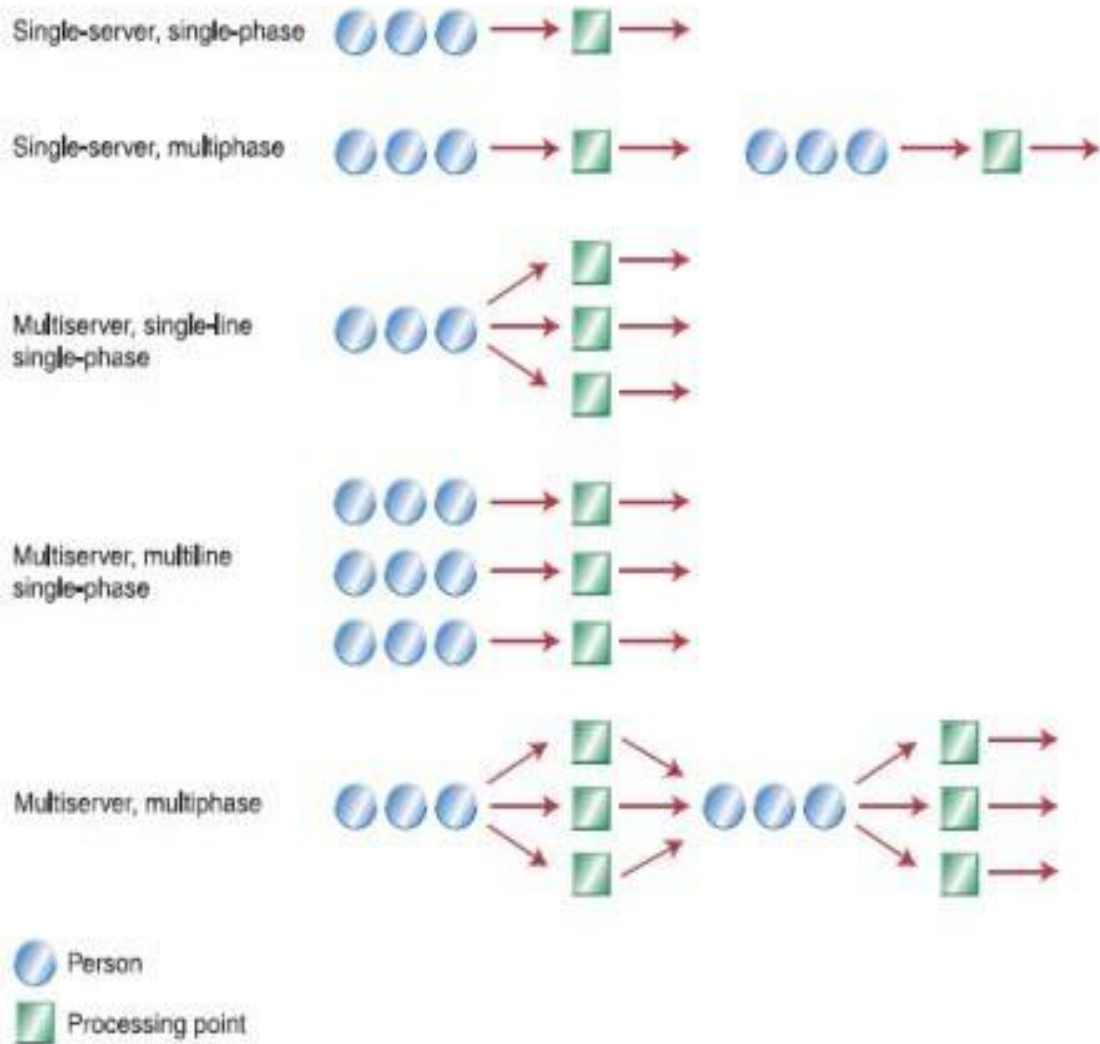


Figure 1: Example of waiting line systems (Stephen, et al., 2013).

1. Single channel, single-phase:

The single channel, single phase model, also known as the single channel system, is a simple and straightforward model. According to (Pramudhita, 2017), this model involves units arriving at the service center on a single waiting line and providing them with one phase. In other words, with this channel, individuals who take a queue number first are served first, and those who take a number last are also served last. An example where this channel is used is of a single cashier serving as the point of payment in a supermarket (Downing, et al., 1988).

2. Single Channel, Multi-Phase:

Compared to the first model mentioned above, this second one is more complex since it has multiple stations that a customer in need of assistance with a service may go through. This channel has one server and multi-phase service operation such as those used in retail banking (Habbache & Maiza, 2021).

3. Multi-Channel, Single Phase:

A multi-channel, single-phase system has many servers and a one-step service, similar to airline ticket counters with distinct lines to serve individuals who are traveling in business and economy classes (Habbache & Maiza, 2021). A further instance could include a system in a bank waiting line where many tellers are offering their services.

4. Multi-Channel, Multi-Phase:

According to (Chikh, 2009), this system is comparable to the multi-channel, single-phase system, except for certain distinct services that are offered sequentially in one channel. This is shown during the admittance process of a patient in hospitals,

where they are provided with a series of services upon arrival such as tests and examinations, diagnosis, admission, medical treatment and payment .This system demonstrates multiple service facilities at each stage, allowing multiple customers to be served simultaneously (Pramudhita, 2017).

2.2 Empirical Literature review

2.2.1 Queue management systems

Several authors worldwide have studied the topic of queue management systems and the results of the various studies have greatly contributed to better optimization of queues in facilities such as banks, hospitals and both private and public institutions. The majority of past studies and literature reviews emphasized the significance of queue management systems and the adoption of this systems for any if not all businesses and organizations. The authors (Uddin, et al., 2016) highlight that a queue management system is a tool used to organize queues of people in retail or public sector environments. It can be proactive by gathering statistics on queue management, which enables the identification and prediction of trends, or reactive by using a system to arrange the existing queues. In essence, a queue management system software is a server-side application that operates on the server and offers an alternative interface for system interaction (RSI Concepts, 2021). While all the necessary hardware to support software functionality is included in the hardware (RSI Concepts, 2021).

Queuing systems are said to be more efficient, productive and boost customer satisfaction in the long run. (Khawle, et al., 2017), emphasize that although it is challenging to fully solve the issue of long queues at commercial banks, they can potentially be managed to enhance customer satisfaction, similar to how Kenyan commercial banks have embraced electronic queue management systems.

- **Benefits of adopting the electronic queue management systems**

Likewise, the goal of queuing systems is to control the customer arrival, service, processing of service problems and data processing methods that can enhance the effectiveness and quality of bank services. (Uddin, et al., 2016). Furthermore, the authors (Burodo, et al., 2021), assert that the implementation of Electronic Queue Management Systems is the only way for commercial banks to address the issue of long queues of customers. Likewise, studies have shown that electronic queue management systems may reduce operating expenses for commercial banks by 23% while also enhancing staff morale (Abdulle, 2021). According to (Alotaibi & Liu, 2013), businesses may decrease customer wait times and provide them on a priority basis by using an Electronic Queue Management System (EQMS).

(Kuklin, 2013), found that commercial banks may use EQMS to their benefit to change and enhance the client experience. The study further revealed that the system can improve customer loyalty and assist any organization maximize revenue (Henry & Njagi, 2023). Another study by (Austria, 2016), suggested that both the customers' and service providers' satisfaction may be enhanced by using an online application called Queue Administration, which is database-driven and manages different customer queues. On the other hand, (Team JRNI, 2020), primarily describes it as a system that controls customer flow, wait times, and provides proper customer service throughout the customer journey.

- **Critiques of the electronic queue management system**

The electronic queue management system, despite its benefits, has some disadvantages and critiques. The following points briefly explain why the critiques made by some authors on the electronic queue management system.

- **High initial investment**

As per (RSI Concepts , 2021), implementing an electronic queue management system requires a substantial initial investment, including hardware components like digital signage, network infrastructure and interactive kiosks.

- **Learning curve for users**

The digital queue management system may pose usability issues and dissatisfaction for some non-tech-savvy customers, who may struggle to adapt to it (Skiplino team, 2023).

- **Integration challenges**

The authors (Isarsoft team, 2023) and (QueueBee Team, 2024) emphasize that one of the disadvantages of the electronic queue management systems is that the integration of the system with existing business processes can at times be complex and time-consuming, necessitating additional effort and technical expertise for seamless communication between components.

- **Regular maintenance**

Maintenance of the system is essential, and it can be an ongoing cost. This includes upkeep of hardware components and software features, which may require technical expertise and resources (RSI Concepts , 2021) .

These drawbacks highlight the need for careful consideration and planning when

implementing an electronic queue management system to mitigate these challenges and maximize its benefits.

2.2.2 Automated queue management systems

This section will specifically provide a brief review of the automated queue management systems utilized by banks, along with the opinions shared by numerous authors. Based on (Abdulle, 2021), the majority of queue management strategies for small environments with simple flow are done manually. Whereas, automated queue management systems are designed for larger spaces and more complex flows. These are often utilized at places like banks, clinics, hospitals, and retail stores, among others. Several researchers have concurred that the automated system for managing queues is effective and appropriate for corporate settings such as banks, and they recommend this approach. Furthermore, it is known that the automated system employs a variety of queuing algorithms and has the ability to switch between them in response to the average waiting time. This enables it to determine which client to serve first by analyzing the condition of the queue status (Al-Jumaili & AL-Jobori, 2011).

According to (Henry & Njagi, 2023), researchers have studied automated queue management systems in organizations for decades, but mixed findings have led to the need for further research in different contexts. (Darlingtina & Obinwanne, 2015), explored the use of queuing models in banking systems, suggesting adding more servers to reduce queue time and improve customer satisfaction. In addition, a study done at combined Hospital Sringer Garhwal Uttarakhand by (Malik & Belwal, 2016), reveals that nearly half of patients find queue time frustrating, and only 35% are satisfied with the service they receive.

2.2.3. Recent trends in automated queue management systems used in banks

Some key trends based on recent insights that automated queue management systems in banks offer include real-time monitoring, multi-channel support, enhanced customer experience, data-driven decision making, and hybrid solutions (RSI Concepts , 2021). The author (Olayinka, 2024), emphasizes that these systems provide real-time updates on queue status, estimated wait times, and alerts, enabling efficient resource management and proactive responses to demand fluctuations. They also support multiple customer interaction channels, enhancing overall customer experience and retaining in-person interactions (Matu, 2023).

Queue management systems offer comprehensive solutions such as scheduling appointments, analyzing customer flow, and providing comprehensive solutions to meet the evolving needs of modern customers. There are a few common types of queuing systems that banks and other financial institutions use today (Henry & Njagi, 2023). In relation to (Wavetec, 2019), the Electronic Queue Management System (EQMS) is a virtual process which optimizes queues to improve waiting times and streamline the experience, using hardware and software components to generate tokens for personalized customer waiting. The paper by (Stuart, 1995), discusses a queue management system intended to maintain and direct customers waiting in a waiting area so they may engage with various service locations. The system also utilizes sensing features to track individuals entering or in the waiting area and signaling features at each service location to indicate when it is free for use.

Banks utilize queue management systems like self-service kiosks, digital kiosks, and appointment booking tools to enhance client efficiency and manage wait times (Wavetec, 2023). Self-service queue management systems are commonly used in banks and public institutions, typically displayed on large touch screen kiosks or tablets in the lobby or at the entrance. Other scholars argue that unlike manual queue management systems, automated queuing systems such as the self-service kiosk system, are more effective and they are beneficial to the customers by allowing them to booking appointments, viewing wait times, and wait in line more efficiently etc.

