INFORMATION SYSTEM ATTRIBUTES AND PERFORMANCE OF CUSTOMER SERVICE ADVISORS IN CALL CENTERS:

A CASE OF MTN UGANDA

By

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Reg. 13/MBA/10/008

A DISSERTATION SUBMITTED TO THE SCHOOL OF MANAGEMENT SCIENCES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTERS' DEGREE IN BUSINESS ADMINISTRATION OF UGANDA MANAGEMENT INSTITUTE

FEBRUARY, 2018

DECLARATION

I IMMACULATE KANYUNYUZI do hereby declare that this research dissertation work is my original work and affirm that it has never been presented by any other researcher to any university or institution of higher learning for any academic award.

Sign Date

…….. ...……

APPROVAL

This dissertation book written by **Immaculate Kanyunyuzi** under the title "Information System attributes and performance of customer service advisors in call centers: A Case Of MTN Uganda" has been under our supervision and is now ready for submission to the Institute for the award of Masters' Degree in Business Administration of Uganda Management Institute.

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MR. ANACLET MUTIBA

DEDICATION

This book is dedicated to all who have been part of this journey; in one way or another.

ACKNOWLEDGEMENT

It has been an educative period as I undertook research on “Information System attributes and Performance of Customer Service Advisors in call centers: A case of MTN Uganda”; during which time I have had support in many forms from different individuals that I acknowledge here. With a deep appreciation, I thank God whose grace has made it possible for me to undertake this study and persevere in all situations. I also acknowledge the support of my mother and brother whose moral, financial and spiritual support has been of great importance during my entire study period.

In the same spirit, the support of my line managers and employer (MTN Uganda) is immensely appreciated. Their understanding and flexibility by availing me time to prepare for my exams and attend classes made it easier for me to work and study at the same time. My friends and colleagues who have encouraged me, prayed with me and advised me are deeply appreciated for all the support rendered to me and for encouraging me to persevere and work harder at every step of this research study. My research supervisors, Dr. Mary B. Muhenda and Mr, Anaclet Mutiba are acknowledged for the guidance given to me during my research study.

Thank you all.

Immaculate Kanyunyuzi

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ABBREVATIONS AND ACRONYMS

APA	American Psychological Association
CHT	Call Handling Time
CVI	Content Validity Index
FCR	First Call Resolution
IS	Information Systems
IT	Information Technology
MIS	Management Information System
NPS	Net Promoter Score
POS	Point of Sale
SPSS	Special Package for Social Scientists
TPS	Transaction Processing System
TTF	Task-Technology Fit

ABSTRACT

The study aimed at examining the relationship between information systems' attributes and the performance of customer service advisors (also called call center advisors) in call centers at MTN Uganda. Information systems attributes were categorized into functional and non-functional attributes. The specific objectives were to establish the relationship between functional attributes of Information systems and the performance of customer service advisors, and to examine the relationship between non-functional attributes of information systems and performance of customer service advisors in MTN Call Centers. A cross-sectional survey design was used with quantitative and qualitative approaches during this research. Simple random and purposive sampling techniques were employed to select a sample of 92 (82.1%) of the target population. The study registered a response rate of 96.7 % (89 out 92). The researcher used self-administered questionnaires and interview guides to collect data from the respondents. The quantitatively collected data was analyzed using statistical SPSS to produce frequency tables, graphs and charts; whereas the qualitatively collected data was analyzed by categorizing data into themes which enhanced effective interpretation of results. The key findings from the study revealed that a positive significant/strong relationship exists between functional attributes of Information systems and performance of customer service advisors in MTN Call Centers in Uganda. It was also found that a positive significant relationship exists between non-functional attributes of Information systems and performance of customer service advisors in call centers at MTN Uganda. The study recommended that applications should be integrated together into one platform, and more advisors be hired, among others. Future

studies could explain how other factors such as motivation and salaries, among others, can affect the performance of advisors.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

The study examined the relationship which exists between the attributes of information systems and performance of customer service advisors at MTN call centers in Uganda. This chapter includes the background, problem statement and purpose of the study. It also presents the study objectives, research questions, hypotheses, scope, significance, justification and operational definition of terms used in this study.

1.2 Background

This section has four parts which include the historical, theoretical, conceptual and contextual backgrounds.

1.2.1 Historical Background

According to Abugabah et al. (2010), research in information systems has grown to focus on the link between information systems and user performance. This is because experts as well as researchers are strongly interested in obtaining more information about information systems and users' performance. This would be valuable in developing better methods or approaches to using information systems and assessing their effect on organizations and user performance. According to Munirat, Isyaka & Aina (2014), information systems' use had increased in firms, by individuals, as well as by Governments. "The use of information systems was encouraged by technological breakthroughs which included the advancements in telecommunications such as the internet, the globalization that created a global unlimited marketplace, the strong growing need for information economy, and the rise of competitive

digital firms" (Munirat et al., 2006). The above aspects contributed to information systems transforming from simply data processing systems to more advanced roles such as decision support systems. Globally, evidence indicates that the users of technology and systems are more likely to have input during the operationalization stage such as in working practices, tasks, decisions about methods, and tools and techniques.

The development of Information Systems (IS) in Sub-Saharan Africa (SSA) in the 1970s and 1980s was slow, in spite of several efforts to introduce the technology. However since 1990, growth has been phenomenal. In Uganda, there has been an adoption of technology and information systems to provide better service delivery by both the public and private sectors (Tweheyo & Chika, 2016). This has had an impact on companies and human resources in the workforce from restructuring of companies, to mergers, and to focus on new product development and better service delivery (Schuler & Jackson, 2001). According to Oshikoya and Nureldin (2015), the Government has also adjusted to the use of information systems by implementing new systems such as land information systems, health information systems, and tax information systems, to mention but a few. In Uganda, these have contributed to changes in the performance of both the Government and authorities in performing tasks which were mainly done physically and/or manually in the past; such as, tax identification number acquisition and land registration processes (Ssewanyana, 2009). It has also seen worker performance improve in several companies where information systems have been adopted (Tweheyo &Chika, 2016). Over the past years, MTN has adopted the use of more advanced information systems so as to serve customers better. This is evidenced by the introduction of Queue Management Systems in

service centers, Document Management Systems to cater to storing subscriber documents as well as more transaction processing systems to ease query-solving and service activations (MTN Group Reports, 2016).

Today, information systems and organizations impact each other, where information systems need to be aligned with the organization to provide necessary information (Schuler & Jackson, 2001). On the other hand, the organization must be aware of and adjust to the influence of information systems so as to gain from new technologies (Laudon &Laudon, 2002).

1.2.2 Theoretical Background

The theoretical frame work for this study is derived from the Task-Technology Fit (TTF) theory founded by Goodhue and Thompson in 1995. The theory works on the assumption that information technology is more likely to have a positive impact on individual performance and be useful if the capabilities of the information technology match the tasks that the user must perform (Schwalbe, 2015). Goodhue and Thompson (1995) developed a measure of task-technology fit that consists of 8 factors: quality, floatability, authorization, and compatibility, ease of use/training, production timeliness, systems reliability, and relationship with users. Each factor is measured using between two and ten questions with responses on a seven point scale ranging from strongly disagree to strongly agree. Goodhue and Thompson (1995) found the TTF measure, in conjunction with utilization, to be a significant predictor of user reports of improved job performance and effectiveness that was attributable to their use of the system under investigation.

The relevance of this theory to the study is that it is suitable for explaining the specific objectives categorized according to functional and non-functional system attributes. The researcher believed that the research question could be well explained by the Task-Technology Fit (TTF) theory which holds that; information technology is more likely to have a strong impact on individual performance and be useful if the capabilities of information technology match the tasks that the user must perform (Goodhue &Thompson, 1995). In this case therefore, it was used to explain the performance of customer service advisors in relation to MTN call center's information systems' attributes. This is because, according to the market performance report 2014, MTN Uganda Limited customers are unsatisfied with services provided by the customer care advisors. The Task-Technology Fit (TTF) theory was used to inform the study on the relationship between information systems' attributes and performance of customer service advisors at MTN Uganda Limited.

1.2.3 Conceptual Background

Information system attributes were considered as the independent variable whereas performance of customer service advisors was the dependent variable. Information system attributes were measured in form of functional and non-functional attributes while performance of customer service advisors were measured in form of call handling time, net promoter score and resolution rate. According to Mcleod & Forkner (1982), "an information system is a group of interrelated parts or elements designed to achieve a particular goal". Organizations use several technological systems in implementing day to day activities to accomplish tasks and meet objectives. Some of these systems are called information systems; which according to Laudon &Laudon (2002), are technically a "set

of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making, coordination, and control in an organization".

Several types of information systems exist and include Transaction Processing systems (TPS), Management Information systems (MIS), Decision Support Systems, and Expert Systems among others. This study mainly focused on the attributes or characteristics of the transaction processing systems in MTN Uganda's call center as the independent variable; where an attribute (as used for this study) is a quality or feature regarded as a characteristic or inherent part of someone or something. "Transaction processing systems (TPSs) collect, store, modify, and retrieve the transactions of an organization" (Papajorgji et al., 2016). Almeida (2012) defined a transaction as "an event that generates or modifies data that is eventually stored in an information system". According to Laudon & Laudon (2002), examples of transaction processing systems include systems used to sell goods by a point-of-sale (POS), credit card processing, or booking reservations. Transaction processing systems differ from other types of information systems in that they directly support business operations (Laudon & Laudon, 2002).

They must be designed in conjunction with the organization's procedures. According to Al-Mamary et al. (2014), "the transaction data obtained from a TPS is stored in an information system and processed using a range of application software. It usually involves updating a database to reflect changes to the transaction data". "The main information processes of a TPS are collecting and storage. If a TPS is used to record a sale and generate a receipt, the transaction data is collected at the POS terminal and then stored using an online database" (Zandbergen, 2004). When evaluating transaction processing systems, the speed, number of transactions processed at a given time and availability of the systems are

important. Because organisations rely a lot on transaction processing systems, breakdowns interrupt operations.

According to Bernadin et al. (1995), performance is defined as "the outcomes of work because they provide the strongest linkage to the strategic goals of the organization, customer satisfaction and economic contributions". In business dictionary.com, performance is "the accomplishment of a given task measured against preset standards of accuracy, completeness, cost and speed". In this study, customer service advisors' performance (dependent variable) was looked at in terms of call handling time, net promoter score and resolution rate. Measuring performance of customer service advisors encompasses the Net Promoter Score which is the rating on a scale of 1% to 100% that a customer feels an advisor who handled his query deserves in terms of service. Timeliness is measured through call handling time (CHT) of the advisors which is the average time taken by an advisor to handle a single customer's query. If call handling time is high, this indicates poor performance because it implies that a lengthy time is taken to handle a single complaint. Another indicator of performance of customer service advisors in this study was the resolution rate; which according to a paper from the north American quit line consortium (2010), means resolving a customer's query in the first call he makes to the helpline without him having to call back or wait for another later call to have his problem resolved.

1.2.4 Contextual Background

According to Amoako (2014), it is important to study good customer service in the daily operations of an organization. This is becomes more complicated for organizations in the telecommunication industry which have a high rate of economic instability since customers become more complex on a daily basis in the type of products and services sought. MTN Uganda started operating in Uganda in 1998. It has more than 8.9 million customers as at 2015 and is still growing. MTN Uganda Limited provides several services including fixed wireless, and mobile telecommunications services. Its clients include corporate organisations, businesses, and individuals. The company also provides mobile Internet, mobile money transfer, withdrawal, payments, and financial services and mobile phones. It offers its products and services through sales outlets and MTN kiosks (Bloomberg, 2014).