2.2.4 Previous studies on the influence of automated queue management systems on customer satisfaction

Customer satisfaction is defined as the product's perceived performance compared to the buyer's expectation, indicating that satisfaction and dissatisfaction are dependent on product performance (Kotler & Armstrong, 20017). Another author defines customer satisfaction as the difference between the customer's perceptions of the waiting experience and his or her expectations about service delivery, which is most times based on past experience (Gabriel , 2011).The author further elaborates that managing customer perception of the queuing experience is crucial for satisfaction with the service interaction, despite the possibility of reducing actual waiting time and customer expectations (Gabriel , 2011).The authors (Ochuko, et al., 2017) emphasize the significant role of customers in company decisions, highlighting their importance among scholars and academicians worldwide.

Customer satisfaction is a crucial success factor and a vital source of competitiveness for banks and other businesses. Therefore, to satisfy their customers and gain a competitive edge, businesses should have the proper queue management solutions in place. A study carried out by (Florence ,2015), on the effect of queuing system on customer satisfaction in Germany, found out that customers are either satisfied or dissatisfied and that manual queuing systems are associated with a high level of dissatisfaction.

- **Studies by other African countries on the problem of long queues in banks and the effect on customer satisfaction**

Numerous studies have been conducted to investigate the impact of queue management systems on customer satisfaction in several contexts. Moreover, the different literature provides valuable information regarding the relationship between queue management systems and customer satisfaction across numerous industries and emphasizes the significance of effective queuing strategies to improve the customer experience. Furthermore, in an article by (Firmansyah & Saputra, 2021), a study was conducted in Nigeria to determine if the queuing system had an impact on customer satisfaction and the findings demonstrated that the suggested hypothesis was accepted given that the results of the hypothesis test were positive and significant. In this particular study, 100 respondents completed questionnaires, and data was gathered using a purposive sampling approach. Validity, reliability, and classic assumptions were examined concerning the questionnaire results. In addition, the study employing basic regression methods demonstrated that the queuing system significantly and positively affects consumer satisfaction (Firmansyah & Saputra, 2021).

Another study in South Africa was done to discover the Absa clients' perceptions of service quality at the Pietermaritzburg Long Market Street Branch suggests that long wait times may lead to customer dissatisfaction (Nzama, 2014). Lastly, research by (Desta and Belete 2019), on the Influence of waiting lines management on customer satisfaction found that 95% of respondents in the Commercial Bank of Ethiopia experience customer dissatisfaction due to long queues. Overcrowding in Nigerian banks has led to customers moving between banks, and modern computerization efforts to minimize waiting lines have not been successful due to frequent breakdowns and long queues (Augustine , 2013).

2.2.5 Literature on customer experience, customer waiting environment and its Impact of customer satisfaction.

- **Customer experience**

Customer experience refers to all of a customer's encounters with a business and the perceptions that are created as a result of the whole purchasing process (McKinsey, 2022). It encompasses all points of contact, such as marketing, sales, and customer service, and is essential for fostering brand advocacy, customer retention, and loyalty (McKinsey, 2022). Ultimately, any company that wants to grow sustainably must provide its customers with a positive experience. (Bordeaux, 2021). As per (Barney, et al., 2023), customer experience (CX) is quite different from customer service, which is only one aspect of the total customer experience. It encompasses not only the actions that customers take but also their feelings and perceptions of a brand at every point of interaction. Customer satisfaction and loyalty are significantly impacted by the quality of the customer experience. As per (Johnston & Kong, 2011), literature review states that companies must take into account the experiences and services of their customers and find out if customers are satisfied with their services based on experience.

Furthermore, given that customers behave, react, and respond in unpredictable ways, managing the customer experience may be challenging for companies. Therefore, to increase the likelihood that a customer will be satisfied, businesses should evaluate and optimize each customer touch point (Barney, et al., 2023). Additionally, a study by (Johnston & Kong, 2011), states that organizations must take into account the experiences and services they offer in addition to the services they offer. This is simply because customer loyalty and happiness are significantly impacted by the customer experience (Johnston & Kong, 2011). The researchers (Xie, et al., 2022), deliberated on the impact of the three vital elements of the customer experience: relationship, performance, and convenience. In addition, the paper further highlighted the significant mediating roles that customer satisfaction plays in the relationship between customer experience and customer well-being.

- **The impact of the customer waiting environment on customer satisfaction**

The author (Joe, 2023), states that one of the most crucial parts of managing any business is providing excellent customer service, however the specifics of this experience can differ greatly depending on the type of organization. The author goes on to say although a poor waiting experience might damage a customer's perception of your company, there are several things the organization can do to improve the experience and guarantee a pleasant wait (Joe, 2023). The authors (Patil & Rane, 2023), revealed three key concepts which are; the significance of the customer experience, the distinction between the experience and service, and strategies that organizations may employ to improve the customer experience.

Similarly, another research investigation provides information on how to increase client loyalty by offering outstanding customer service. In this paper the strategies for enhancing customer loyalty and satisfaction were discussed (Rane, et al., 2023). Also, a separate survey on customer experience has been discussed and the literature presents a thorough analysis of the customer experience and its key factors, which include consumer satisfaction and loyalty (Lemon & Verhoef, 2016). This paper goes on to say that customer expectations go hand in hand with factors such as responsiveness, reliability, and service quality (Lemon & Verhoef, 2016).

Besides, (Garcia, et al., 2022), assert that a thorough evaluation and analysis of this expanding field of study was provided by a Bibliometric analysis of the customer experience literature. Literature on the customer waiting environment has also extensively been done by several authors. According to (Joe, 2023), the waiting area is a location where clients wait for assistance. In addition, the writer states that an organization that desires to make its clients feel comfortable should establish a welcoming environment in the waiting room, which should highlight three essential aspects namely entertainment, climate, and communication (Joe, 2023). A pleasant waiting area typically leaves customers feeling better and the architecture, layout, and lighting of waiting areas contribute to their aesthetic appeal by providing comfort, space, and ambiance (Abdulle, 2021). Generally speaking, past research and literature has shown that customers who are in a comfortable waiting area feel better and are more satisfied than those that might wait in a long queue standing for hours. Some other authors also showed that, waiting environment has a direct impact on customer's satisfaction toward waiting time satisfaction. Also, that there is a positive correlation between waiting time satisfaction and waiting time environment (Abdulle, 2021).

2.2.6 Overall critique of the literature

The current body of knowledge is now investigating the impact of the adoption of the queue management systems on customer satisfaction has deficiencies that will now be addressed in this section. Although the overall, literature review and studies conducted emphasize the importance of queue management systems in banks for enhancing customer satisfaction, reducing waiting times, and improving service efficiency. One of the major deficiencies that have been identified from some of the studies is that they suffer a potential threat to construct validity in that they did not look at the possible disadvantages and negative effects that the electronic queue management systems that might present or have on their customers as well as the banks. In addition, most if not all the studies concentrated more on appraising the systems and left out factors such as the rejection and if accepted the proper use and acceptance of the systems by both the customers and staff in the institutions. Among other things, studies that were conducted by (Makumbiro, 2020) and (Stephen, et al., 2013), lack relevant theories to back up their claims pertaining to the effect of the queuing systems on customer satisfaction and congestion control in banks. Besides, Furthermore, theories are crucial to all studies given that they provide researchers with a solid foundation for every claim they present.

Additionally, other researchers such as (Abdulle, 2021), (Augustine, 2013), (Belas & Gabcova, 2016) and (Desta & Belete, 2019) have investigated the topic of queue management systems on customer satisfaction in their banks extensively in Kenya Nigeria and Slovakia and the Czech Republic and Ethiopia but not many studies have been done in Zambia. Lastly, a review of the literature reveals that the majority of the findings were context-specific and restricted to some countries such the ones mentioned above. It was therefore stated that samples should be drawn from multiple geographical areas to have a wide range of research and perspective. The lack of knowledge about the adoption of queue management systems in Zambia is what inspired this research so as to add on to the body of knowledge by obtaining results that are generalizable and useful to the all industries, especially the banking industry of Zambia.

2.3 Theoretical Framework review

This section presents the theories reviewed and applied in this study to comprehend the influence of queue management systems on customer satisfaction

2.3.1 Queuing Theory

The queuing theory was invented by Danish mathematician, statistician and engineer known as Agner Krarup Erlang in the field of telephony in 1909 (Thomopoulos, 2012). This theory is the study of a queue using mathematical models to assess a queue's efficiency. It serves as the basis for determining the optimal queue management solution (Yifter, et al., 2023). Additionally, this theory is a branch of operations research that studies how customers or items move through a service system. As indicated by (Alnowibet, et al., 2022), the primary goal of queuing theory is to examine queuing issues in different sectors such as business and transportation using Tandem and Bi-Tandem Queues, focusing on stochastic processes and successive production phases due to man and machine.

The queuing theory has been used extensively in the banking sector to optimize retailing and reduce customer wait times, and applied in computer simulation models to support business decisions and problems (Afolalu, et al., 2019). Additionally, this theory is important in reducing customer waiting times in banks by identifying and evaluating alternative solutions to enhance the efficiency of the banking service system (Malabuyoc, et al., 2021).

The queuing theory has also been utilized in several studies to evaluate its effect on customer satisfaction in the banking industry. For example, research on the influence of queuing theory on customer satisfaction in the banking sector in Nigeria discovered that unsatisfactory queuing systems might have a major negative impact on consumer satisfaction (Augustine, 2013). Furthermore, another research study found that waiting queue management influenced customer satisfaction in commercial banks and suggested that several servers be maintained reduce wait times and raise customer satisfaction.

As a result, the queuing theory plays a crucial role in evaluating and enhancing the effectiveness of queue management systems, which in turn impacts bank customers' satisfaction (Burodo, et al., 2021) .This theory is pertinent to the current study because it considers queuing models and provides a mathematical basis for understanding and optimizing the queuing process, which directly affects customer satisfaction, which would be a part of the solution to the problem of long queues in banks in Zambia.

2.3.2. Technology Acceptance Model (TAM)

This model was first developed by Fred Davis in 1986 and its main goal was to provide light on the mechanisms that underlie technology adoption to predict the users' behavior and offer a theoretical justification for its effective use. (Lai, 2017). Based on the Theory of Reasoned Action, Davis created a model of technology adoption to analyze the connection between external variables and system usage. (Marikyan & Papagiannidis, 2023). The authors (Arai, et al., 2020), state that the Technology Acceptance Model analyzes how consumers come to accept and use newly introduced technology. Furthermore (Lai, 2017), highlights that a range of factors influence how and when individuals use new technology that they are introduced to. TAM, despite its limitations, has proven effective in studying the factors influencing technology adoption (Abdulle, 2021). In the context of queue management systems, the technology acceptance model may be used to analyze the factors influencing the adoption of queue management systems across different industries and businesses. Moreover, the model can be extended to comprehend the acceptance of EQM system by various users, including customers and service providers.

According to (Shackel, 2009), Usability refers to a software system's ease of learning and handling by its intended users, while usefulness refers to its ability to serve a recognizable purpose. In this regard, the Technology Acceptance Model is usually interpreted to indicate that a software system, like an electronic queue management system, must be extremely user-friendly and provide a clear purpose for customers to recognize and accept it (Abdulle, 2021). In relation to this study this theory aids in comprehending how Absa bank's customers will accept the introduction of queue management system technology innovations based on the systems capability and usability. As per (Marikyan & Papagiannidis, 2023), A person's desire to use a new technology is mostly determined by two criteria, namely perceived ease of use and perceived usefulness. This makes the Technology Adoption Model one of the most prominent models of technology adoption.

2.3.3 Diffusion of Innovation Theory

For over 30 years, researchers have examined how new inventions get adopted. One of the widely recognized adoption models is described by Everett Rogers in his book, Diffusion of inventions (Singer, 2022). Rogers asserted that innovations are more likely to be accepted faster than others if they have greater benefits, compatibility, observability, trialability and simplicity (Sahin, 2006). According to (Rathod, 2016), diffusion is the method by which an innovation is communicated and gradually spread across people in a social community through certain routes.

Consequently, the theory primarily focuses on innovation, time, communication channels and social system, and aims to provide insight into how and why new ideas and technology spread (Hattabou, 2005). (Rogers, 2003), categorized the adopters into the classifications based on the level of innovation.

This classification comprises of the innovators, late majority and early adopters and majority. The adoption of new technology begins with innovators and early adopters, then spreads to the early majority, late majority, and laggards (Sahin, 2006). Although the theory has been used successfully in a number of fields, it has some limitations, such as a lack of coherence and difficulties measuring diffusion since human networks tend to be complex (Dearing, 2009). However, the diffusion theory is relevant to this study because it is crucial in explaining the banks' adoption of technical innovations, as they provide a relevant advantage, indicating a better financial advantage. In conclusion, the diffusion of innovation theory relates to the adoption of queue management systems by examining how new ideas or products such as new technologies are communicated and accepted by a specific population over time. Additionally, the model assists organizations in customizing their strategy to meet the demands of various customers, including the adoption of queue management technologies (Sahin, 2006). Lastly, the adoption of queue management systems can be influenced by the diffusion model's prediction of users' continued development and the diffusion process' ongoing evolution (Singh, et al., 2018).

2.4 Conceptual Framework

A conceptual framework is a representation of the interaction of the variables in the study. Similarly, the conceptual framework tries to show which variables are dependent and independent. As per (Miles & Huberman, 1994), this framework is a model developed to address research problems and questions, focusing on key factors, constructs, or variables and their relationships, either graphically or narratively.

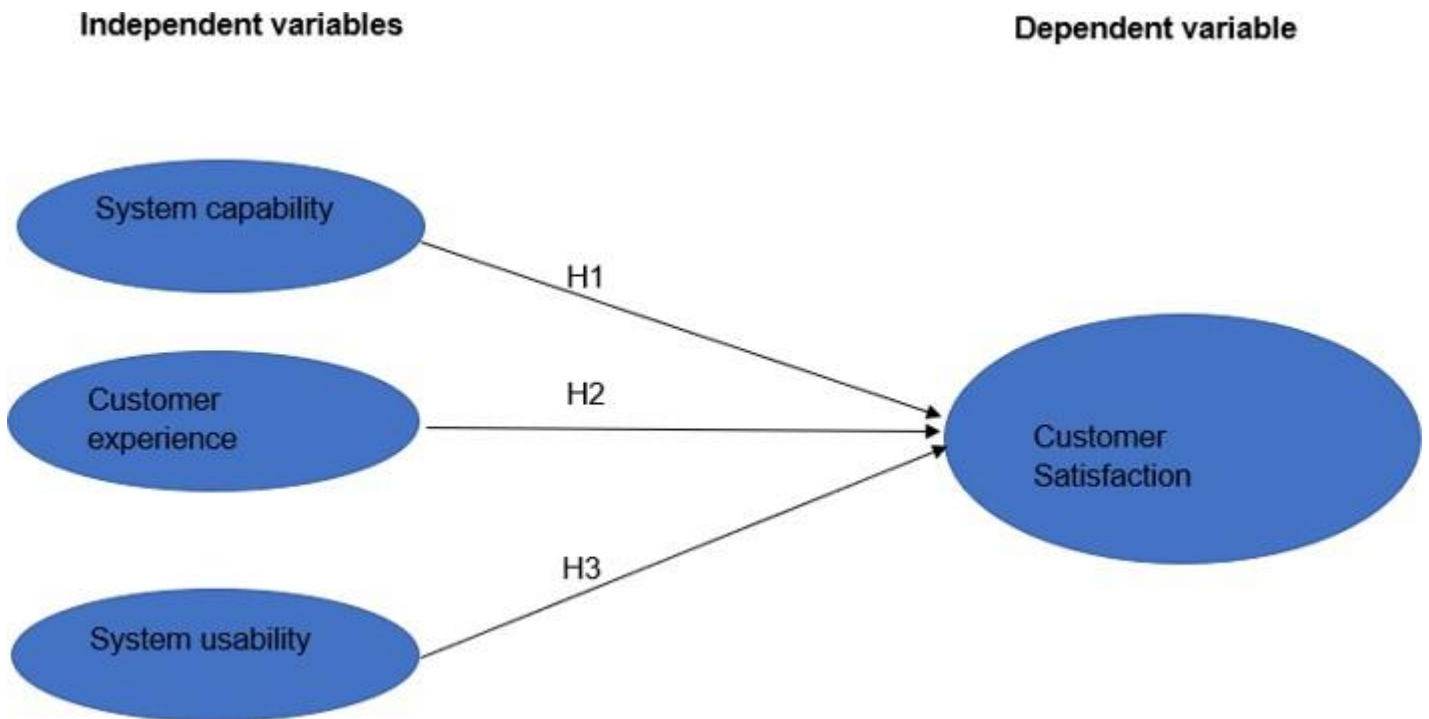


Figure 2: Conceptual framework

This framework is created to explain the influence of the independent variables (system capability, customer experience and system usability) and the dependent variable (customer satisfaction).

2.4.1 System Capability

This variable can encompass the ability of the electronic queue management system to carry out task and generally be efficient and effective. This depends on features such as the type of technology used, the efficiency of the system in managing queues, and its ability to integrate with other systems or devices

2.4.2 Customer Experience

This variable focuses on the effect of the queue management system on the customer's experience. It may include factors such as waiting time experience of the customer at the bank.

2.4.3 System usability

This variable covers the learnability and ease of use of a system and may be measured against the dependent variable by considering the ways in which the system's ease of use and accessibility impacts customer satisfaction.

2.5. Development of hypotheses

2.5.1The relationship between system capability and customer satisfaction

Several empirical studies have been conducted on the relationship between system capability and customer satisfaction. An investigation by (Miguel, et al., 2022), on how dynamic capabilities affect the satisfaction of customers in the automotive industry found that digital capabilities positively influence customer satisfaction.

Another study further revealed that existing literature asserts that customer satisfaction and the capability and quality of a system positively correlate and that the quicker the system is and capable to response times the more the customer is satisfied and assured (Kumar & Lata, 2021). The aforementioned studies and numerous others show a positive relationship between system capability, digital transformation and dynamic capabilities on customer satisfaction in various contexts. Thus, suggesting a positive relationship between system capability and the satisfaction of the customers.

Drawing from the aforementioned empirical research, our hypothesis is that:

H1: There is a positive relationship between the system capability and customer satisfaction of customers at the bank.

2.5.2 The relationship between customer experience and customer satisfaction

Studies have been conducted to investigate the correlation between customer experience and customer satisfaction. (Diaz, 2023), emphasizes the significance of the experience of the customer in enhancing customer satisfaction by fostering a positive and personalized experience. Similarly, according to (Pozza, 2014), it has been demonstrated that that customer experiences significantly impact the satisfaction process. Empirical studies by other researchers indicates a positive link between customer experience and satisfaction. On the basis of the observed studies, our hypothesis is that:

H2: There is a positive relationship between good customer experience and customer satisfaction.

2.5.3 The connection between system usability and customer satisfaction

Empirical studies reveal a strong correlation between system usability and customer satisfaction, with the System Usability Scale being a practical tool for measuring user satisfaction (McLellan, et al., 2023). Similarly, another study revealed that perceived compatibility significantly influences both perceived ease of use and usefulness, underscoring the crucial role of system usability in customer satisfaction (Tsai, et al., 2014). In consideration of the empirical research done, we hypothesize that:

H3: The system usability positively affects the customer satisfaction

2.6 Chapter summary

This chapter reviewed other scholars' literature which described the contribution of queue management systems on the banks productivity. The findings by the different authors in the literature review reveals that the research objectives that the electronic queue management system capability and usability significantly impact customer satisfaction, as well as the customer's experience and waiting environment. Moreover, the chapter reviewed empirical literature, theoretical literature as well as a conceptual framework on the topic in various countries with such systems in place. The methodology that will be applied to address the research questions under the study objectives is described in the upcoming chapter. Moreover, it will outline the

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The previous chapter discussed the different literature that has been authored by other authors, the theoretical framework, as well as the conceptual framework. This chapter on the other hand, aims to present the methodology and design used to get the necessary data. It provides comprehensive explanations of the study design, data collecting techniques, sample design, research instruments, data processing, and data analysis techniques. According to (Cooper & Schindler, 2006), the systematic and scientific procedures used to produce a study's conclusions and findings, which are then used to evaluate claims about knowledge, are known as research methodology. The perspectives the researcher takes to approach a study therefore determines the layout of the methodology. In this study a quantitative research method is used and this method seeks to test the hypothesis outlined in the study through data. Similarly, this research utilizes quantitative methods, including correlation analysis and multiple regression to analyze the sample population.

3.1 Research Approach

This study will make use of the quantitative approach and this research entails collecting data which is numerical and is associated with a deductive approach. A survey was utilized by the researcher to gather extensive data from a sizable population. Also, the quantitative approach was chosen as it involves hypothesis that predict specific relationships among variables, this study consisted of three hypotheses.

3.2 Research Design

This is an extensive plan for data collection, measurement, and investigation, along with an integrated approach to combine study components, effectively addresses the research problem (Gimblett, 2006). This research under the quantitative research followed a descriptive research design because it seeks to understand the existing problem better. Based on (McCombes, 2022), numerous research techniques can be applied in a descriptive study design to examine one or more variables. In addition, a descriptive research design was employed because this method is versatile and adaptable to different research needs due to its ability to utilize various data collection techniques such as surveys, observational studies, case studies, and focus groups (Sirisilla, 2023).

3.3 Study Population

A population by definition is the intangible idea of a big group of numerous cases from which a sample draws a sample and where the results are generalized to a sample (Bhandari, 2020). Questionnaires were distributed to customers of the selected Absa Bank, Lusaka in this study.

3.4 Sampling design

The process of choosing a suitable number of units from the population of interest in order to offer reliable information about the total population is known as sampling design (Hair, et al., 2003).

3.4.1 Sample size

Although the questionnaire was sent to 250 respondents for this study, the researcher was only able to obtain 204 responses.

3.4.2 Sampling Techniques

The researcher used convenience sampling method to obtain data. This was done by randomly distributing questionnaires among Absa bank customers, until the desired sample was obtained. However, some potential limitations and challenges were faced when obtaining responses such as limited time, data and potential bias by participant among many others.

3.5 Data Collection instruments

The research instruments that were used were questionnaires and observations. This research used both primary and secondary data and the primary data collection method was used to obtain information and opinions directly and specifically from the customers of the bank as well as the secondary data from other researchers such as journals.