So as to bring services closer to customers and to enhance customer retention and loyalty, initiatives for both business and consumer segments across all customers touch points and channels have been made. MTN Uganda has set up more than fifteen service centers country-wide to cater to its customers' requirements. Despite the initiatives by management to invest in technology so as to improve customer service, MTN Uganda's total subscriber base decreased by 14.1% from 10.4 million to 8.9million in 2014 (MTN report, 2014).

1.3 Statement of the Problem

Organizations such as MTN Uganda continue to invest increasingly in various types of information systems' implementations, such as call center applications. This is primarily because of the belief that these investments will lead to increased productivity for employees and organization (Abugabah & Sanzogni, 2014). MTN Uganda Ltd has for the past 10 years invested in technology and information systems to improve customer care service and performance of employees. It has established more than 15 fully fledged service centers to serve the communication requirements of the company's urban based customers on top of a network of over a hundred thousand points of sale countrywide (MTN report, 2014). However, from the quarterly market performance reports; MTN continues to decline as a preferred telecommunications network as compared to some competitors in the market. This is shown by MTN having lower user share (42% average) than that of Airtel Uganda (49% average) between April 2016 and March 2017 (Market Performance Report Headlines, 2017). Service; with an average contribution of -1% to MTN's average NPS score of 15% (between October 2014 and September 2017), was a major contributor to MTN Uganda's low scores. In these reports were complaints about the challenges customers face when they call into the call centers for assistance. Some of the challenges mentioned include poor or no resolution to their queries, spending a lot of time in the queue before being helped and spending a lot of time on a call to the call centers. As a result, MTN's Net Promoter Score (NPS) which indicates how satisfied a customer is with the brand has continued to decline. (Market Performance reports 2014 – 2017). Relatedly, according to MTN Uganda report 2015, the total subscriber base decreased by

14.1% from 10.4 million to 8.9million. This phenomenon has raised many un-answered questions within the management of MTN Uganda Limited and other key stakeholders.

Some researchers including Hendricks et.al, (2007) have conducted studies on information systems' impact on organization and individual performance and among variables investigated include; strategies, structures, productivity, work design and individual tasks. The study therefore sought to examine the relationship between information systems attributes and the performance of customer service advisors at MTN Uganda Limited. This could help point to whether information systems could be a contributing factor to the poor service indicated in these Market Performance Reports.

1.4 Purpose of the Study

To examine the relationship between information systems attributes and performance of customer service advisors in call centers at MTN Uganda

1.5 Specific Objectives

1. To establish the relationship between functional attributes of Information systems and performance of customer service advisors in call centers at MTN Uganda
2. To examine the relationship between non-functional attributes of information systems and performance of customer service advisors in call centers at MTN Uganda

1.6 Research Questions

1. What is the relationship between functional attributes of Information systems and performance of customer service advisors in call centers at MTN Uganda?
2. What is the relationship between non-functional attributes of Information systems and performance of customer service advisors in call centers at MTN Uganda?

1.7 Hypotheses

1. There is a significant positive relationship between functional attributes of information systems and performance of customer service advisors
2. There is a significant positive relationship between non-functional attributes of information systems and performance of customer service advisors

1.8 Conceptual Framework

Figure 1.1 below illustrates how the researcher conceptualized the variables of the study. It is hypothesized that information Systems Attributes (Functional and Non-functional); which are the independent variable, influence the performance of customer service advisors (dependent variable). This implies that if the management of MTN Uganda Limited improved the functional and non-functional attributes of systems used at the call centers, it is believed that this would in turn improve the call handling time, net promoter score and the First call resolution score.

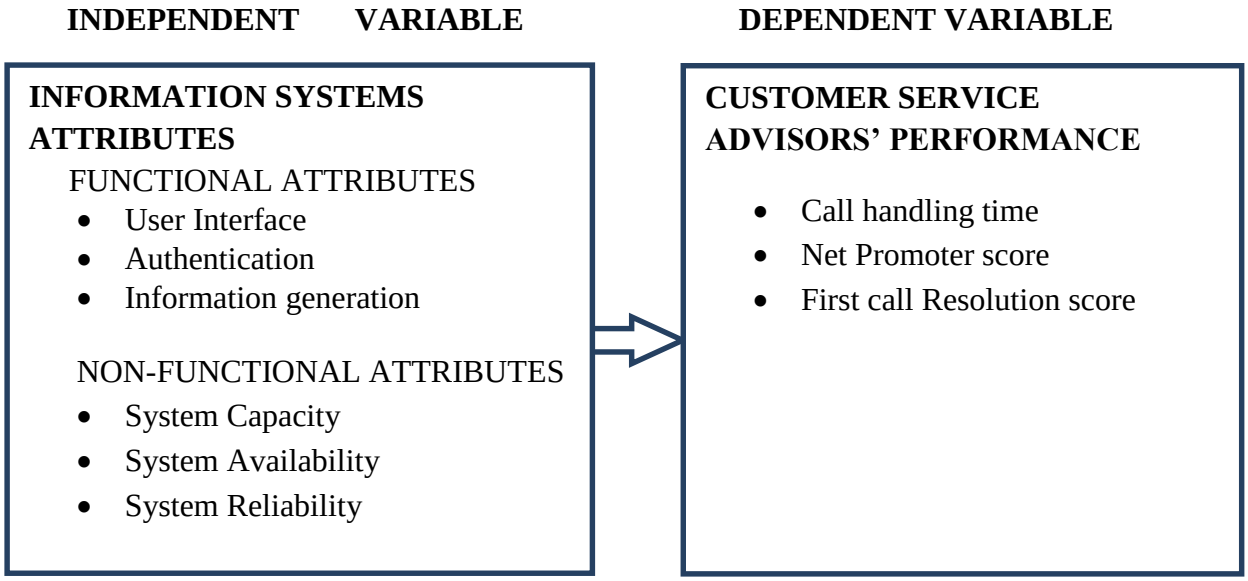


Figure 1.1: A conceptual Framework adapted from Daniel Denison's model (1990).

1.9 Significance of the Study

Findings from the study could inform information systems design and adoption policies in various organizations with Call Centers, including MTN Uganda Ltd, which could aid decision makers in coming up with policies from an informed point of view. The findings could aid managers at MTN Uganda Limited to focus more on developing and

implementing efficient information systems for improved performance of customer service advisors from an informed point of view. The study addresses the challenges of information systems attributes towards achieving improved employee performance. Furthermore, findings from this research will likely benefit different groups of people such as academicians as findings from this study could add new insights to the current pool of knowledge. Research findings may be of use in teaching as well as developing a body of management theory. The study findings are likely to help bridge the existing knowledge gap hence contributing to the academic body of knowledge. The study could also trigger further studies in the field of information systems attributes in call centers and how it impacts on performance of customer service advisors.

1.10 Justification of the Study

Existing research does not offer in-depth explanations of how the performance of customer service advisors in call centers has been influenced by attributes of information systems especially in the telecommunication sector. Furthermore, the low Net Promoter Scores scored by MTN Uganda in quarterly surveys are partly caused by poor service (average -1% score) which is partly provided by MTN Call centers. Despite efforts to invest more in information systems, increase service touch points and improve work processes designed to serve the customer better, Service (which depends on the work and performance of customer service administrators) continues to contribute negatively to MTN Uganda's market scores. This study is intended to make a significant contribution towards generating more knowledge on how the performance of customer service advisors can be improved so as to improve customer care at MTN Uganda. The study was conducted at MTN

Uganda's call center because this is an area that offers direct customer service and is heavily reliant on information systems in order for tasks to be achieved. The study covered the period of January 2014 to December 2017 because this is a period in which service negatively impacted MTN's NPS score and saw many changes and adoptions in information systems at MTN Uganda's call centers.

1.11 Scope of the Study

1.11.1 Content Scope

This research study aimed at understanding the relationship between information systems' attributes and customer service advisors performance at MTN Uganda Ltd call centers. The independent variable were the Information systems Attributes whereas the dependent variable was the performance of customer service advisors. The dimensions the study considered under the independent variable were; functional and non-functional attributes of the system. The dimensions under the dependent variable were; Call handling time, Net Promoter score and first call Resolution score

1.11.2 Geographical Scope

The study was carried out at MTN Uganda's call centers in Kampala. The two call centers are found at Plot 77 on Yusuf Lule Road and at Nyonyi Gardens in Kololo. Kampala Call Centers were chosen because they are the only call centers MTN Uganda has and also house a majority of the customer service advisors who interface with customers on a daily basis and with key decision makers at MTN. They were also easily accessible and therefore the researcher easily collected data for this research with minimal resources.

1.11.3 Time Scope

The study covered the period of January 2014 to December 2017 because this is a period in which customer service negatively impacted MTN's NPS score and saw many changes and adoptions in information systems at MTN Uganda's call centers. This period also saw challenges such as declines in MTN Uganda's overall NPS scores as well as the subscriber base by 14.1% from 10.4 million to 8.9 million subscriber. The researcher felt this period was sufficient to provide information on the relationship between information systems attributes and the performance of customer service advisors in the call centers at MTN Uganda.

1.12 Operational Definitions

Information Systems: "A set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization". (Laudon &Laudon, 2002)

Attributes: features or characteristics regarded as a characteristic or inherent part of someone or something. In this study, attributes will define the functionality of the information system

Functional attributes: these characteristics specify what the system should do in terms of behavior and function.

Non-functional attributes: these characteristics specify criteria that can be used to judge the operation of a system and how it will carry out these functions.

User Interface: this is the means by which the user and a computer system interact to input commands and get an output from the computer system. (Internet source)

Authentication: the process or action of verifying the identity of a user or process. (Internet source)

Information generation: For purposes of this study, this means the speed with which output/information is returned from systems and the quality of output/information returned.

System Capacity: capacity is the complex measurement of the maximum amount of data that may be transferred between network locations over a link or network path (Internet source). For purposes of this study, it will also include the amount of users the system can support optimally.

System availability: is the probability that a system will work as required when required during the period of a mission. (Internet source).

System reliability: is defined as the probability that a device will perform its intended function during a specified period of time under stated conditions.

Performance: "the outcomes of work because they provide the strongest linkage to the strategic goals of the organization, customer satisfaction and economic contributions" (Bernadin et.al, 1995)

Call handling time: the average time taken by an advisor to handle a single customer's query (MTN Call Center reports)

Net Promoter Score: rating on a scale of 1% to 100% that a customer feels an advisor who handled his query deserves in terms of service. (MTN Call Center reports)

First Call Resolution: American quit line consortium (2010), means resolving a customer's query in the first call he makes to the helpline without him having to call back or wait for another later call to have his problem resolved (American quit line consortium, 2010)

Call Centers: An office set up to handle a large volume of telephone calls, especially for taking orders and providing customer service.

Customer service advisor: "An employee responsible for managing client communications through interacting directly with potential, new and existing clients". (MTN Uganda reports, 2004)

CHAPTER TWO

LITERATURE REVIEW

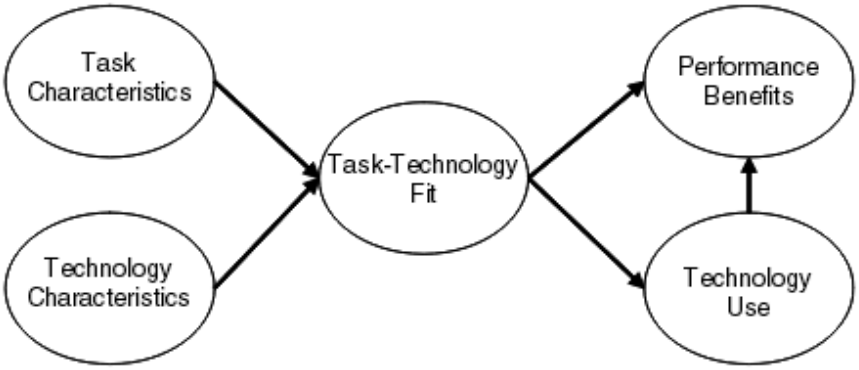
2.1 Introduction

In this chapter, existing literature on how attributes/characteristics of information systems can impact user performance was reviewed. This was done by reading and analyzing existing information on the topic at hand as explained by different theories, scholars, writers and researchers, with both conceptual and theoretical reviews. Sources of information for literature review included published white papers, researches, text books, company annual reports, journals, internal magazines, brochures plus company policies.