3.5.1 Primary data

As per (Saunders & Thornhill, 2003), primary data guarantees up-to-date facts and precise perspectives to address the research inquiries. Survey

questionnaires were used in this research to collect primary data, given that they are easy to conduct and reliable. Likewise, the data will be collected by getting responses from the respondents after they send back an answered questionnaire that will be sent to them virtually.

3.5.2 Secondary data

Secondary data sources are really helpful, especially since they enable researchers to create sizable, high-quality databases that aid in finding solutions to research issues. (Hillier, 2022). Usually, another researcher or perhaps an investigating organization gathers this kind of evidence. Because secondary data is disseminated and documented in an organized manner, it can be accessed and managed more quickly. In this study, the secondary data sources will include other academic work /past research from other researchers e.g., journals, websites, books, personal sources etc.

3.6 Measurement of variables

According to (Hair, et al., 2003), the nominal, interval ordinal, and ratio levels comprise the four levels of measuring scales. The measurements of all constructs are derived from previous studies and the study employed four variables; one dependent variable and three independent variables (Sharabati, et al., 2015).

3.6.1 Dependent variables

The dependent variable (customer satisfaction) was measured by constructs adopted from (Palvia, 2009) and (Sharabati, et al., 2015).

3.6.2 Independent variable

The three independent constructs are: system capability, and was measured by a scale adapted from (Nugroho, et al., 2020); customer experience and its measures are adopted from (Nobar & Tostamzadeh, 2018); system usability with measures that are adopted from (Sharabati, et al., 2015).

3.7 The internal reliability and factor analysis of the research instrument

Principal-axis factor extraction was used in exploratory factor analysis (EFA) to ascertain the factor structure. Likewise, the Varimax rotation criteria is used in the Principal Component Analysis technique to extract loaded components (Taherdoost, et al., 2022). The items' factorability was mainly assessed using various recognized criteria for correlation factorability. Firstly, it was discovered that the correlation matrix showed a reasonable factorability, given that every item at least correlated 0.5 with at least one other variable. Secondly, Bartlett's test of sphericity revealed a significant result, and the Kaiser-Meyer- Olkin measure of sample adequacy exceeded the advised value of 0.6.

Lastly, it was found that the commonalities were more than 0.5, indicating that every variable shared a variance in common with the rest of the variables. Based on the general pointers provided the factor analysis was deemed suitable for every item. Also, the principal components analysis was employed to identify and calculate composite scores for the underlying factors.

3.8 Data Analysis

The data was analyzed using quantitative data analysis with descriptive, inferential statistics techniques, and SPSS, to summarize and explain the information gathered from the participants. Also, utilizing statistical tests and techniques such as confirmatory factor analysis, ANOVA, partial correlation analysis, and hierarchical regression, the data was examined with an emphasis on the reliability and construct validity of certain scales. The correlation was utilized to establish the connection between variables, whilst correlation analysis was used to determine the link between the variables.

3.9 Ethical Considerations

The research used questionnaires with clear objectives, confidentiality, and ethical standards. Respondents voluntarily answered and participated in the study, and responses were kept anonymous, ensuring ethical conduct and confidentiality.

- **Chapter summary**

The research approach that the researcher employed in the survey to answer the research questions is presented in this chapter. In addition, the study design, as well as the demographic and sample under investigation, have been highlighted. The results and data analysis will be presented in the next chapter.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF RESULTS

4.0 Introduction

The design and technique utilized to gather the necessary data are highlighted in the previous chapter, and the basis for this research study has been established in the preceding chapters. The analysis and interpretation of the data gathered are presented in this chapter, which forms the basis of the study. Furthermore, Statistical Packages for Social Sciences (SPSS) and tabulation in Microsoft Windows Excel were used for the data analysis.

4.1 Response rate

The researcher distributed the questionnaires to 250 respondents and only managed to get 204 responses from the participants. This resulted in an 82% response rate, indicating cooperative and supportive responses from the well-attended respondents.

No of responses expected to collect	No of Questionnaires collected	Percentage %
250	204	82%

Table 2: Response rate

4.2 Demographic Variables

Variable	Frequency	Percentage (%)	Cummulative percentage (%)
1 Gender			
Male	80	39.2	39.2
Female	124	60.8	100.0
2 Age			
18 - 25 years	55	27.0	27.0
26 - 35 years	114	55.9	82.9
36 - 45 years	21	10.2	93.1
46 - 55 years	10	4.9	98.0
56 and above	4	2.0	100.0
3 Category			
Student	40	19.6	19.6
Employed	132	64.7	84.3
Not employed	32	15.7	100.0

Source: field work (2023)

Table 3: Socio-demographic profile of respondents

The table above shows that the survey had more female respondents than male respondents. These respondents were customers at Absa bank, Lusaka picked at random. 124 of the participants were female while the rest (80 people) were males. The study included the gender (male and female) section to ensure that the respondents were an appropriate mix in terms of gender.

The highest number of respondents fell in 26 years -35 years these were 114 (55.9%) respondents, 55(27%) respondents were between 18-25 years, 21 (10.2%) respondents fell between 36 -45 years, 10(4.9%) were between 46-55 years and lastly 4 (2%) respondents were 56 and above.

The last question asked under the demographic section requested the respondents to identify and state what they were currently doing, either employed, unemployed or a student. The largest number of respondents were the 132 employed (64.7%) and the rest of the respondents were 40 students (19.6%) and 32 unemployed (15.7%).

4.3 The exploratory factor analysis tests

Items	Factor loading	Cronbach's Alpha
I am satisfied with the services provided by the electronic queue management system.	.758	.827
I am very pleased with using the electronic queue management system installed at the bank because it creates value added services for customers.	.798	
My interaction with the electronic queue management system was very satisfying.	.831	
All things considered I am very satisfied with the electronic queue management system installed at Absa bank.	.806	

Table 4: Exploratory factor analysis results for customer satisfaction

The table above presents the results of the exploratory factor analysis (EFA) for all 4 customer satisfaction items being examined. Kaiser-Meyer-Olkin measure of sampling adequacy was .793. Based on commonalities greater than 0.5, all 4 items are retained strong loading of the scale's reliability is supported by its Cronbach's alpha score and alpha value of .827.

Items	Factor loading	Cronbach's Alpha
I find the electronic queue management system capable of processing customer requests in an orderly manner.	.819	.805
The electronic queue management system is capable of ensuring the right services are delivered to the bank customers.	.812	
The electronic queue management system has a capability to operate various features in a well-structured manner	.824	
The electronic queue management system is capable of making adjustments to the information provided depending on customer's service request.	.752	
The electronic queue management system is capable of ensuring timely delivery of customer service requests and assistance.	.715	

Table 5: System capability exploratory factor analysis results

The table above presents the results of the exploratory factor analysis (EFA) for all 5 system capability items being considered. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .721. All 5 items are retained based on commonalities above 0.5, strong loading of Cronbach's alpha score, and an alpha value of 0.805, supports the reliability of the scale.

Items	Factor loading	Cronbach's Alpha
I am pleased with the quality of customer experience provided by Absa bank.	.816	.825
The customer service personnel at the bank are highly knowledgeable and helpful.	.817	
The electronic queue management system at the bank ensures efficient and orderly management of queues, providing a positive experience for customers.	.801	
The bank provides an excellent physical experience.	.863	
Generally, I had a good customer experience at the bank particularly with the installed electronic queue management system.	.828	

Table 6: Customer experience exploratory factor analysis results

The table above presents the results of the exploratory factor analysis (EFA) for all 5 customer experience items under consideration. Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .801. All 5 items are retained based on commonalities above 0.5, strong loading of Cronbach's alpha score, and an alpha value of 0.825; this supports the scale as being reliable.

Items	Factor loading	Cronbach's Alpha
The electronic queue management system allows easy navigation through the process.	.838	.879
The electronic queue management system is available for use at all times.	.834	
I find it easy to place an order on the electronic queue management system.	.817	
The electronic queue management system is flexible to interact with.	.837	
The electronic queue management system was user friendly.	.842	

Table 7: System usability exploratory factor analysis results

The table above presents the results of the exploratory factor analysis (EFA) for all 5 system usability items under consideration. Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .865. With an alpha value of 0.879, substantial loading of the Cronbach's alpha score, and commonalities over 0.5, all five items are kept on the scale, indicating its reliability.

4.4 Multiple regression

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Customer_Satisfaction	204	3.37	1.087	-.454	.174	-.332	.347
System_Capability	204	3.17	1.068	-.462	.174	-.336	.347
Customer_Experience	204	3.54	1.066	-.802	.174	.199	.347
System_Userbility	204	3.10	.981	-.412	.174	.145	.347
Valid N (listwise)	204						

Table 8: Multiple regression

The table above shows according to the multiple regression, the distributions appear approximately normal and both kurtosis and skewness are within an acceptable range for a normal distribution. The table displays the results, which indicate that the means for the variable; customer satisfaction, system capability, customer experience and system usability were all more than 3.0, suggesting that the participants agreed with the questionnaire's questions.

4.5 Correlation analysis

A statistical technique called correlation analysis is used to ascertain the direction and strength of the relationship that currently exists between two or more sets of variables. Further, the Pearson's coefficient of correlation, a commonly used technique for evaluating the relationship between variables, was employed in this investigation.

	Customer_S atisfaction	System_C apability	Customer_ Experience	System_ Usability
Customer_satisfaction	1			
System_Capability	.349	1		
Customer_experience	.351	.387	1	
System_Usability	.479	.415	.358	1

Table 9: Correlation of variables

System usability had a substantial positive Pearson Correlation of 0.479, as seen in the table above. Subsequently came the customer experience with a moderate positive Pearson Correlation of 0.351 while system capabilities had a Pearson Correlation of 0.349.

4.6 Inferential Statistics (Hierarchical Regression Analysis)

One kind of multiple linear regression analysis is termed hierarchical linear regression, in which new variables are introduced in discrete steps known as "blocks." (To & Mandracchia, 2019). This is frequently carried out to control factors statistically assess the impact of adding variables on a model's prediction ability, or investigate moderating effects (For example, how does the relationship between two variables change when one variable changes?). Our aim is to assess if the addition of new variables significantly enhances the R² (the model's explanation of variance in DV).

Model Summary^c

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.429 ^a	.172	.170	.993	.174	19.850	2	191	.000	
2	.547 ^b	.301	.281	.917	.124	17.142	2	187	.000	2.002

a. Predictor: (Constant), System_Capability, Customer_experience

b. Predictors: (Constant), System_Capability, Customer_experience, System_Usability

c. Dependent Variable: Customer_Satisfaction

Table 10: Model Summary

The Durbin-Watson value calculates the correlation across consecutive time intervals between a time series and a lagged version of itself. There is always a range of 0 to 4 for the Durbin-Watson statistic. Hence, a score of 2.002 indicates that the sample has no auto correlation. Regression analysis was conducted using two models. Model 1 yielded an R² of 0.172, or 17.2%. It also demonstrated the significance of the predictors (customer experience and system capability) in the first model at F (2, 191) = 19.850, p < 0.05.

These predictors account for 17.2% of the variance in the dependent variable. This entails that system capability and customer experience has an effect on the customer satisfaction. Compared to the previous model, Model 2 performed better, with an R of 0.547 and an R² change of 0.124, and three predictor variables: system capability, customer experience, and system usability. Furthermore, using multiple regression analysis for model two, it was tested to determine if the system usability increases the predictability of customer satisfaction.

With all three variables included, the multiple regression model explained 30.1% of the variation ($R^2 = 30.1$, $F(2, 187) = 17.142$, $p < .05$). When system capability and customer experience explain 30.1 % of the variance (R^2 change = .124, $F(2, 187) = 17.142$, $p < .05$) in the dependent. This indicates that all the factors have an impact and that the increase of the system capabilities adds a more significant predictability on customer satisfaction.

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	40.084	2	19.547	19.850	.000 ^b
	Residual	191.104	192	.990		
	Total	231.188	194			
2	Regression	70.161	3	17.470	20.175	.000 ^c
	Residual	161.026	190	.817		
	Total	231.188	194			

a. Dependent Variable: Customer_Satisfaction

b. Predictor: (Constant), System_Capability, Customer_experience

c. Predictors: (Constant), System_Capability, Customer_experience, System_Usability

Table 11: ANOVA

The model utilized in this study is reliable and applicable to the field of study, as indicated by the findings in the table above, where the F-statistic value (F= 20.175; P= 0.000 < 0.05) is high and significant. Thus, system usability, customer experience, and capabilities all have an impact on customer satisfaction.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.413	.276		4.853	.000
	System_Capability	.282	.073	.273	3.875	.000
	Customer_experience	.252	.073	.240	3.384	.001
2	(Constant)	.523	.329		1.591	.103
	System_Capability	.103	.073	.102	1.427	.032
	Customer_experience	.385	.085	.328	4.466	.000
	System_Usability	.233	.084	.184	2.472	.004

a. Dependent Variable: Customer_Satisfaction

Table 12: Coefficients

The study's regression equation model is $Y = \beta_0 + \beta_1 SC + \beta_2 CE + \beta_3 SU + \epsilon$ where Y is Customer Satisfaction. Substituting the standardized coefficients in the model it results to;

$$Y = 0.523 + 0.103SC + 0.385CE + 0.233SU$$

This model reveals that customer experience has the highest effect on the customer satisfaction among customers, 0.385 unit change in the customer experience causes a unit change in the customer satisfaction of the customers. Further, there is a statistically significant ($p < 0.05$) 32.8% effect size (standardized beta = 0.328) between the customer experience and customer satisfaction in relation to system usability, customer satisfaction is impacted by it and this relationship is statistically significant ($p = 0.000 < 0.05$). 0.233 unit change in the system usability causes a unit change in the customer satisfaction of students.

Further the effect size of the system usability on customer satisfaction is 18.4 % (standardized beta is = 0.184). Lastly, the system capability has an effect on the customer satisfaction among customers and is statistically significant ($p=0.000<0.05$). The coefficient of 0.103 unit change in the system capability causes a unit change in the customer's satisfaction; further the effect size of the system capability on customer satisfaction is 10.2% (standardized beta is = 0.102).

4.7 Summary of the hypothesis test

Hypothesis	T-Values	Beta	P-Values	Statistics	Results
System_Capability	3.875	.273	.000	P<.05	Supported
Customer_experience	3.384	.240	.001	P<.05	Supported
System_Usability	2.472	.184	.004	P<.05	Supported
a. Dependent Variable: Customer_Satisfaction					

Table 13: Hypothesis Test

4.8 Limitations of Study

Throughout the study, a number of limitations were discovered that might be further improved upon by future researchers, these are as follows:

4.8.1 Limited Time

The study's depth and thoroughness were hindered by time constraints, potentially affecting the quality of the research outcomes.

4.8.2 Mediating factor

This study focuses on the direct relationship between independent variables and dependent variables, excluding other mediating factors that may significantly influence customer satisfaction. Therefore, the research's accuracy and reliability may be impacted by the absence of mediating factors.

4.8.3 Sample size and geographical limitations

This study only confined to customers of Absa bank, at one of the branches in Lusaka representing customers with this bank. Since, the sample size has not met the target for the proposed research the results might not be as robust or representative, as the samples drawn since not enough samples were gathered to accurately represent all Absa's clientele.

4.8.4 Self-report measurement

Respondents' questionnaire responses and other self-report measures have been used as the source of data for this study. As a result of this, when clients are requested to report on themselves independently, issues like method bias and subjective self-evaluation might occasionally surface, which lowers the validity of the results. For example, the client may falsify information or misrepresent their responses to highlight their personality.

4.9 Chapter summary

The study's interpretation and data analysis were covered in this chapter, by firstly providing a brief discussion in the first section on the demographics followed by a discussion of the test of the reliability of the variables measured in this research. Section two then discussed the multiple regression of the customer satisfaction and all the variables that affect it (system capability, customer experience and system usability). The third section of the research involved regression analysis as well as testing the hypotheses, and the next chapter will conclude the research highlight recommendations.

CHAPTER FIVE DISCUSSION OF FINDINGS

5.0 Introduction

The analysis of the gathered data using SPSS and the reporting of the findings were covered in the preceding chapter. This chapter outlines the discussions of the results, the hypothesis, and conclusion in reference to variables influencing the customer satisfaction of customers at Absa bank in Lusaka. The objective of this research was to explore the influence of electronic queue management systems on the customer satisfaction. The study's research questions were as follows when it was carried out:

1. Does the system's capability affect how satisfied the bank's customers are?
2. How does the customer experience while at the bank influence the customer's satisfaction?
3. What impact does the system usability have on the level of customer satisfaction?

5.1 Hypothesis results discussion

5.1.1 Relationship between system capability and customer satisfaction

The correlation analysis revealed a significant positive relationship between system capability and customer satisfaction, confirming the acceptance of the alternative hypothesis:

H1: There is a positive relationship between the system capability and customer satisfaction of customers at the bank.

	Customer_S atisfaction	System_C apability	Customer_ Experience	System_ Usability
Customer_satisfaction	1			
System_Capability	.349	1		
Customer_experience	.351	.387	1	
System_Usability	.479	.415	.358	1

Table 9: Correlation of variables

This is also shown in the hypothesis test table below where system capability had a P value less than 0.05 which shows that this supported the hypothesis.

Hypothesis	T- Values	Beta	P-Values	Statistics	Results
System_Capability	3.875	.273	.000	P<.05	Supported
Customer_experience	3.384	.240	.001	P<.05	Supported
System_Usability	2.472	.184	.004	P<.05	Supported
a. Dependent Variable: Customer_Satisfaction					

Table 13: Hypothesis Test

5.1.2. Relationship between customer experience and customer satisfaction

The results of the correlation analysis demonstrates that there is a highly significant correlation between the customer experience and customer satisfaction.

	Customer_Satisfaction	System_Capability	Customer_Experience	System_Usability
Customer_satisfaction	1			
System_Capability	.349	1		
Customer_experience	.351	.387	1	
System_Usability	.479	.415	.358	1

Table 9: Correlation of variables

In addition, this independent variable had a P value less than 0.05 ($P < 0.05$) and the results showed that the hypothesis was supported

Hypothesis	T-Values	Beta	P-Values	Statistics	Results
System_Capability	3.875	.273	.000	$P < .05$	Supported
Customer_experience	3.384	.240	.001	$P < .05$	Supported
System_Usability	2.472	.184	.004	$P < .05$	Supported

a. Dependent Variable: Customer_Satisfaction

Table 13: Hypothesis Test

As a result, the alternative theory was approved:

H2: There is a positive relationship between good customer experience and customer satisfaction

5.1.3 Relationship between system usability and customer satisfaction

The results from the correlation analysis as shown in the table below indicate that the system capability and customer satisfaction are positively correlated.

	Customer_S atisfaction	System_C apability	Customer_ Experience	System_ Usability
Customer_satisfaction	1			
System_Capability	.349	1		
Customer_experience	.351	.387	1	
System_Usability	.479	.415	.358	1

Table 9: Correlation of variables

Hypothesis	T-Values	Beta	P-Values	Statistics	Results
System_Capability	3.875	.273	.000	P<.05	Supported
Customer_experience	3.384	.240	.001	P<.05	Supported
System_Usability	2.472	.184	.004	P<.05	Supported
a. Dependent Variable: Customer_Satisfaction					

Table 13: Hypothesis Test

This independent variable of system usability tested against the dependent variable customer satisfaction had a P value less than 0.05 ($P < 0.05$) and the results showed that the hypothesis was supported. As a result, the alternative hypothesis that follows was approved:

H3: The system usability positively affects the customer satisfaction

5.2 General discussion of the findings

The results indicate that a significant number of the respondents were satisfied with the amount of time they spent waiting for services and that the EQM system made the waiting process better as compared to normal manual queue management systems. This study also discovered that customers were generally satisfied with the customer experience at the bank especially with the installed electronic queue management system.

As shown in the table below, among the other two independent variables it was revealed that customer experience significantly impacts customer satisfaction the most, with a unit change of 0.385 in customer experience causing a change in satisfaction.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.413	.276		4.853	.000
	System_Capability	.282	.073	.273	3.875	.000
	Customer_experience	.252	.073	.240	3.384	.001
2	(Constant)	.523	.329		1.591	.103
	System_Capability	.103	.073	.102	1.427	.032
	Customer_experience	.385	.085	.328	4.466	.000
	System_Usability	.233	.084	.184	2.472	.004

a. Dependent Variable: Customer_Satisfaction

Table 12: Coefficients

Furthermore, majority of the respondents as observed in the previous chapter are appreciative with how the installed electronic queue management system in the bank functions and manages the queues, therefore are satisfied. All the three independent variables rooted from the electronic queue management system observed in the study (system capability, customer experience and system usability) were all measured against the dependent variable (customer satisfaction) to determine the connection between these two groups of variables. Therefore, it can be concluded that the research questions have all been answered and that the electronic queue management system does influence the level of satisfaction of customers.

5.3 Chapter summary

The study's findings were briefly discussed in this chapter, providing the different aspects and conclusions of the hypothesis and the results concluded from the previous chapter. The chapter also looks at the study's objectives in reference to the variables influencing the customer satisfaction of customers at Absa bank in Lusaka. The next final chapter will conclude the research by providing a conclusion of the study and thereby providing the recommendations that could help future researchers as well as the different banks and institutions.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

The previous chapter presented the data analysis and interpretation section chapter serves to summarize the findings of the study presented in the previous chapter. In addition to that, the chapter provides a conclusion of the study and finally give the recommendations as well as a direction that future studies can focus on.

6.1 Summary of findings

The results and findings of this study demonstrate that the independent variables rooted from the electronic queue management system have an impact of the levels of the customer's satisfaction. It also shows that a noteworthy portion of the banking customers who have used electronic queue management system at the bank are satisfied with the options and features offered by it, Majority agree to the system being capable of processing customer requests in an orderly manner as well as the system being user friendly and easy to use which in turn enhances their customer experience at the bank.

As mentioned in chapter four, a statistical method known as the correlation analysis was used in this study to determine the relationship between the sets of variables, providing direction and the existing relationship between these variables. The findings from the table reveals a strong positive Pearson correlation between system usability, customer experience, and system capability against customer satisfaction, with a moderate positive correlation of 0.351 and 0.349 respectively.

6.2 Recommendations

This section recommends ways and methods that may be considered and implemented alongside the electronic queue management systems by Absa bank, to further work towards reducing queues and congestion in the bank as well as enhancing customer satisfaction.

6.2.1 Provision of comfortable waiting areas also enlarge

Usually, long queues can lead to boredom and frustration which eventually leads to customer dissatisfaction; therefore, the bank can tackle this by making customers feel more comfortable while they wait by making them unaware of the waiting time. Various methods can be employed to enhance the experience, including air conditioning, comfortable seating, electronic entertainment, and displaying magazines or newspapers in the waiting area and waiting table. Similarly, the bank should ensure that the waiting rooms are spacious enlarge to cater for busy days during the month and peak hours.