2.2 Theoretical review

According to Abugabah in 2009, understanding the connection between information systems and user performance is of great concern in information systems' research studies. However, the Task-technology fit has been viewed as a major paradigm in understanding the effect that information technology has on the performance of individuals as stated by Irick (2008), and the use of the Task-Technology Fit (TTF) theory in the field of information systems has increased overtime as noted by Furneaux (2012). According to Dishaw et al. (2002), this model explains the actual use of a system to its functionality as well as the task characteristics. Founded by Goodhue and Thompson in 1995, the TTF foundational premise is that "outcomes depend upon the degree of fit or alignment between an information system and the tasks that must be performed" (Furneaux, 2012).

Task-Technology Fit Theory: A Survey and Synopsis of the Literature



Goodhue and Thompson (1995)

Figure 2.1: Task-Technology fit model

As seen in the model above, the Task technology fit theory suggests that the characteristics of the task as well as those of the technology used work hand in hand to create a fit which affects the usage of the technology and results in an effect on user performance. The researcher believed that the Task-Technology fit model was relevant to the study because it was useful in providing insights on the relationship between technology characteristics of the information systems used at call centers at MTN and task characteristics of the customer service advisors at MTN Uganda limited. From the study findings it clearly showed that both functional and non-functional attributes had a positive significant relationship with performance of the customer service advisors, which proved the Goodhue and Thompson (1995) assertions that "outcomes depend upon the degree of fit or alignment between an information system and the tasks that must be performed". Therefore, TTF theory was critical in reflecting the impact of task, technology, and information systems attributes on individuals' performance of customer service advisors.

2.3 Functional attributes of information systems and performance of customer service advisors

With several complaints from customers about the poor service obtained from call centers in terms of the long time spent in the queue and a failure to resolve customer queries, several reasons for such poor performance from customer service advisors come to mind. Since call centers heavily rely on information systems for operations, it has been found imperative to review related literature on the impact that system characteristics/attributes could have on customer service advisors' performance and user performance at large.

Functional attributes of an information system are characteristics which show what the system is intended to do. These show the intended behavior of a system and such includes the systems tasks or functions that it has to carry out (Malan & Bredemeyer, 2001). According to Kennedy (2013), functional attributes create a concrete link between what is wanted and what will be created and allows the right technologies to be used.

Regarding the impact functional attributes of information systems have on user performance, it seems that improvements in functional attributes result in improvements in users' performance. Bejjar & Boujelbene (2013) conducted a study to assess users' performance in Tunisian companies basing on a combination of the Task Technology Fit, Technology Acceptance and the Delone & McLean models. Findings from the study indicated that user performance is affected by the systems' quality as well as the quality of information directly. User performance was also affected indirectly by the systems' supposed usefulness and how easy they were to use. Measures such as accuracy, accessibility, correctness and reliability defined system quality

Similarly, in a related study conducted by Abugabah et al. (2009) on how information systems influence user performance, it was revealed that how the system is used, system quality, quality of information used, the systems' usefulness, how easy it is to use, how the task and technology fit, satisfaction of uses, what one intends to use the system for, user characteristics and task characteristics were the most constant factors that possibly influenced users' performance.

In a related effort, AlTaboli & Abou-Zeid (2007) conducted a study on the impact that color, font and locations of a web interface design have on the performance and satisfaction of users. Three physically inconsistent designs of the website were used as independent variables, and a consistent design was used for control. Subjects were instructed to perform a number of common web tasks in the websites whereby time taken to complete tasks as well as the number of errors made were measured as the performance variables. The users' satisfaction levels were documented and findings showed that font and locations significantly affect the number of errors made by users. The locations and colors have a subjectively significant effect on satisfaction. None of the three elements has a significant effect on completion times.

Another study by Nwone (2006) sought to examine the impact information system characteristics have on the satisfaction of postgraduate students with the school's web portal at the University of Ibadan. The characteristics investigated included system quality, information quality, service quality, and the technological/infrastructural factors. Findings showed that all the above factors significantly impacted the students' satisfaction with the

web portal. From the study, recommendations to efficiently manage information systems and invest heavily in information system frameworks were made so as to maximize students' satisfaction.

Stone, Good and Baker-Eveleth (2008) carried out a study on the impact information technology has on the marketing performance of individuals and firms. Independent variables included organizational and end-user traits, information quality, system or service quality, industry traits, and tasks performed using a system. The dependent variables were perceptions on how easy it was to use the system, individual performance impacts (i.e. perceived usefulness), attitudes toward using the system, and system use. Outcomes from the study indicated that the above independent variables impacted perceived performance of the marketing organization, perceived usefulness, attitudes toward using the system, and system use.

From the literature reviewed, whereas several researchers and scholars have alluded to the fact that functional attributes of information systems impact the performance of users and service quality, they fall short in articulating the magnitude and extent to which system attributes affect performance of system users. In addition, little research has been done in the call center environment. It is against this background that this study sought to explicitly examine the magnitude of the relationship between information systems attributes and performance of customer service advisors, specifically those working in call centers.

2.4 Non- Functional attributes of information systems and performance of customer service advisors

According to Chung (2013), non-functional attributes of information systems determine how the system will carry out its functions. Torkestani, Mazloomi and Haghigha (2014) stated that "information system quality and capability allow organizations to focus specifically on the areas that have the greatest impact on organizational performance".

Noor, Ruzita and Ruhana (2010) examined how the sophistication of information systems relates to user performance by carrying out a research study in the Malaysian financial services industry. Top level executives from 140 financial institutions responded to the self-administered questionnaire. Findings showed that Information System sophistication determines performance measures.

In a related study, Al-Mamary et al. (2014) examined the relationship between system quality, information quality, and organizational performance. Their study revealed that the quality of the system substantially affects how users accept the system. It also impacts the efficiency and effectiveness of performance in organizations. This was exemplified by the fact that systems which were easy to learn and use resulted in the production of good quality of information. In turn, the quality of information from systems significantly affected users' acceptance of the information systems and improved the organization's performance. "The quality of the system and quality of the information are considered as key factors affecting IS acceptance and improve the organizational performance" (Al-Mamary et al., 2014).

Macharia (2013) also investigated the factors which influence the adoption of information systems in service delivery in all departments of hospitals. By using the questionnaire survey method, findings showed that the staff's knowledge and literacy levels regarding information and communication technology significantly influences the adoption of information systems. Macharia (2013). It was also shown that information system characteristics influenced the adoption of information systems.

Al-Gharaibeh & Malkawi (2013) investigated the effect management information systems (MIS) have on organizational performance through a research study done in governmental organizations of the Jordanian ministry of planning. Findings showed that hardware and software equipment did not impact the performance of governmental organizations. However, networks, individuals and procedures, and management information system on a general significantly impacted the performance of governmental organizations. At the end researchers recommended the ministry continue updating MIS continuously in addition to training employees on system use to improve performance.

Yuan (2013) investigated the difference in the performance of users when using an information visualization system and when using a traditional information retrieval system. One group of subjects used the visually oriented cite space system whereas the the remaining subjects searched the textual-based web of science system. Findings showed that subjects using the cite space system spent significantly less time, felt significantly more satisfied, and performed significantly fewer mouse clicks than those using the web of Science system. These results indicated in Tunisian companies that it would be helpful to

consider different visualization methods to represent and organize information in the design of information retrieval systems.

Sepahvand & Arefnezhad (2013) stated that "one of the success factors and effectiveness of information systems in organizations is the organizational factors". From their study, Sepahvand & Arefnezhad (2013) concluded that; organizational factors such as top management support, resource allocation, decisionmaking structure, management style and alignment of goals and knowledge of IT management, affect the success factors of information systems (System quality, user satisfaction, perceived usefulness) (Sepahvand & Arefnezhad, 2013).

In their study Andreolini et al. (2006) investigated the effect that technology capacity has on the performance of Web applications and the bottlenecks limiting the service capability of such system. Their study confirmed that increasing the amount of memory of the database resulted in performance improvement.

The researcher noted from the literature review that; many research studies carried on the effect of non- functional attributes on user performance used the Task-Technology Fit (TTF) theory to explain user performance and behavior towards system usage. However, little has been done to seek an explanation basing on Task-Technology Fit (TTF) theory on the performance of customer care advisors in call centers especially in telecommunications companies. It is against this background that this study tried to find if systems attributes were affecting customer advisors' performance at MTN Uganda.

2.5 Summary of Literature Review

From the literature reviewed, several researchers seem to agree to information system characteristics influencing the performance of users whereas others have alternative findings to this assumption.

In regards to functional attributes influencing user performance, researchers such as Bejjar & Boujelbene (2013), Abugabah et al. (2009), AlTaboli & Abou-Zeid (2007) and Stone, Good and Baker-Eveleth (2008) did research studies which generally indicated that functional attributes such as the quality of information generated by a system, how easy a system is to use as well as user interface qualities such as fonts, colours and locations do impact users' performance. However, other factors such as the perceived usefulness of systems, user and task characteristics, intention to use, organizational and end-user traits were found to influence performance as well. Contrary to this study, AlTaboli & Abou-Zeid (2007) found that some elements of the user interface may affect performance in terms of the accuracy of outputs but not in terms of the completion of tasks as shown when they found that fonts, colours and locations do not have significant effects on task completion times.

Non-functional attributes were also found to influence user performance and such included system quality which Bejjar & Boujelbene (2013) defined as measures such as accuracy, accessibility, correctness and reliability. Other researchers such as Abugabah et al. (2009), Stone, Good and Baker-Eveleth (2008), and Al-Mamary et al. (2014) concluded that system quality influences user performance as well. Andreolini et al.(2006) also found that

increasing system capacity positively impacted system web performance and in turn, user performance.

Whereas the literature reviewed points out critical factors that affect the performance of end users of information systems, there is limited literature explaining how other factors such as authentication steps, system availability and capacity affect user performance, specifically in call centers of telecommunications companies. This study therefore aimed to examine how such information systems' attributes affect the performance end users, such as customer care advisors in call centers.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

In this chapter, the methods that were employed in conducting this study are explained. Chapter three shows the research designs, the study population, the sample size and selection, sampling techniques, data collection methods and instruments, validity and reliability of instruments, data analysis, as well as how the measurement of variables was done.

3.2 Research Design

According to Punch (2003), "a research design is a basic plan for a piece of research. It describes all the activities involved in planning and executing a research project". This study adopted a cross-sectional survey design. "A cross-section study design is one that produces a "snap shot" of a population at a particular point in time, involves indirect measures of the nature and rate of change in the physical and intellectual development of the sample study and provides the researcher with data for either a retrospective or a prospective enquiry" (Cohen et al. 2011). Quoting Amin (2005), "cross section designs are easy to use, less time consuming and less costly because data is gathered just at one point in a time". The study also employed both qualitative and quantitative approaches during data collection. The quantitative data collected was used to explain phenomena in the form of numerical data, while qualitative data collected helped to understand the case study in depth. Using both approaches allowed for triangulation; so as to compare findings from different methods, compare results from these methods and make well rounded conclusions.