6.2.2. Training staff to optimize service rate

Enhancing the service rate can assist in lowering the number of customers waiting in queue. This may be accomplished by putting in place effective scheduling, simplifying procedures, and training employees to handle more transactions per minute and to gain to enhance customer service skills. This will be both beneficial to the customer and the productivity of the bank. In addition to the training the bank can install faster technological systems for the staff as well which will allow the staff to work better and faster.

6.2.3 Increasing the number of bank branches

Increasing the number of bank branches can assist handle a higher volume of clients and shorten wait times by giving different customers from different locations a variety a bank closest to them.

6.2.4. Increasing the number of counters

This recommendation was one of the most suggested remarks from our respondents, as most of the customers feel that there is a need for increase in the staff attending to customers as well as the increase in counters or service points to accommodate more customers and reduce waiting time. Moreover, if the bank cannot move staff to work permanently at that department, a suggestion would be to include optimizing staff scheduling temporarily transferring them especially during peak hours and at the end of the month. Introducing self-service options or digital solutions to allow customers to perform routine transactions independently, reducing the need for queuing.

6.2.5 Encourage the use of online banking services to customers

In addition to investing in more self-service banking choices like ATMs and mobile banking, the bank can encourage its customers to use the already available online services, its benefits and convenience, such as digital payment solutions and other products available on the bank's app. By implementing these techniques, banks may reduce queues, raise client satisfaction, and improve their internal workload.

6.2.6 Let customers know the length of time to wait

Customers are less likely to incorrectly estimate their wait time and more willing to bear the delay when they are aware of how long they should anticipate to wait.

As a result, the bank should designate employees to check on the clients who are already in the waiting room, find out what kind of support they require, and provide them advice on how to proceed and how long it will take to receive assistance. In addition, changeover between the two discipline modes while they are waiting for service in situations when the bank prefers First Come First Serve (FCFC) and at times changes to the priority mode queue discipline. This will lessen inconvenience and unnecessary verbal arguments between clients and bank employees as well as between customers themselves. Customers' anxiety will also be reduced if they are informed about how long they should anticipate spending at the bank

6.2.7. Constant upgrades of the electronic queuing system

The bank should be committed to upgrading their electronic queue management systems from time to time to address the changing business trends. This means constant system enhancement for increased customer value.

6.3 Recommendations for Further Research

This research was specifically designed to study and explore the influence of electronic queue management system on customer satisfaction at Absa bank, Lusaka. It is suggested that more studies be conducted at various banks throughout the country to further research the topic of the impact of electronic queue management on customer satisfaction. Additionally, the study might include additional establishments, such as government institutions which do not have the EQM system and both public and private institutions can benefit.

6.4 Conclusion

Despite a number of limitations, the study clearly showed that customers at the Absa bank, Lusaka were highly appreciative of the system and majority had a good customer experience waiting. All the three components (customer waiting environment, system capability and system usability) was identified as a measure of the effectiveness of queue management in relation to customer satisfaction. All in all, this research uncovered that indeed the adoption of good, well-functioning and user-friendly electronic queue management systems do positively influence the customers' satisfaction. Lastly, further in-depth study on this is imperative for other scholars to do as the problem of long queues and congestion negatively affects customer satisfaction which is a vital issue to the society and institutions. Moreover, if not managed properly this problem is ultimately a hindrance to the performance and productivity of the institutions thus affecting the country's economic development in the long run.

References

- Abdulle, F. A., 2021. *Evaluation of the impact of electronic queue management systems on customer service in Hospital in Kenya: A case study of Premier Hospital, Mombasa, Kenya*, and s.l.: United States International University.
- Afolalu, A. S., Babaremu, K. O., Ongbali, S. & Abioye, A., 2019. Overview Impact of Application of Queuing Theory Model on Productivity Performance in a Banking Sector. *Journal of Physics Conference Series*.
- Al-Jumaili, A. A. S. A.-J. & AL-Jobori, H. K., 2011. Automatic Queuing Model for Banking Applications. *International Journal of Advanced Computer Science and Applications*, 2(7).
- Alman, D., 2012. *Organizational Productivity*, s.l.: issue.
- Alnowibet, K. A., Alrasheedi, A. F. & Alqahtani, F. S., 2022. Queuing Models finalizing the Steady-State Distribution of Stochastic Inventory Systems with Random Lead Time and Impatient Customers. *MDPI Journals*, 10(4).
- Alotaibi, Y. & Liu. F., 2013. System of queues for various client classifications. *International Journal of Business Information Systems s*, 13(4).
- Amprital, K. & Williamjeet, S., 2017. Analysis of queuing to customers management in Banking System using simulation. *International Journal of Advance Research in Science and Engineering* , pp. 1041-1049.
- Arai, K., Kapoor, S. & Bhatia, R., 2020. *Proceedings of the Future Technologies Conference (FTC) 2020*. 1 ed. s.l.: Springer International Publishing.
- Augustine, A. N., 2013. Queuing Model as a Technique of Queue Solution in Nigeria Banking Industry. *International Institute for Science, Technology and Education (IISTE): E-Journals*, 3(8), pp. 188-190.
- Austria, L., 2016. Queue Management Practices of Quick Service Restaurants (QSR) in Lipa. *Asia Pacific Journal of Multidisciplinary Research*, 3(5), pp. 87-95.
- Barney, N., Mixon, E. & Torode, C., 2023. *Customer experience (CX)*, s.l.: Tech Target.

Belas, J. & Gabcova, L., 2016. The relationship among customer satisfaction, loyalty and financial performance of commercial banks. *Ekonomie a Management*, 19(1), pp. 132-147.

Bhandari, P., 2020. *Population vs. Sample | Definitions, Differences & Examples*, s.l.: Scribbr.

Bishop, S., Okagbue, H., Oguntunde, P. E. & Odetunmbi, O. A., 2018. Survey dataset on analysis of queues in some selected banks in Ogun State, Nigeria. *Data in Brief*, pp. 835-841.

Bordeaux, J., 2021. *What Is Customer Experience? (And Why It's So Important)*, s.l.: Service Hub.

Britannica, 2023. *Technology*. [Online]

Available at: <https://www.britannica.com/technology/technology>

[Accessed 11 June 2023].

Bronson, G. J., 1996. *Algorithm Development and Program Design Using C*. Minneapolis: West Publishing Company.

Burger, A. & Moormann, J., 2009. Productivity in banks: myths & truths of the cost income ratio. *Banks and Bank Systems*, 3(4).

Burodo, M. S., Mikayla, I. & Yusuf, G., 2021. An Empirical Analysis of the Queuing Theory and its Application to Customer Satisfaction in a Small and Medium Enterprises (SMEs): A Study of Danjalele Enterprise, Funtua, Kastina state. *International Journal of Novel Research in Healthcare and Nursing*, 8(3), pp. 89-99.

Chibesa Kunda, M., 2021. *Zambia National Commercial Bank: Digitization for Growth*, Lusaka: Zambia National Commercial Bank (Zanaco) PLC.

Chikh, A. E. K. M. E., 2009. *Operations research*. 2nd ed. Cairo: Arabic group for training and publishing.

Chilufya, K., 2022. Customer Service Quality in The Banking Industry. A Case Study of Zanaco-Ndola. *Texila International Journal of Management*, pp. 1-14.

Chishala, F., 2021. *Public Relations Function: Case of Employee -Customer Communications at Zambia National Commercial Bank*, Lusaka: Research gate.

- Christie Martin Stuart, 1995. *Queue management systems*, s.l.: s.n.
- Cooper, D. R. & Schindler, P. S., 2006. *Business Research Methods*. 9th ed. s.l.: McGraw-Hill.
- Darlingtona, O. A. & Obinwanne, E. E., 2015. On application of queuing models to customers management in banking system. *American Research Journal of Bio Sciences*, 1(2), pp. 14-15.
- Davidson, 2016. Front Desk Customer Service for Queue Management System. *Corporate ownership & control*, 3(3), pp. 88-95.
- Dearing, J. W., 2009. *Applying Diffusion of Innovation Theory to Intervention Development*, s.l.: PMC PubMed Central.
- Desta, A. Z. & Belete, T. H., 2019. The Influence of Waiting Lines Management on Customer Satisfaction in Commercial Bank of Ethiopia. *Financial Markets, Institutions and Risks*, 3(3), pp. 5-11. Development aid, 2021. *Absa Bank Zambia Plc (Former Barclays Bank)*. [Online]
Available at: <https://www.developmentaid.org/organizations/view/229481/barclays-bank-zambia>
[Accessed 4 January 2024].
- Diazz, J., 2023. *How do you define and differentiate customer experience from customer service and customer satisfaction?* [Online]
Available at: <https://www.linkedin.com/advice/0/how-do-you-define-differentiate-customer-experience>
[Accessed 25 November 2023].
- Downing, D., Clark, J. & Friedlob, G. T., 1988. *Quantitative Methods*. California: Barrons.
- Firmansyah, F. & Saputra, A. C., 2021. Effect of the Implementation of Queue System on Customer Satisfaction. 4(1).
- Gabriel , A. M., 2011. *Queuing Theory: a model for Improving Customer Satisfaction in The Nigerian Banking Industry*, s.l.: University of Benin.
- Ganguly, S. & Prasanna, U., 2023. *Long queues form in front of RBI from 4am to deposit Rs 2,000 notes*, Kolkata: The times of India.
- Garcia, J. G., Castaño, E. P., Garcia, J. S. & García, M. G., 2022. Bibliometric analysis of the customer experience literature. *Economic Research*, 36(2).
- Gimblett, B. K., 2006. *What Is Research Design? The Context of Design*. New York: New York University.
- Gobat, J., 2012. What is a Bank? *International Monetary Fund*, 49(1).

Habbache, F. & Maiza, A. M., 2021. Queue management system (QMS) as a recent trend in improving service's quality. *Economic Researcher Review*, 9(1), pp. 66-81.

Hair, J. F., Money, A. H., Babin, B. & Samouel, P., 2003. *Essentials of Business Research Methods*. New York: Wiley.

Hattabou, A., 2005. *Diffusion of Innovations Theory*, s.l.: Academia.

Henry, D. O. & Njagi, D., 2023. Automated queue management systems on service delivery in public hospitals in Kenya during the COVID-19 era: A meta-analysis. *International Journal of Research in Education Humanities and Commerce*, 4(4).

Hillier, W., 2022. *What Is Secondary Data? A Complete Guide*. [Online]

Available at: [https://careerfoundry.com/en/blog/data-analytics/what-is-secondary-data/#:~:text=Secondary%20data%20\(also%20known%20as,that%20help%20solve%20business%20problems.](https://careerfoundry.com/en/blog/data-analytics/what-is-secondary-data/#:~:text=Secondary%20data%20(also%20known%20as,that%20help%20solve%20business%20problems.)

[Accessed 6 December 2023].

Hill, N., Roche, G. & Allen, R., 2007. *Customer Satisfaction: The customer experience through the customer's eyes*. London: Cogent Publishing.

Hussain, Z. et al., 2017. E-Banking challenges in Pakistan: An Empirical Study. *Journal of Computing and Communications*, Volume 5, pp. 1-6.

IMD, 2021. *Reimagining banking with Africana city*, Lausanne: International Institute for management development.