3.3 Study Population

This research study was conducted on 89 of 112 employees at MTN Uganda's call centers in Kampala. Those targeted were from the customer care department, and administration. The targeted population was composed of 4 supervisors, 10 Team leaders and 98 customer service advisors. The above categories of respondents were preferred because they had information relevant to the topic under study.

3.4 Sample Size and Selection

The sample size of 92 respondents was selected using simple random sampling method (listing the population, assigning numbers to the units and then selecting the sample by use of random numbers) as well as purposive sampling method. Determining the sample size was based on the Morgan and Krejcie table from 1970 as shown in appendix 5.

Table 3.1: Sampling Size of Respondents and Sampling Techniques

Population Category	**Population Size**	**Sample Size**	**Sampling Techniques**	**Data collection**
Supervisors	4	4	Purposive Sampling	Face-to-face Interviews
Team leaders	10	10	Purposive Sampling	Self-administered Questionnaire
Customer service advisors	98	78	Simple Random Sampling	Self-administered Questionnaire
Total:	**112**	**92**		

Source: primary data: Table adopted and modified from Morgan and Krejcie's 1970 table for measuring sample size

The researcher selected a sample size of 92 employees as a representative of the entire population. In the sample size, the researcher purposively selected all the 4 supervisors and 10 Team leaders. 78 customer service advisors were randomly selected. The researcher collected data from the supervisors through the interview method because the supervisors were viewed as key informants from whom in-depth knowledge on call center systems could be attained through probing for more detailed information. For the case of team leaders and customer service advisors, the researcher employed self-administered questionnaires to collect data since they were able to get some time to fill up the questionnaire.

3.5 Sampling Techniques Procedure

The research study used probability and non-probability sampling techniques. Probability sampling technique was chosen because it is ideal and it minimizes sampling bias (Mugenda & Mugenda, 2003). This technique obtains samples randomly from a larger population, makes generalizations and allows for administering two-tailed tests in statistical analysis of quantitative data (Cohen et al., 2011). Simple random sampling technique was used to sample call center advisors. This was done through listing the population and assigning numbers to the units, and then selecting the sample by use of random numbers.

Non-probability sampling technique was done by purposively selecting all 4 supervisors and 10 team leaders. The supervisors were then interviewed. This was in accordance to what Sekaran (2003) proposed i.e. to collect very informative data from respondents in case sampling needs to be done from smaller groups of key informants.

3.6 Data Collection Methods

Different methods were employed in this study so as to gather the required data from the respondent. The methods used included the following;

3.6.1 Questionnaire Survey Method

The Questionnaire Survey Method is a method of data collection that involves collecting primary data from respondents whereby respondents answer questions which are limited to the stated alternatives in a questionnaire. The questionnaire has definite and concrete, open and close-ended questions. This method acts as a great source or a facility for the collection of the data from the diverse and scattered group of people. This method also helps in the collection of reliable and dependable data, and was utilized in obtaining quantitative and primary information/data from team leaders as well as customer service advisors. The questionnaire survey method involved using a semi-structured questionnaire. This is suitable because part of the questionnaire gives respondents the ability to provide responses to a given set of alternatives whereas another section of the questionnaire permits respondents to qualify their responses.

3.6.2 Interview Method

The use of the interview in research marks a move away from seeing human subjects as simply manipulable and data as somehow external to individuals, and towards regarding knowledge as generated between humans, often through conversations (Kvale, 1996. This method presents several types of interviews which include Informal conversational interviews and the interview guide approach. Qualitative data for the research was obtained by the use of interviews that enabled the researcher get in-depth information from the key

informants in the study who happened to be 4 supervisors. The interview method provided qualitative data which was used to back up the quantitative data that was collected using survey questionnaire. The researcher had face to face interactions with supervisors in which their opinions and perceptions were sought through asking questions and probing deep into the issues. The interview guide allowed an in-depth examination of the key informants on issues related to information system attributes and performance of customer service advisors in call centers at MTN Uganda Limited.

3.6.3. Documentary Review Analysis

Reviewing documents was used when obtaining secondary data through using a documentary review checklist. Periodical documents from MTN customer care centers such as monthly and weekly reports, as well as market survey reports were used. The documents reviewed were related to the topic of research.

3.7 Data Collection Instruments

The researcher gathered data using the interview guide, questionnaires and document review checklist. This enabled the researcher get detailed and in-depth information from the respondents.

3.7.1. Interview Guide

"An interview is a face to face dialog between an interviewer and an interviewee" (Mugenda & Mugenda, 2003). The interview guide contained a checklist of questions designed to obtain responses about the areas of this research study. It was administered face to face between the researcher and call center supervisors to allow for in-depth examination of the key informants on issues related to information system attributes and

performance of customer service advisors in call centers at MTN Uganda Limited. The interview guide enabled the researcher to attain uniformity and consistency of data collected since usually the compliance rates are greater compared to the other tools (Mugenda & Mugenda, 2003).

3.7.2. Self – administered Questionnaire

A questionnaire is a set of similar questions framed to gather information from respondents. The questionnaire used had both close and open ended questions so as to to get original views of the respondents. This was selected based on the fact that the variables could not be observed such as; views, opinions and perceptions. Questionnaires were distributed to team leaders and customer service advisors. In this study, a five headed response rating using Likert scale ("5 for Strongly Agree, 4 for Agree, 3 for Undecided 2 for Disagree, 1 for Strongly Disagree") was used to ease the filling of the questionnaire.

3.7.3 Document Review Checklist

The researcher reviewed different documents pertaining to MTN Uganda's market performance and the performance of customer service advisors at MTN Uganda's call centers as seen in the documentary review checklist in appendix 4.

3.8 Validity and Reliability

This section highlights how the reliability and validity of the instrument was measured

3.8.1 Validity of Instruments

According to Amin (2005), validity is both external and internal. the former refers to the application of the study elsewhere and obtaining similar results while the latter refers to the effectiveness of the instruments on the intended research. However, according to

(Oso&Onen, 2008) validity is the extent to which instruments measure what it is intended to measure. Content validity was measured by focusing upon the extent to which the content of the instruments corresponded to the theoretical concepts that the instrument is made to measure. The instrument's validity is important in determining whether the statement in the questionnaire or the interview guide is relevant to the study. Amin (2005) notes that validity tests whether an instrument used in research is accurate, correct and meaningful. He asserts that for an instrument to be valid, it should have an average index of 0.7 and above. Content validity index was used during the pilot study before the researcher embarked on final data collection. Content Validity Index (CVI)

$$\text{CVI} = \frac{\text{Number of items declared valid}}{\text{Total number of items}}$$

An instrument was tested for validity by giving the instrument to three people with competency in the area of study to assess the instrument variables on whether they were fit enough to measure the objectives. Using their results, the percentage validity was computed through the CVI method.

$$\text{CVI} = \frac{38}{49} = 0.78$$

3.8.2 Reliability of instruments

According to Mugenda and Mugenda (2003), "reliability is the measure of the extent to which a research instrument is able to provide the same results upon being tested repeatedly". To ensure reliability of the instruments under this study, a pre-test was conducted based on the internal consistency method to pre-test the instruments through application of Cronbach's alpha formula and the questionnaire and the interview guide was pre-tested by 10 people who were not be part of the study respondents. Data collected was

analyzed using SPSS to establish how reliable the questionnaire instrument was. According to Cohen et al. (2011), the value of Cronbach's alpha of 0.5 and above is consistent with the minimum recommended values as a measure of reliability of internal consistency. Cohen et al. (2011) further recommend the Cronbach's alpha coefficient of 0.6 as the minimum acceptable level of reliability test. They assert that the reliability index of 0.6 is just enough to guarantee reliability. The Cronbach's alpha coefficient was computed as shown in table 3.2

Table: 3.2: Reliability Statistics

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.625	0.966	49

Source: SPSS

3.9 Data Collection Procedures

After obtaining permission from the proposal defense panelists and supervisors to proceed with data collection, the researcher obtained a letter of introduction from the School of Management Sciences. This letter introduced the researcher to the authorities and respondents in the field at MTN Uganda Limited. The researcher then collected both the primary and secondary data that provided the required information. The questionnaires were distributed with the help of some research assistants, whereas the researcher conducted interviews and carried out the documentary review.

3.10 Data Analysis

Both qualitative and quantitative data was collected and thus the analysis considered the two categories of data.

3.10.1 Qualitative data analysis

Thematic and content analysis were employed when analyzing qualitative data by relating findings from the data collected to the research questions. Qualitatively collected data was reorganized so as to indicate the presence of meaningful patterns when using content analysis. By organizing data into codes and themes, thematic analysis enabled the identification of patterns from the information collected. From the information given during data collection, data was interpreted through creating explanations and using quotations from the responses given. In addition, information and responses that belong to the same categories were assembled together and their similarity with the quantitative data created.

3.10.2 Quantitative data analysis

Descriptive and inferential statistics were used when analysing quantitative data. These were done by using the Statistical Package for Social Scientists (SPSS). Descriptive statistics involved measuring means as well as measures of dispersion like standard deviations, percentages and frequencies. Editing and coding was used to process the data collected. Responses to each category of variables were then presented by the use of comprehensive tables. Inferential statistics involved the use of correlation analysis by using a Pearson correlation coefficient and regression analysis using a regression coefficient so as to determine the strength of the relationship between the two variables.

3.11 Measurement of Variable

According to Mugenda and Mugenda (2003), there is a need to use nominal, ordinal and likert types of rating scales when designing questionnaires and measuring variables. A nominal scale was used to measure gender, marital status and the type of helpline supported (Kothari, 2000). The ordinal scales were used when measuring variables such as respondents' age, levels of education, as well as experience. When measuring the independent variables (information system attributes) and the dependent variables (performance of customer service advisors), a 5-points likert scale ("1- strongly disagree, 2-disagree, 3- undecided, 4- agree and 5-strongly agree") was used. According to Mwabilu et al. (2004) and Amin (2005), "the choice of this scale of measurement was that each point on the scale carries a numerical score which measures the respondent's attitude and it is able to measure perceptions, attitudes, values and behaviors of the individuals towards a given phenomenon".

3.11.1 Ethical Consideration

To assure respondents of their privacy, respondents' names were not captured/tagged to their responses. Respondents could also leave questions that they did not wish to answer unanswered. In addition, the researcher ensured not to put the respondents under pressure as they responded to the research questions. All these were done as suggested by Mugenda & Mugenda (2003). Given the sample size of this study, anonymity and non-traceability of the participants were taken care of in the questionnaire design and the report would be confidential.

In this study therefore, in order to avoid plagiarism, the researcher acknowledged the works of various authors referred to in the study by citation using APA format. When quoting a

source, the quote was used exactly the way it appeared to avoid misquoting. Pages of references were also included to cite sources of information and work done by previous researchers.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF RESULTS

4.1 Introduction

The purpose of the study was to examine the relationship between information systems' attributes and performance of customer service advisors in call centers at MTN Uganda. This chapter entails presentation, analysis and interpretation of results from the study. The study focused on the following objectives; finding out the relationship between functional attributes of Information systems and performance of customer service advisors and examining the relationship between non-functional attributes of information systems and performance of customer service advisors in call centers at MTN Uganda

4.2 Response Rate

The response rate of a survey is a measure of how many people approached (sampled) actually completed the survey (expressed as a percentage from 0% to 100%). Using self-administered questionnaires and face-to-face interviews methods to collect data from the respondents, the study attained the following response rate as illustrated in table 4.1 below;

Table 4.1: Response Rate

Method	Target Response	Actual Response	Response Rate (%)
Questionnaire	88	85	96.6
Interview	04	04	100
Total	92	89	96.7

Source: Field Data, August, 2017

The response rate results in table 4.1 show that; the overall rate of response to the study was 96.7%. A total of 88 questionnaires were dispatched and 3 questionnaires were

returned blank; resulting in an actual response of 85. The researcher interviewed all 4 supervisors. Overall, 89 respondents out of a sample of 92 actively took part in the study; representing a high response rate of 96.7%. The higher the response rate, the more likely the results are to be representative of the population (Institute for Social Science Research, 2015).

4.3 Demographic Characteristics of Respondents

The summary details of respondents' background characteristics are presented in this subsection. The study sought to determine the different demographic characteristics of respondents in order to determine their knowledge, understanding and capacity to respond to questions posed to them in the questionnaire and Interview guide. Demographic characteristics include; gender, age group, marital status, highest level of education, length of service, and type of helpline being supported. The researcher will later on use these demographic characteristics to draw comparisons among respondents.

4.3.1 Respondents by Gender

The researcher investigated the gender variable of the population because while making decisions on matters of any social or economic phenomenon, the gender of the population in question is important. Similarly, on matters concerning information systems' attributes and performance of customer service advisors in call centers at MTN Uganda, the researcher had to investigate the gender variable of the population. In order to establish the gender structure of the respondents, they were asked to state their gender and below are the results that were recorded in table 4.2 on the next page.

Table 4.2: Gender Distribution of Respondents

		Frequency	Percent
Valid	Male	41	46.1
	Female	48	53.9
	Total	89	100.0

Source: Field Data, August, 2017

According to results in table 4.2 above, a majority of the respondents were female (48); representing 53.9% of the total respondents. 41 were male; representing 46.1% of the total respondents. These findings show that there are more women than men in provision of customer care services. Since women are generally known to be more polite and caring from the family setting, they are more inclined to dominate customer care services in the workforce. However, results also showed that a significant number of male respondents participated in the study; pointing to the fact that men are equally able to provide customer care services, especially where technology usage such as call centers is involved. Overall, this finding implied that the study was conducted on a people with solid experience on matters concerning customer service provision. This would provide relevant responses that would answer the research questions of the study.

4.3.2 Respondents by Age group

Scientific research shows that opinions on a number of topics differ between different age groups. To establish the age structure of the respondents, they were asked to state their age ranges. This allowed the researcher to determine the age range of the target audience so as gather the information the study sought.

Below are the results that were recorded in figure 4.1

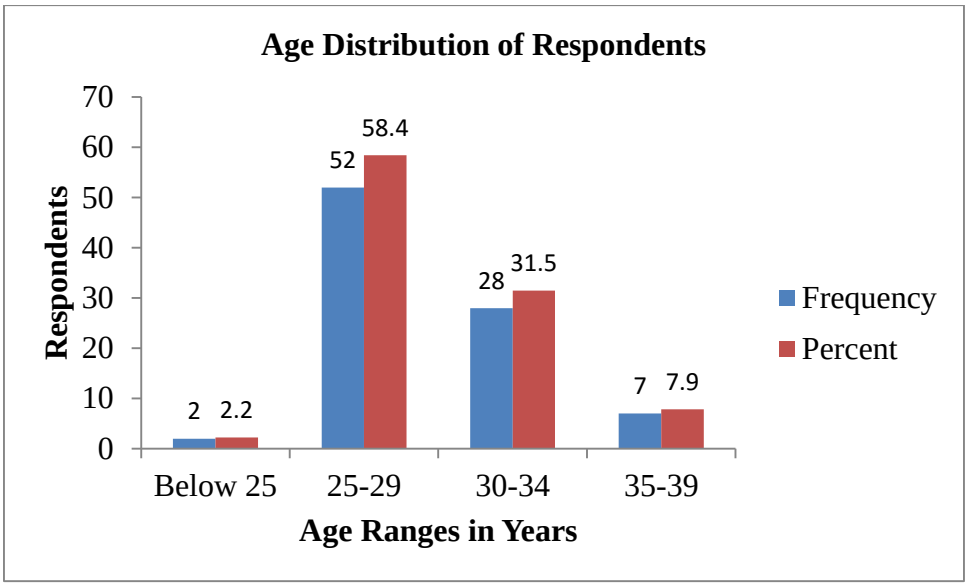


***Figure 4.1: Respondents by Age*: Field Data, August, 2017**

From Figure. 4.1, a majority of the respondents were in the age bracket of 25- 29 years; representing 58.4% of the total respondents. 31.5% were in the age range of 30 - 34 years, while 7.9% were in the age range of 35- 39. Only 2.2% of the respondents were below 25 years old. The cumulative percentage of respondents above 25 years old was 97.8%, implying that the study was most likely conducted on responsible adults with mature cognitive abilities and whose judgment and responses on the issues from the study were presumed to be valid and accurate.

4.3.3 Respondents by Marital Status

In Uganda, the marriage institution is one of the most important social institutions and has undergone many changes. The perceptions and attitudes of a person can differ by marital status because the marriage might make a person a little more responsible and mature in understanding when giving responses to the questions asked. The researcher asked the

respondents to state their marital status. The findings are shown in figure 4.2 in details below.

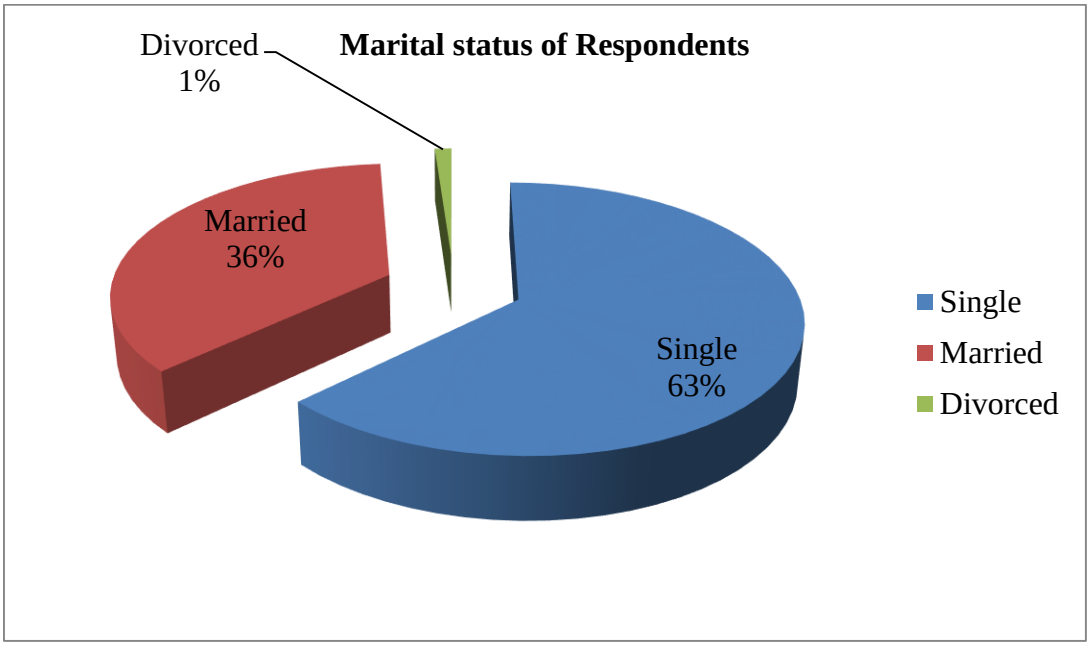


Figure 4.2: Marital status of Respondents. **Source: Field Data, August, 2017**

Figure 4.2 showed that a greater number (63%) of the respondents were single, while 36% of the respondents were married. Only 1% were divorced. From the previous findings, a majority of the respondents were in the age bracket of 25- 29. This could explain why most respondents were single since at that age, most of the young people have just completed studies. Therefore, the population under study had full commitment to their work and provided relevant views in relation to functional and non-functional attributes of the information systems at the call centers. This improves chances of providing valid and relevant views to the objectives of the study.

4.3.4 Respondents by Highest Level of Education

The researcher found it imperative to know the educational background of the respondents. This is because education is one of the most important characteristics that might affect a persons' attitude and perception on any particular social phenomena. Therefore, in order to establish the highest level Education of the respondents, they were asked to state their qualifications and below are the results that were recorded in table 4.3

Table 4.3: Educational Level of Respondents

		Frequency	Percent
Valid	Diploma	4	4.5
	Bachelors Degree	79	88.8
	PGD / Masters	6	6.7
	Total	89	100.0

Source: Field data, August, 2017

With regard to their highest level of education, table 4.3 indicates that 88.8% of the respondents were bachelors' Degree holders, while 6.7% had post graduate diploma or masters' degree qualifications. Only 4.5% of the respondents had diplomas. Basing on the above findings, where 95.5% the respondents had university education, the study was conducted on people who had enough cognitive capacity to tell what is required for the study. Yhis implied that with regards to information systems attributes and customer service performance, such people had enough capacity to understand what is taking place at MTN Uganda.

4.3.5 Respondents by Length of Service

The duration of service of a particular employee in an organisation usually correlates with their knowledge about the organisation. In order to ascertain the length of service for each respondent at MTN Uganda, the respondents were asked to state how long they have worked with MTN Uganda.

The results were displayed in figure 4.3 below;

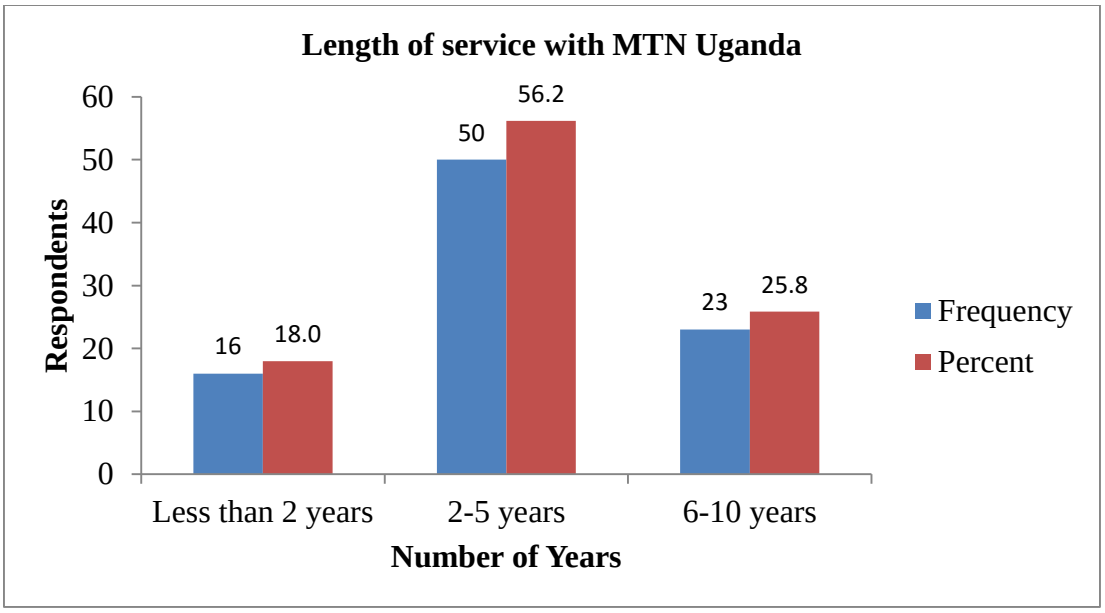


Figure 4.3: Length of service. **Source: Field Data: August, 2017**

Results from Figure 4.3 indicate that 56.2% of the respondents had worked at MTN Uganda for a period of 2-5 years, 25.8% had served for a period of 6 – 10 years, while 18.0% had worked for less than 2 years. A cumulative percentage for those who had worked at MTN Uganda for over 2 years was 82.0%, implying that most of the respondents had enough experience and information to respond to the questionnaire and interview appropriately.