IMD, 2023. *Absa and IMD celebrate powerful partnership linking the African banking giant's purpose with performance*, Johannesburg: IMD.

Indeed, Editorial Team, 2023. *The Banking Industry: Definition, Trends and Key Terms*. [Online]

Available at: <https://www.indeed.com/career-advice/career-development/banking-industry>

[Accessed 1 December 2023].

Inside Retail Asia , 2018. *Retailers lose US\$2.35 billion as queues deter Hong Kong shoppers*.

[Online]

Available at: <https://insideretail.asia/2018/12/06/retailers-lose-us2-35-billion-as-queues-deter-hong-kong-shoppers/>

[Accessed 22 February 2024].

International Trade Administration, 2022. *Zambia - Trade Financing*. [Online]
Available at: [https://www.trade.gov/country-commercial-guides/zambia-trade-financing#:~:text=Banking%20Systems,U.S.\)%20banks%20or%20financial%20institutions](https://www.trade.gov/country-commercial-guides/zambia-trade-financing#:~:text=Banking%20Systems,U.S.)%20banks%20or%20financial%20institutions).
[Accessed 1 December 2023].

Isarsoft team, 2023. *Smart Queue Management - the Definitive Guide*. [Online]
Available at: <https://www.isarsoft.com/article/smart-queue-management-the-definitive-guide>
[Accessed 15 March 2024].

Joe, A., 2023. *How to enhance your customers waiting experience*, s.l.: Market Business News.
Johnston, R. & Kong, X., 2011. The Customer Experience: A Road Map for Improvement. *Managing Service Quality*, 21(1), pp. 5-24.

Joshi, R., 2018. *Assessment of customer service strategies on customer retention in local commercial banks: a case study of investment bank Plc*, Lusaka: UNZAZOU.

Kabamba, A. M., 2019. *Modeling and analysis of queuing systems in banks: (A case study of Banque Commerciale du Congo -BCDC/Mbujimayi)*, Mbujimayi: Munich Personal RePEc Archive.

Kasa, R., 2023. *Corporate Banking*. [Online]
Available at: <https://razorpay.com/blog/business-banking/what-is-corporate-banking/>
[Accessed 8 November 2023].

Kaswan, A., 2023. *Types of Queues*. [Online]
Available at: <https://www.baeldung.com/cs/types-of-queues> [Accessed 9 December 2023].

Kazeem, B. L., 2021. The effect of agency banking services on customers' satisfaction in Nigeria. *Journal of Management Sciences*, 4(3), pp. 206-209.

Khawle, A., Taware, S. & Kulkani, N., 2017. Smart Queue Management for Banks using IoT. *International Journal for Scientific Research and Development*, 5(3), pp. 1271-1274.

Kiplagat, J., Kamaku, D. P. W. & Paul, D. S. N., 2020. Influence of automated queue management system optimization on performance of National Cement Company. *International Academic Journal of Information Systems and Technology*, 2(1), pp. 221-224.

Klimenko, A., 2023. *Digital Transformation in Banking and Financial Services*. [Online]

Available at: <https://maddevs.io/blog/digital-transformation-in-banking-and-financial-services/>
[Accessed 4 December 2023].

Kondapalli, P. K., 2023. *Importance of Banking in Economic Development*. [Online]

Available at: <https://www.linkedin.com/pulse/importance-banking-economic-development-pradeep-kumar-kondapalli/>

[Accessed 29 November 2023].

Kotler, P. & Armstrong, G. M., 2017. Principles of Marketing. *Assumption Journal*, 29(1).

Kumar, A. & Lata, S., 2021. The System Quality and Customer Satisfaction with Website Quality as Mediator in Online Purchasing: A Developing Country Perspectives. *Journal of operations and strategic planning*, 4(1).

Kumar, R., 2020. Queuing System. In: *Modeling and Simulation Concepts*. s.l.: Laxmi Publications Private Limited, pp. 1-31.

Kumbar, S., 2017. *What is technology adoption life cycle and chasm?* [Online]

Available at: <https://medium.com/@shivayogiks/what-is-technology-adoption-life-cycle-and-chasm-e07084e7991f#:~:text=The%20technology%20adoption%20life%20cycle,characteristics%20of%20defined%20adopter%20groups.>

[Accessed 24 November 2023].

Lai, P., 2017. The literature review of technology adoption models and theories for the novelty technology. *Journal of Information Systems and Technology Management*, 14(1), pp. 21-38.

Lemon, K. N. & Verhoef, P. C., 2016. Understanding Customer Experience throughout the Customer Journey. *Journals of marketing*, 80(6).

Liu, E. X., 2021. *Stay Competitive in the Digital Age: The Future of Banks*, s.l.: IMF Working Papers.

Lungu, M. J., 2020. *An assessment of the effectiveness of Bank Queuing System (BQS) Management on customer satisfaction: a case study of Zambia National Commercial Bank Plc-Kitwe Industrial Branch*, s.l.: Zambian Catholic University.

- Maimbo, S. M. & Mavrotas, G., 2004. Savings mobilization in Zambia: the role of financial sector reforms. *Giordano Dell-Amore Foundation*, 28(4), pp. 415-445.
- Makumbiro, J. K., 2020. *An evaluation of the efficiency of queuing management systems: case study of Barclays Bank Zambia Plc*, s.l.: Cavendish University.
- Malabuyoc, F. L. S., Sy, M... A. P. C., Sobrevilla, M. D. M. & Estember, R. D., 2021. *A Queuing Theory Approach to Improve Service Quality of Banking Systems: A Case Study of a Bank in Laguna, Philippines*. Monterrey, International Conference on Industrial Engineering and Operations Management.
- Malik, N. & Belwal, O. K., 2016. Application of queuing theory to patient satisfaction at combined Hospital Srinagar Garhwal Uttarakhand. *International Journal of Science and Research*, 5(4), pp. 1621- 1624.
- Marikyan, D. & Papagiannidis, S., 2023. *Technology Acceptance Model: A*, Newcastle: s.n.
- Matley, J., 1979. *Skills vital to successful managers*. Virginia: McGraw-Hill Publishing Company.
- Matu, C., 2023. *Queue Management in Banks: The Top Trends and Tools to Know*. [Online] Available at: <https://www.coconutsoftware.com/blog/blog-queue-management-banks-guide/> [Accessed 18 May 2024].
- McCombes, S., 2022. *Descriptive Research Design | Definition, Methods & Examples*, and s.l.: Scribbr.
- McKinsey, C. &., 2022. *What is CX?* [Online] Available at: <https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-cx#/auth-download/%2F~%2Fmedia%2Fmckinsey%2Ffeatured%20insights%2Fmckinsey%20explainers%2Fwhat%20is%20cx%2Fwhat%20is%20cx.pdf%3FshouldIndex%3Dfalse> [Accessed 23 December 2023].
- McLellan, S., Muddimer, A. & Peres, S. C., 2023. The effect of experience on system usability scale ratings. *Journal of user experience*, 7(2), pp. 56-67.
- Miguel, P. M. d., Heredero, C. D.-P., Montes, J. L. & Garcia, A., 2022. Impact of Dynamic Capabilities on Customer Satisfaction through Digital Transformation in the Automotive Sector. *Sustainability*, 14(8).
- Miles, M. B. & Huberman, M., 1994. *Qualitative data analysis: An expanded sourcebook*. 2nd ed. Thousand Oaks: Sage Publications.
- Mitchell, J., 2019. *Zambian banks rethink traditional route to growth*, s.l.: The Banker.

Mithare, D. Y., 2023. *Business Administration (Production & Operation Management)*. s.l.: Sharp Publications.

Monteclaro, A. J., 2023. *What Is a Server? | Definition, Types, and Features*, s.l.: Server watch.

Muyendekwa, S., 2022. Customer service impact on Banks: a case study of united bank of Africa Zambia. *Global Scientific Journals*, 10(4), pp. 1-4.

Nkrumah, R., 2014. *Analysis of service queues in Ghanaian banking halls :The costs and customers' switch behaviour*, s.l.: Academia .

Nobar, H. B. K. & Tostamzadeh, R., 2018. The impact of customer satisfaction, customer experience and customer loyalty on brand power: empirical evidence from hotel industry. *Journal of Business Economics and Management*, 19(2), pp. 417-430.

Nugroho, M. A., Jusoh, R. & Salleh, N. A. M., 2020. The Role of Alignment between IS Strategy and Social Capital on the IS Capability and Business Performance Relationship: A Cross-Sectional Survey. *IEEE Access*, Volume 8, pp. 152760-152771.

Nyantakyi, E. B. & Sy, M., 2015. The Banking System in Africa: *Africa Economic Brief*, 6(5), pp. 1-16.

Nzama, M. E., 2014. *Internal Lean diffusion on streamlined-service operations: ABSA Bank* , s.l.: University of Kwazulu -Natal.

Ochieng, J. & Kegoro, H., 2021. Automated queuing system on performance of selected state-owned commercial entities in Kenya: A conceptual paper. *International Journal of Research*, 9(9), pp. 391-405.

Ochuko, M. F., Adeniran, L. M. & Bello, A., 2017. Analysis of effectiveness customers' service satisfaction on Nigeria Banks' profitability: a queuing and regression analysis in Sokoto Metropolis. *International Journal of Transformations in Business Management*, 7(1), pp. 21-36.

Odirichukwu, J. C., Lekara, T. & Odii, J. N., 2014. Banking queue system in Nigeria. *Computing, Information Systems, Development Informatics & Allied Research Journal*, 5(1), pp. 95-97.

Oladejo, M. O., Oluwaseun, Y. S., Shittu, S. A. & Sanni, T., 2021. Why the queuing in the banking environment in the era of electronic banking. *International Scientific Journal about Technologies* , 7(1), pp. 17-25.

- Olayinka, W., 2024. *A comprehensive guide to queue management systems in banks*. [Online] Available at: <https://waitwell.ca/queue-management-systems-in-banks/> [Accessed 14 March 2024].
- Onoja, A. A. & Kembe, M., 2018. The application of queuing theory on patient satisfaction in ante-natal care clinic. *Matter International Journal of Science and Technology*, 6(1), pp. 15-17.
- Palvia, P., 2009. The role of trust in E-Commerce relational exchange: A unified model. *Information and Management*. *Information & Management*, pp. 213-220.
- Pandawa, J. M., 2020. *Absa Bank Zambia Plc*. [Online] Available at: <https://www.linkedin.com/in/joel-musonda-pandawa-88273475/?originalSubdomain=zm> [Accessed 23 December 2023].
- Patil, D. R. & Rane, N. L., 2023. Customer experience and satisfaction: Importance of customer reviews and customer value on buying preference. *International Research Journal of Modernization in Engineering Technology and Science*, 5(3), pp. 3437-3438.
- Pattawi, J., 2016. *Related literature review*, s.l.: Academia.
- Perry, E., 2023. *What is productivity? Definition and ways to improve*. [Online] Available at: <https://www.betterup.com/blog/what-is-productivity> [Accessed 24 November 2023].
- Pozza, I. D., 2014. Customer experiences as drivers of customer satisfaction. *Dan's management & Prospective*, Volume 31, pp. 138-139.
- Pramudhita, A. N., 2017. *Queue model in health facilities information system*. s.l., International Conference on Electrical, Electronics and Information Engineering (ICEEIE).
- QueueBee Team, 2024. *Guide to Queue Management System: All You Need To Know*. [Online] Available at: <https://www.queuebeesolution.com/resources/blog/guide-to-queue-management-system-all-you-need-to-know.php> [Accessed 15 March 2024].
- Queue.it Team, 2023. *Queuing theory: Definition, history & real-life applications & examples*. [Online] Available at: <https://queue-it.com/blog/queuing-theory/> [Accessed 9 December 2023].
- Rahim, R. & Mahmud, R. M., 2020. *Minimize Aggregate Measure of Waiting Times and Queue Lengths in M/M/1 queue*, s.l.: American-Eurasian Network for Scientific Information.