They would provide valid and accurate responses regarding information required for the research study.

4.3.6 Type of Helpline supported by the Respondent

Because of the varying services provided by MTN Uganda, each type of helpline has attributes or characteristics which are unique to its services. Therefore, in order to determine the effect of information systems' attributes on the performance of the customer service advisors, it was important to get information from advisors who work in all sections of the call center. The researcher asked the respondents to state the helpline they support in the call center. The findings were tabulated in table 4.4 below.

Table 4.4: Helpline supported at the call center

		Frequency	Percent
Valid	General helpline	31	34.8
	Mobile Money Helpline	21	23.6
	Data Helpline	16	18.0
	High Value customers' helpline	21	23.6
	Total	89	100.0

Source: Field Data: August, 2017

These findings from table 4.4 showed that a majority of the respondents (34.8%) were supporting the general helpline at the call center, 23.6% were supporting the mobile money helpline, another 23.6% were supporting High value customers' helpline, while 18% supported the Data helpline. These findings showed that the study was conducted on a population that had interacted with a variety of information systems. Therefore, the study

was conducted on a people with wide experience in call center challenges and hence would provide relevant information to answer the research questions.

4.4 Empirical Findings

In order for any hypothesis to gain acceptance in the scientific community, empirical evidence is required. Empirical evidence is the knowledge or source of knowledge acquired by means of observation and experimentation. In order to determine the empirical evidence, the researcher used a questionnaire that was set on a five point Likert scale format. They could respond as Strongly Disagree=1, Disagree=2, Undecided =3 Agree =4 and Strongly Agree = 5

4.4.1 Functional attributes of Information systems and performance of customer service advisors

The first objective of the study was to find out the relationship between functional attributes of Information systems and performance of customer service advisors in call centers at MTN Uganda. The researcher sought the opinion of the respondents to find out whether there was a relationship between functional attributes of Information systems and performance of customer service advisors. Using a five point Likert scale format, the researcher captured responses from the questionnaire either by responding as Strongly Disagree=1, Disagree = 2, undecided = 3 Agree = 4 or Strongly Agree = 5.

Table 4.5 below shows responses to questions on the experience with system user interfaces.

Table 4.5: Descriptive Statistics on User Interface

Variables	Responses				
	1	**2**	**3**	**4**	**5**
The information systems used by call center advisors make all needed options and materials for a given task visible; without distracting the user with redundant information	3.5%	4.7%	4.7%	50.6%	36.5%
The appearance of information systems used by call center advisors at the call center is clear and concise to users	2.4%	2.4%	5.9%	32.8%	56.5%
The appearance of information systems used by call center advisors at the call center make simple, common tasks easy	2.4%	4.7%	3.5%	29.4%	60.0%
The information systems used by call center advisors operate in a language that the advisors clearly understand	2.4%	0%	2.4%	21.1%	74.1%
The information systems used by call center advisors at the call center have clear menus that direct a user to required information	4.7%	1.2%	4.7%	30.6%	58.8%

4.4.1.1 Visibility of required options and material

In a bid to find out how the user interface of the information system affected the performance of customer service advisors in call centers at MTN Uganda, the researcher asked respondents whether the information systems used by call center advisors made all needed options and materials for a given task visible; without distracting the user with redundant information. Results from table 4.5 showed that a cumulative percentage of those in agreement (Agree and Strongly Agree) with the statement was 87.1%, those in disagreement (Disagree and Strongly Disagree) were 8.2% while 4.7% of the respondents were undecided. This result indicated that to a greater extent the information systems used by call center advisors made all needed options and materials for a given task visible.

4.4.1.2 Clarity and conciseness of systems' interfaces

The researcher further sought the opinion of the respondents on the clarity of information systems used by call center advisors. 89.3% of the respondents agreed that it was clear and concise to users. While 4.8% were in disagreement, 5.9% could not decide whether it was clear and concise to users or not. This finding clearly implied that information systems used by customer service advisors at the call center were clear and concise to a larger extent. This finding could be attributed to what the researcher obtained from *Supervisor 1* during the face-to-face interview, when she stated that: *"There is a project team that engages customers to test product user friendliness among customers from which ideas on system creation and development are generated".*

4.4.1.3 User-friendliness of systems' interfaces

On whether the appearance of information systems used by call center advisors at the call center made common tasks easy and simple, 89.4% of the respondents were in agreement while 7.1% were in disagreement. 3.5% of the respondents were not sure. Considering the bigger percentage of respondents were in agreement with the statement, the researcher concluded that to a significant extent, the information systems used by call center advisors at the call center made common tasks easy and simple. Again, referring to supervisor 1, these findings could be linked to what she said during the face-to-face interview with the researcher that: *"When we are carrying out user acceptance tests (UATs) during the development/improvement stage of systems, we invite representatives from the user sections to test the systems' functions and recommend areas of* improvement"

4.4.1.4 Language displayed by systems

In as far as the language used to operate the information system was concerned, 95.2% of the respondents stated that they clearly understood it. However, 2.4% said they did not clearly understand it while another 2.4% were not decided. Basing on this finding, the researcher therefore made a conclusion that the language used by the information system was user friendly.

4.4.1.5 Presence of clear menus for easy direction

Finally, on the issue of interface menus, 89.4% of the respondents indicated that they have clear menus that direct a user to required information. 5.9% stated that interface menus were not clear and 4.7% were undecided on whether interface menues were clear or not.

Overall, it was found a bigger number (90.1%) of the respondents concurred that the user interface used by the customer service advisors was user-friendly. Only 5.6% were not satisfied with the user interface and 4.3% were not able to make a decision. This finding agrees with the statement from supervisor 1 who said that *"The user interface has influenced users positively because we use feedback from the user team to enhance already existing systems. This allows us to obtain a menu/ interface that enables them carry out most of the commonly requested services as opposed to having many systems doing different functions"*

Table 4.6 below shows responses to questions on the experience with system authentication

Table 4.6: Descriptive Statistics on Authentication

Variables	Responses				
	1	**2**	**3**	**4**	**5**
Information systems used by call center advisors request for individual usernames and passwords before being used	3.5%	2.4%	3.5%	12.9%	77.7%
The information systems used by the customer care advisors at the call center generally accept and verify users' login details quickly	2.4%	2.4%	0%	21.1%	74.1%
Information systems used by call center advisors require different levels of access which result in delays to acquire required information	20%	12.9%	5.9%	31.8%	29.4%
The number of steps required for a call center advisor to login into a system are few and do not cause delays	2.4%	4.7%	2.4%	24.7%	65.8%
The systems used by the advisors generally have many or strong security features or requirements that cause delays when working	21.2%	23.5%	8.3%	17.6%	29.4%

One of the functional attributes investigated by the researcher was the authentication features of the information systems used by the customer service advisors at MTN Uganda call centers.

4.4.1.6 Use of usernames and passwords for system access

The researcher inquired from the respondents whether the information systems used by call center advisors requested for individual usernames and passwords before being used. 90.6% of the respondents were in agreement, 5.9% said no, while 3.5% of the respondents said they were not sure. This finding points to the fact that to a greater extent the systems requested for usernames and passwords before being used.

4.4.1.7 Quickness of verifying user login details

Similarly, the researcher went ahead to find out from the respondents whether the information system generally accepted and verified users' login details quickly. An overwhelming number (95.2%) of respondents answered in the affirmative whereas 4.8% disagreed. This generally shows that the information systems generally accepted and verified users' login details quickly.

4.4.1.8 Levels of access to systems

The researcher put a question to the respondents on whether the information systems used by call center advisors required different levels of access which resulted in delays to acquire required information. 61.2% said yes, 32.8% disagreed and 5.9% were undecided. This finding clearly showed that whereas a significant number of respondents (61.2%) agree that there were different levels of access, a sizable number (32.8%) state that this did not result into delays in acquiring required information. During the face-to-face interviews with the supervisors, *supervisor 2* stated that; "*Authentication rarely impacts advisors negatively."* His statement confirms the findings from the customer service advisors.

4.4.1.9 Effect of steps required to log onto systems

On the issue of the number of steps required for a call center advisor to login into a system, 90.5% of the respondents stated that they were few and did not cause delays. While 7.1% indicated that they were many and caused significant delays, 2.4% of the respondents were undecided.

4.4.1.10 Presence and effect of security features

Finally, the researcher inquired from the respondents whether the systems used by the advisors generally had many or strong security features or requirements that caused delays when working. 47.0% of the respondents were in agreement, 44.7% did not agree with the statement, and a significant number (8.3%) was undecided.

Overall, the researcher established that the information systems used by customer service advisors had authentication features but did not generally cause delays in information access and report generation. The quantitative data collected on this item is in agreement with qualitative data collected from face-to-face interview. *Supervisor 3* stated that: *"Authentication has not challenged advisors from meeting their performance targets."* However, *supervisor 4* was quick to add that: *"although authentication has enabled advisors access information according to their level of work and minimized fraud, it can however delay resolution in case of challenges with log in passwords or in case a system requires multiple authentication steps to log in".*

Table 4.7 below shows responses to questions on the experience with information generation

Table 4.7: Descriptive Statistics on Information Generation

Variables on information generation	Responses				
	1	2	3	4	5
The customer care advisor can generally obtain a response from the systems fast and precisely using the systems at the call center	3.5%	5.9%	4.7%	42.4%	43.5%
The information systems generally facilitate faster storage and retrieval of data in and out of the system	2.4%	9.3%	2.4%	40.0%	45.9%
Information generated from information systems in the call center at MTN Uganda can easily be interpreted and used to resolve queries	2.4%	0%	3.5%	36.5%	57.6%
The information systems are flexible, allowing for undoing and re-doing of tasks as requested by the customer care advisor	3.5%	15.3%	8.2%	31.8%	41.2%
The information systems keep users informed of actions, changes, and errors that are relevant and of interest to the user e.g. airtime has been loaded, error loading airtime e.t.c.	3.5%	0%	2.4%	30.6%	63.5%
I am satisfied with the user interface, authentication and information generation of systems used in the call center	1.2%	11.8%	7.1%	44.6%	35.3%

The researcher made efforts to ascertain the way in which information is being generated at MTN call centers by the customer service advisors.

4.4.1.11 Quickness of system to generate responses

To begin with, the researcher asked the respondents whether the customer care advisors generally obtained a response from the system fast and precisely. 85.9% were in agreement, 9.2% disagreed and 4.7% were undecided. This finding clearly showed that the information system facilitated timely access to information.

4.4.1.12 Storage and retrieval of data

On the issue of storage and retrieval of data in and out of the system, 85.9% of the respondents concurred that the information system facilitated faster storage and retrieval of data in and out of the system. However, 11.7% of the respondents said it did not facilitate faster storage and retrieval of data in and out of the system, while 2.4% remained undecided.

4.4.1.13 Usefulness of information generated by systems

Can the information generated from information systems in the call center at MTN Uganda be interpreted and used to resolve queries? 94.1% of the respondents said yes, 2.4% said no while 3.5% of them were undecided.

4.4.1.14 Flexibility of actions made by systems

On whether the information systems are flexible, allowing for undoing and re-doing of tasks as requested by the customer care advisor, 73.0% said they were flexible, 18.8% of the respondents said the information systems were not flexible and could not allow for un doing and re-doing of tasks, a significant figure of 8.2% could not make a decision on this statement.

4.4.1.15 Update on state of action of system

The researcher went ahead to find out from the respondents whether the information systems kept users informed of actions, changes, and errors that were relevant and of interest to the user. 94.1% of the respondents answered in the affirmative, only 3.5%

disagreed and 2.4% were undecided. Clearly, this finding indicates that the systems provided feedback to the users.

Overall, 79.9% of the respondents stated that they were satisfied with the user interface, authentication and information generation attributes of systems used in the call center. However, 13.0% were not satisfied and 7.1% could not decide whether they were satisfied or not. A similar response was obtained from the face-to-face interviews where supervisors agreed that: *"information generated affects the customer service advisors positively and is sufficient for advisors to complete their tasks efficiently".* However, *supervisor 4* added that*: "This only affects users negatively in case the systems are not up to date with the latest information which occurs occasionally".*

These descriptive findings prompted the researcher to conduct further analysis on the results using inferential statistics to determine whether there existed a relationship between functional attributes of the information system and the performance of the customer service advisors at call centers of MTN Uganda. The inferential analysis would also help the researcher determine the strength and direction of the relationship between the two variables.

Relationship between functional attributes of information system and performance of customer service advisors

A Pearson product-moment correlation coefficient was computed to assess the relationship between functional attributes of information systems and performance of customer service

advisors. The results helped to determine the strength and direction of the existing relationship between variables. Table 4.8 below shows that there was a significant correlation between the two variables, r = 0.745**, n = 85, p = 0.000 (where "r" is the Pearson correlation, "n" is the number of respondents, and "p" is the probability value). The scatter plot (figure 4.4) was used to establish the strength and the direction of the relationship between the two variables and it established that a strong positive relationship exists between these two variables.

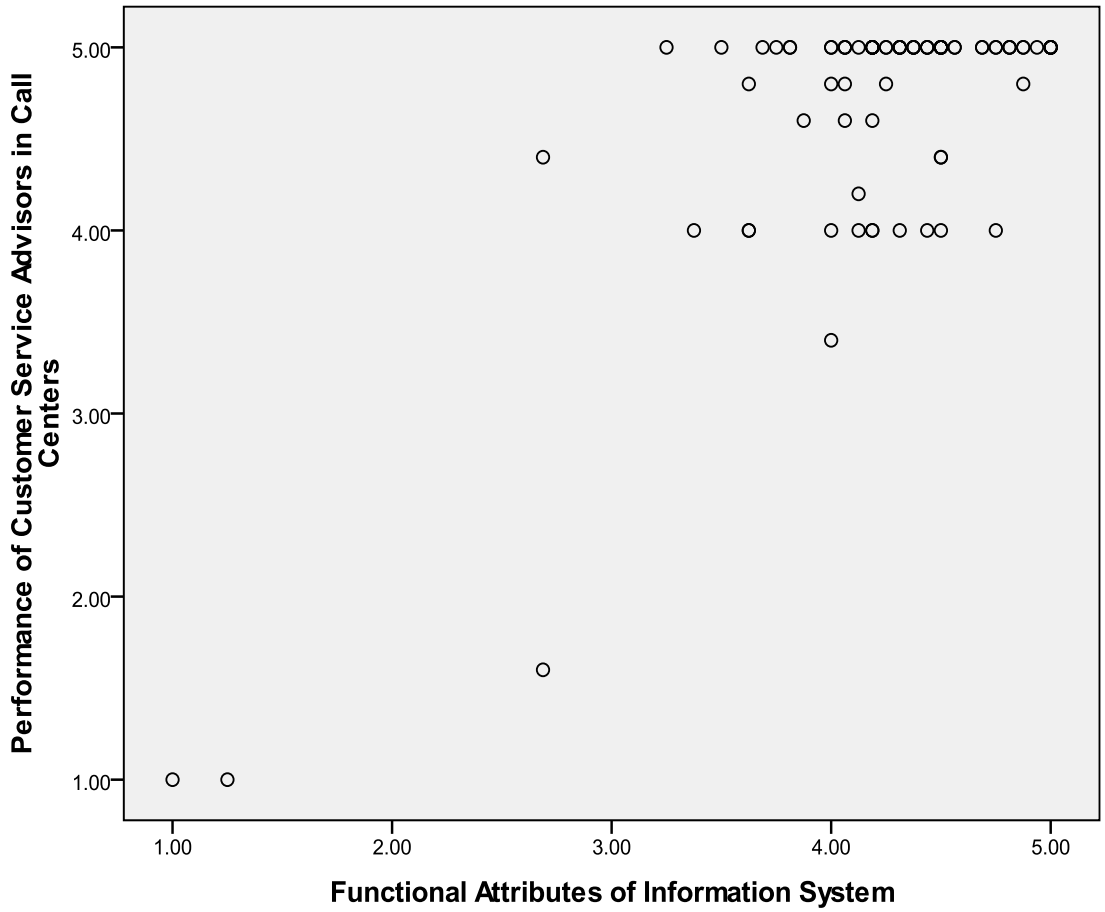
Table 4.8: Correlation between functional attributes and performance

		Functional Attributes of Information System	Performance of Customer Service Advisors in Call Centers
Functional Attributes of Information System	Pearson Correlation	1	.745**
	Sig. (2-tailed)		.000
	N	85	85
Performance of Customer Service Advisors in Call Centers	Pearson Correlation	.745**	1
	Sig. (2-tailed)	.000	
	N	85	85

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Primary data analysed using SPSS

Figure 4.4: Scatter plot for functional attributes and performance



Source: Primary data analysed using SPSS

From the scatter plot above, the plots seem to form a straight line and are densely positioned in one place at the top right corner. This indicates that performance of customer service advisors has a strong relationship with functional attributes of information systems. Similarly, the straight line slopes upwards from the origin, indicating that a positive correlation exists between the two variables. Improvements in functional attributes such as user interface, authentication and information generation are correlated with improvements in performance of customer service advisors.

Test of Hypothesis:

Ho: There is no significant positive relationship between functional attributes of information systems and performance of customer service advisors

From the findings in table 4.8, the p – value (0.000) is small, showing that it is smaller than the significance value of 0.05, the null hypothesis (Ho) is rejected. This implies that there is sufficient statistical evidence at $\alpha = 0.05$ level of significance to conclude that functional attributes of information systems influence performance of customer service advisors in call centers. Improvements in functional attributes of information system correlate with improvements in performance of customer service advisors in call centers.

Regression Analysis between functional attributes and performance of customer service advisors

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.745[a]	.555	.550	.51660

a. Predictors: (Constant), Functional Attributes of Information System

The model summary table above gives the *R* and R^2 values. The *R* value shows the simple correlation which is 0.745, indicating a high degree of correlation. The R^2 value shows how much (or the amount) of the total variation in performance of customer service advisors (dependent variable) can be explained by the functional attributes of information systems (independent variable). In this case, 55.5% can be explained, which is large.

The **ANOVA** table below reports how well the regression equation fits the data (predicts the dependent variable). The output results below indicate that the regression model predicts the dependent variable significantly well. Since p = 0.000, which is less than 0.05, it implies that, overall, the regression model statistically significantly predicts the outcome variable (it is a good fit for the data).

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.611	1	27.611	103.460	.000[a]
	Residual	22.151	83	.267		
	Total	49.762	84			

a. Predictors: (Constant), Functional Attributes of Information System

b. Dependent Variable: Performance of Customer Service Advisors in Call Centers

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.055	.359		2.940	.004
	Functional Attributes of Information System	.857	.084	.745	10.172	.000

a. Dependent Variable: Performance of Customer Service Advisors in Call Centers

The coefficients table provides the necessary information to predict performance of customer service advisors at call centers from functional attributes of information systems, as well as determine whether functional attributes of an information system contribute statistically significantly to the model.

4.4.2 Findings on Non-functional attributes of Information systems and performance of customer service advisors in call centers at MTN Uganda

The second objective of the study was to examine the relationship between non-functional attributes of information systems and performance of customer service advisors in call centers at MTN Uganda. Using the Likert scale format, the researcher captured responses from the questionnaire either by responding as Strongly Disagree=1, Disagree = 2, undecided = 3 Agree = 4 or Strongly Agree = 5. Table 4.9 below displays the results.

Table 4.9 below shows responses to questions on the experience with system capacity

Table 4.9: Descriptive Statistics on System Capacity

Variables	Responses				
	1	**2**	**3**	**4**	**5**
Information systems used in the call center are capable of storing all relevant information required to resolve a given customer's query	3.5%	4.7%	3.5%	32.9%	55.4%
The information systems used in the call center are able to support all customer care advisors required to use those systems at a given time	3.5%	2.4%	7.1%	35.3%	51.7%
The information systems used at MTN Uganda's call center can remain functional when additional users are added to use those systems.	4.7%	3.5%	2.4%	32.9%	56.5%
Information systems can work at optimum speeds even when the entire required number of users at a given time is actively using the system	3.5%	1.2%	3.5%	36.5%	55.3%
The information system used at the call center are generally able to interact with other relevant systems in order to store and retrieve relevant information to resolve customers' queries	2.4%	2.4%	7.1%	41.1%	47.0%

4.4.2.1 Storage of relevant information by systems

In an effort to assess the capacity of the information systems used by customer service advisors in call centers, the researcher inquired from the respondents whether information systems used in the call center are capable of storing all relevant information required to resolve a given customer's query. 88.3% of the respondents were in agreement with the statement, 8.2% of the respondents disagreed while 3.5% remained undecided. This result showed that to a larger extent, the information systems used by the customer service advisors were capable of storing all relevant information. In a related response from the face-to-face interview, *supervisor 2* intimated that "*System capacity challenges rarely occur"* and *supervisor 3* added that: *"Capacity is sufficient enough for advisors to do their work well",* confirming the findings from the questionnaires.

4.4.2.2 Ability for systems to support all required users concurrently

The researcher also sought responses on whether the information systems used in the call center were able to support all customer care advisors at a given time. 87.0% of the respondents concurred that the system was capable of supporting multiple users at the same time. However, 5.9% disagreed while 7.1 % could not decide on the statement. This finding pointed to the fact that at MTN Uganda call centers, the information systems supported several users at ago.

4.4.2.3 Ability for systems to support additional users

Respondents answered on whether the information systems used at MTN Uganda's call center can remain functional when additional users are added to use those systems. 89.4%

of the respondents said yes, 8.2% said no, only 2.4% of the respondents were undecided. Considering the greater percentage of those were in agreement, the researcher concluded that to a significant extent the systems were able to support additional users.

4.4.2.4 Ability for systems to work at optimal speeds

Can the information system work at optimum speeds even when the entire required number of users at a given time is actively using the system? A record percentage of 91.8% answered in the affirmative. However, 4.7% of them did not agree with statement and 3.5% did not take any decision on that statement. These results provided a clue to the researcher that at MTN Uganda the information system could work at optimum speeds.

4.4.2.5 Ability for systems to interact with other systems

Finally, the respondents were also asked whether the information systems used at the call center were able to interact with other relevant systems in order to store and retrieve relevant information to resolve customers' queries. 88.1% of the respondents confirmed this to the researcher, 4.8% disagreed with the statement while 7.1% were not sure.