Rane, N. L., Achari, A. & Choudhary, S. P., 2023. Enhancing customer loyalty through quality of service: effective strategies to improve customer satisfaction, experience, relationship, and engagement. *International Research Journal of Modernization in Engineering Technology and Science*, 5(5), pp. 427-452.

Rathod, U., 2016. *Diffusion of Innovations Theory*. [Online]

Available at: <https://www.linkedin.com/pulse/diffusion-innovations-theory-umesh-rathore/>

[Accessed 23 December 2023].

Rogers, E. M., 2003. *Diffusions of Innovations*. 5th Ed. New York: Free Press.

RSI Concepts, 2021. *What are advance components of queue management system?* [Online]

Available at: <https://www.rsiconcepts.com/blog/2021/06/what-are-advance-components-of-queue-management-system/>

[Accessed 8 December 2023].

RSI Concepts , 2021. *Pros and Cons of queue management systems*. [Online]

Available at: <https://www.rsiconcepts.com/blog/2021/07/pros-and-cons-of-queue-management-system/>

[Accessed 15 March 2024].

Sahin, I., 2006. Detailed review of Rogers' diffusion of innovations theory and educational technology - related studies based on Rogers 'Theory. *The Turkish Online Journal of Educational Technology – TOJET*, 5(2).

Santamaria, B., 2019. *Stock issues and long queues cost British retailers 102 billion pounds each year*, s.l.: Fashion Network.

Saunders, M. L. & Thornhill, A., 2003. *Research Methods for Business Students*. s.l. Harlow; Pearsons Education Limited.

SEDCO, 2023. *Absa Bank continues improving customer experience by implementing SEDCO Queue Management System this time in Kenya*. [Online]

Available at: <https://www.sedco.co/en/about-sedco/newsroom/absa-bank-continues-improving-customer-experience-implementing-sedco-queue>

[Accessed 3 January 2024].

Shackel, B., 2009. Usability - Context, framework, definition, design and evaluation. *Interacting with computers*, 21(5), pp. 339-346.

Shanthi, R. & Desti, K., 2015. Customers' Perception on Online Shopping. *Journal of Marketing and Customer Research*, Volume 13, pp. 14-21.

Sharabati, M. M. N., Sulaiman, A. & Salleh, N. A. M., 2015. End User Satisfaction and Individual Performance Assessments in e-Procurement Systems. *International Journal of Computer Theory and Engineering*, 7(6), pp. 1793-8201.

Simpasa, A. M., 2013. *Competition and Market Structure in the Zambian Banking Sector*, s.l.: African Development Bank Group.

Singer, L., 2022. *Diffusion of Innovation Theory*, s.l.: Boston University School of Public Health.

Singh, O., Aggrawal, D., Anand, A. & Agarwal, M., 2018. Queuing theory-based innovation diffusion modelling incorporating change in adoption rate. *International Journal of Mathematics in Operational Research*, 12(1), pp. 102-103.

Sirisilla, S., 2023. *Bridging the Gap: Overcome these 7 flaws in descriptive research design*, s.l.: Enago Academy

Skiplino team, 2023. *Queue management systems :A step by step guide*. [Online] Available at: <https://www.skiplino.com/queue-management-systems-a-step-by-step-guide-skiplino/> [Accessed 15 March 2024].

Stephen, M. O., Okolie, S. O. & Adio, A. K., 2013. Queue Management Systems for Congestion Control: Case study of First Bank, Nigeria. *IJASCSE International Journal of Computer Science & Engineering*, 2(5),

pp. 54-58.

Suha, A. G., 2015. *Crowd Control Management Solving Queue problems in Banking Industry*. [Online] Available at: <https://www.linkedin.com/pulse/crowd-control-management-solving-queue-problems-suha-abu-ghosh/>

[Accessed 10 December 2023].

Taherdoost, H., Sahibuddin, S. & Jalaliyoon, N., 2022. *Exploratory Factor Analysis; Concepts and Theory*, s.l.: Malaysia-Japan International Institute of Technology (MJIT).

Team JRNI, 2020. *What is a queuing system? Advantages of queue management*. [Online]

Available at: <https://www.jrni.com/blog/advantages-of-queuing-system>

[Accessed 8 December 2023].

The Guardian reporter, 2022. *Absa scoops four consumer choice awards 2022*, Dar es Salaam: IPP media.

Thomopoulos, N. T., 2012. *Fundamentals of Queuing Systems: Statistical Methods for Analyzing Queuing Models*. Chicago: Springer.

To, Y. & Mandracchia, J., 2019. *Learn About Hierarchical Linear Regression in SPSS With Data from Prison Inmates*. s.l. SAGE Publications, Ltd.

Tsai, H.-T., Chien, J. L. & Tsai, M. T.-., 2014. The influences of system usability and user satisfaction on continued Internet banking services usage intention: empirical evidence from Taiwan. *Electronic Commerce research*, Volume 14, pp. 137-169.

Tsernov, K., 2023. *What is queue management? The definitive guide to queuing systems*. [Online]

Available at: <https://www.qminder.com/blog/queue-management/what-is-queue-management-systems/>

[Accessed 11 November 2023].

Uddin, M. N. et al., 2016. Automated Queue Management System. *Global Journal of Management and Business Research: Administration and Management*, 16(1).

Wavetec, 2019. *Understanding the Electronic Queue Management System*. [Online]

Available at: www.wavetec.com [Accessed

14 December 2023].

Wavetec, 2023. *Ultimate Guide to Queue Management Systems in Banks*. [Online]

Available at: <https://www.wavetec.com/blog/banking/queue-management-for-your-bank-branch-a-must-or-a>

[must/#:~:text=Research%20said%20that%2073%25%20of,customers%20with%20self%2Dservice%20options.](https://www.wavetec.com/blog/banking/queue-management-for-your-bank-branch-a-must-or-a-must/#:~:text=Research%20said%20that%2073%25%20of,customers%20with%20self%2Dservice%20options.)

[Accessed 1 December 2023].

Xie, C., Jin, J. & Guo, X., 2022. Impact of the critical factors of customer experience on well-being: Joy and customer satisfaction as mediators. *Frontiers Psychology*, Volume 13.

Yifter, T., Mengstenew, M., Yoseph, S. & Moges, W., 2023. Modeling and simulation of queuing system to improve service quality at commercial bank of Ethiopia. *Cogent Engineering*, 10(2).

Zambia Development Agency, 2021. *Press Release – ZDA ABSA Bank Zambia Plc Sign MoU to Help MSMEs Access Affordable Financial Services*. [Online]

Available at: <https://www.zda.org.zm/press-release-zda-absa-bank-zambia-plc-sign-mou-to-help-msmes-access-affordable-financial-services/>

[Accessed 9 January 2024].

Zambia National Commercial Bank, 2022. *Integrated Report*, Lusaka: Zambia National Commercial Bank.

APPENDICES

Appendix 1: Questionnaire



UNIVERSITY
of
LUSAKA

SCHOOL OF POSTGRADUATE STUDIES

Dear valued respondent,

My name is Kabamba Chimfutumba, I am a postgraduate student at University of Lusaka pursuing a Masters of Business Administration. I am currently undertaking research and as part of my data collection, I am conducting a survey regarding customers views towards the influence of Electronic Queue Management Systems on customer satisfaction at Absa Bank, Lusaka. I am kindly requesting for a few minutes of your time to fill out the attached questionnaire, which forms a comprehensive part of my research.

Through your participation, I hope to understand your opinion, as the results of the survey are intended to contribute to improve the problem of unbearable long queues and congestion faced by most customers in banks. Confidentiality and anonymity of records or identifying you as a participant will be maintained by us and the data collected will only be used purely for academic purposes as mentioned above.

Thank you for your participation, your responses are of utmost significance in my quest of data collection and I hope you will take the time to complete this survey.

Sincerely

Kabamba Chimfutumba

Phone: +260974867344

Email: kchimfutumba@gmail.com

Questionnaire No:...

Instructions:

- 1) There are **TWO** (2) sections in this questionnaire. Please answer ALL questions in ALL sections.
- 2) Completion of this form will take you approximately 5 to 10 minutes.

Section A: Demographic Profile

Please indicate (/) in the appropriate information about yourself. Each question should only have ONE answer. All responses are strictly confidential.

1. Gender:

- Male Female

2. Age:

- 18 -25 26-35 35-45 46-55 56 and above

3. Which category do you fall in?

- Student Employed Unemployed

Section B: Independent and Dependent Variables

Please indicate the extent to which you agree to the following statements (1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree and 5=Strongly Agree)



No.	CUSTOMER SATISFACTION	SD 1	D 2	N 3	A 4	SA 5
1	I am satisfied with the services provided by the electronic queue management system					
2	I am very pleased with using the electronic queue management system installed at the bank because it creates value added services for customers					
3	My interaction with the electronic queue management system was very satisfying.					
4	All things considered; I am very satisfied with the electronic queue management system installed at Absa bank.					
No.	SYSTEM CAPABILITY	SD 1	D 2	N 3	A 4	SA 5
1	I find the electronic queue management system capable of processing customer requests in an orderly manner.					
2	The electronic queue management system is capable of ensuring that the right services are delivered to the bank customers.					
3	The electronic queue management system has a capability to operate various features in a well-structured manner					
4	The electronic queue management system is capable of making adjustments to the information provided depending on the customer's service request.					
5	The electronic queue management system is capable of ensuring timely delivery of customer service requests and					

No.	CUSTOMER EXPERIENCE	SD 1	D 2	N 3	A 4	SA 5
1	I am pleased with the quality of customer experience provided by Absa bank.					
2	The customer service personnel at the bank are highly knowledgeable and helpful.					
3	The electronic queue management system at the bank ensures efficient and orderly management of queues, providing a positive experience for customers					
4	The bank provides an excellent physical experience					
5	Generally, I had a good customer experience at the bank, particularly with the installed electronic queue management system.					
No.	SYSTEM USABILITY	SD 1	D 2	N 3	A 4	SA 5
1	The electronic queue management system allows easy navigation through the process.					
2	The electronic queue management system is available for use at all times.					
3	I find it easy to place an order on the electronic queue management system.					
4	The electronic queue management system is flexible to interact with					
5	The electronic queue management system was user friendly					

Appendix 2: Similarity report

DISSERTATION

ORIGINALITY REPORT

19%

SIMILARITY INDEX

15%

INTERNET SOURCES

4%

PUBLICATIONS

10%

STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to UNIVERSITY OF LUSAKA Student Paper	4%
2	www.researchgate.net Internet Source	1%
3	Submitted to Copperbelt University Student Paper	1%
4	www.asjp.cerist.dz Internet Source	1%
5	Submitted to Zambia Centre for Accountancy Studies Student Paper	1%
6	ir-library.egerton.ac.ke Internet Source	1%
7	etd.aau.edu.et Internet Source	1%
8	repository.out.ac.tz Internet Source	<1%
9	umispace.umi.ac.ug Internet Source	<1%