Overall, these findings establish the fact that the information systems used by customer service advisors at MTN call centers had adequate and efficient capacity to handle multiple customers at a given time. However, during the face-to-face interview *supervisor 1* stated that *" Though system capacity is generally good, challenges have arisen where advisors cannot do their work due to license challenges where some advisors could not log onto some systems until licenses were acquired".*

Table 4.10 below shows responses to questions on the experience with system availability

Table 4.10: Descriptive statistics on System Availability

Variables	Responses				
	1	2	3	4	5
Information systems used in the call center are readily accessible as and when required by the users	3.5%	5.9%	2.4%	42.3%	45.9%
Information systems required to resolve customers' queries are given/availed to customer services agents when required	3.5%	3.5%	1.2%	36.5%	55.3%
Information systems required to resolve customers' are up and running for at least 22 hours a day (90% of the day)	4.7%	7.1%	3.5%	34.1%	50.6%
The relevant access levels required to adequately resolve customer queries are generally made available to customer service agents	4.7%	3.5%	3.5%	35.4%	52.9%
Information systems are uniformly functional/running for all users who require a given system at a given time	4.7%	2.4%	1.2%	42.3%	49.4%

4.4.2.6 Accessibility of systems at MTN Uganda's call centers

A cumulative percent of 88.2% of the respondents agreed that information systems used in the call center are readily accessible as and when required by the users. 9.2% of them indicated that they were not readily accessible by users whereas 2.4% of the respondents were undecided at the time of data collection. This finding clearly shows that to a greater extent, the users at MTN Uganda Call centers were able to access the information systems at any time, implying that there was guaranteed availability of the systems. This result concurs with a statement from *supervisor 1* who informed the researcher that *"All systems required to resolve customer challenges have been made available and are up and running for the biggest part of a given day. Further still, back end monitoring is closely done by IT to analyze trends of systems in order to identify challenges and resolve them quickly"*

4.4.2.7 Availability of systems required for resolution of different queries

On whether information systems required to resolve customers' queries are given/availed to customer services agents when required, 91.8% of the respondents said yes. However, 7.0% of the respondents dissented and 1.2% of the respondents were undecided

4.4.2.8 System uptime

The researcher posed another question seeking to find out whether the information systems required to resolve customers' are up and running for at least 22 hours a day (90% of the day), 84.7% of the respondents said the systems were always up 90% of the day. However, a significant number of 11.8% of the respondents did not agree with the statement and 3.5% of them remained undecided.

4.4.2.9 Presence of required access levels

On whether the relevant access levels required to adequately resolve customer queries were generally made available to customer service agents, a majority of the respondents (88.3%) agreed that the relevant access levels were generally available to customer service agents. 8.2% of the respondents indicated that they were not available and 3.5% of them were not sure.

4.4.2.10 Functionality of systems for different users

Finally, the respondents were also asked to provide their views on whether information systems were uniformly functional/running for all users who require a given system at a given time. Results showed that 91.7% of the respondents said that the information systems

were uniformly running, 7.1% disagreed with statement and only 1.2% could not make a decision on the statement.

Overall, the researcher was able to establish that at MTN Uganda call centers, information systems used by the customer service advisors were readily available at least 90% of the day and that they are uniformly functioning.

Table 4.11 below shows responses to questions on the experience with system reliability

Table 4.11: Descriptive statistics on System Reliability

Variables	Responses				
	1	2	3	4	5
Information systems used in the call center generally return correct and accurate results for queries fed into them to resolve customer queries	4.7%	4.7%	2.4%	32.9%	55.3%
Information systems used in the call center perform their intended functions as and when required e.g. a command to load airtime doesn't result in loading of a tune instead	5.9%	1.2%	0%	18.8%	74.1%
Information systems used in the call center can be relied upon to be up-to-date with relevant information required to resolve customers' queries	2.4%	11.8%	3.5%	42.3%	40.0%
The information systems used by customer care advisors are able to perform and maintain their functions in routine circumstances, as well as unexpected circumstances such as power failures, high traffic.	2.4%	7.1%	3.5%	36.4%	50.6%
Information systems used by customer care advisors are able to produce consistent results every time the same input requests are made (for example, the same information displayed whenever the same request is made)	2.4%	5.9%	2.4%	32.8%	56.5%
I am satisfied with the capacity, availability and reliability of systems used in the call center	1.2%	9.4%	8.2%	42.4%	38.8%

4.4.2.11 Accuracy of responses generated by systems

The researcher asked the respondents whether information systems used in the call center generally return correct and accurate results for queries fed into them to resolve customer queries. 88.2% of the respondents concurred with the statement while 9.4% disagreed and 2.4% were undecided. This result showed that to the greater extent the information systems return correct and accurate results.

4.4.2.12 Ability for systems to perform their intended functions

In a related question to the respondents, the researcher asked whether information systems used in the call center perform their intended functions as and when required. 92.9% of the respondents responded in the affirmative, confirming the fact that, the systems used by customer service advisors at MTN call centers performed their intended functions. However, 7.1% did not agree. According to supervisor 4, *"Systems provide accurate data and can be relied upon to do so under different conditions because audits are consistently done to check that information generated is accurate and the systems are reliable".*

4.4.2.13 Presence of up-to-date information from systems

The researcher went ahead to seek opinions of the respondents on whether information systems used in the call center could be relied upon to be up-to-date with relevant information required to resolve customers' queries. 82.3% of the respondents agreed, however, a significant number of 14.2% disagreed and only 3.5% were undecided.

4.4.2.14 Ability to function under different situations

To inquire further into the non-functional attributes, the researcher asked the respondents to state whether the information systems used by customer care advisors were able to perform and maintain their functions in routine circumstances, as well as unexpected circumstances such as power failures and high traffic. 87.0% of the respondents were in agreement with the statement, 9.5% were in disagreement while 3.5% were undecided. This finding therefore shows that to a large extent, information systems used by the customer service advisors maintained their functions in routine circumstances, as well as unexpected circumstances.

4.4.2.15 Consistency of responses produced by systems

On the issue of consistency, the researcher inquired from the respondents whether the information systems used by customer care advisors were able to produce consistent results every time the same input requests are made. 89.3% of the respondent yes, while only 8.3% said no. 2.4% of the respondents were not able to make a decision on the statement. The implication of this finding is that to a reasonable extent, the information systems used by the customer service advisors produced consistent results.

Overall, the researcher asked the respondents to provide their opinion on whether they were satisfied with the capacity, availability and reliability of systems used in the call center, 81.2% of the respondents stated that they were satisfied, 10.6% indicated that they were not satisfied and 8.2% of the respondents were not sure of their satisfaction with systems.

Relationship between non-functional attributes of information system and performance of customer service advisors

A Pearson product-moment correlation coefficient was computed to assess the relationship between non-functional attributes of information system and performance of customer service advisors. The results were used to determine the strength and direction of the existing relationship between variables. Table 4.12 below shows that there was a significant correlation between the two variables, r = 0.765*, n = 85, p = 0.000. The scatter plot (figure 4.5) was used to establish the strength and the direction of the relationship between the two variables and it established that a strong and positive relationship is existent between the two variables.

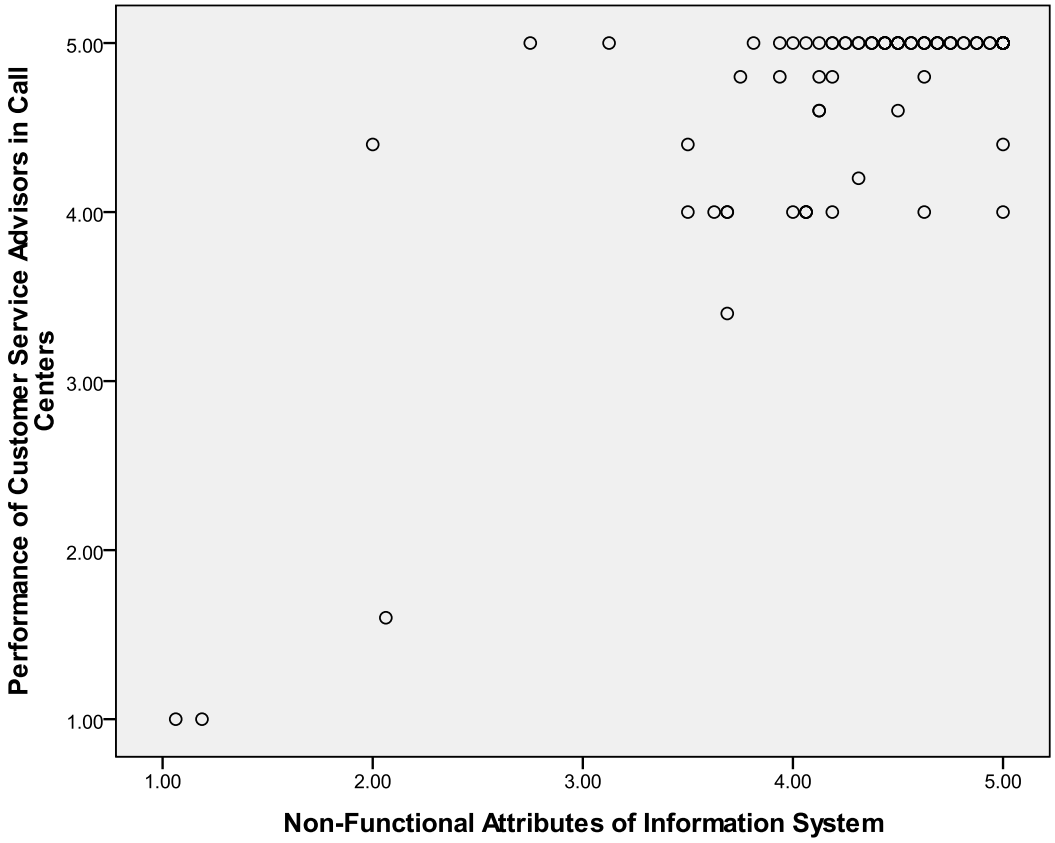
Table 4.12: Correlation between non-functional attributes and performance

		Non-Functional Attributes of Information System	Performance of Customer Service Advisors in Call Centers
Non-Functional Attributes of Information System	Pearson Correlation	1	.765**
	Sig. (2-tailed)		.000
	N	85	85
Performance of Customer Service Advisors in Call Centers	Pearson Correlation	.765**	1
	Sig. (2-tailed)	.000	
	N	85	85

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Primary data analysed by SPSS

Figure 4.5: scatter plot showing non-functional attributes and performance



Source: Primary data analysed using SPSS

From the scatter plot above, the plots seem to form a straight line and are densely positioned in one place at the top right corner. This indicates that performance of customer service advisors has a strong relationship with non-functional attributes of information systems. Similarly, the straight line slopes upwards from the origin, indicating that there is a positive correlation between the two variables. Improvements in non-functional attributes such as system capacity, availability and reliability are correlated with improvements in performance of customer service advisors.

Test of Hypothesis:

Ho: There is no significant positive relationship between non-functional attributes of information systems and performance of customer service advisors

From the findings in table 4.11, the p – value (0.000) is small, showing that it is smaller than the significance value of 0.05. The null hypothesis (Ho) is rejected. This implies that there is sufficient statistical evidence at the = 0.05 level of significance to conclude that non-functional attributes of information systems influence performance of customer service advisors in call centers. Improvements in non-functional attributes of information system correlate with improvements in performance of customer service advisors in call centers.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.765[a]	.585	.580	.49885

a. Predictors: (Constant), Non-Functional Attributes of Information System

The model summary table above provides the *R* and R^2 values. The *R* value represents the simple correlation which is 0.765, indicating a high degree of correlation. The R^2 value indicates how much of the total variation in performance of customer service advisors (dependent variable) can be explained by the non-functional attributes of information systems (independent variable). In this case, 58.5% can be explained, which is large.

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29.107	1	29.107	116.967	.000[a]
	Residual	20.655	83	.249		
	Total	49.762	84			

a. Predictors: (Constant), Non-Functional Attributes of Information System

b. Dependent Variable: Performance of Customer Service Advisors in Call Centers

The **ANOVA** table above reports how well the regression equation fits the data (predicts the dependent variable). The output results above indicate that the regression model predicts the dependent variable significantly well. Since $p = 0.000$, which is less than 0.05, it implies that, overall, the regression model statistically significantly predicts the outcome variable (it is a good fit for the data).

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.379	.308		4.472	.000
	Non-Functional Attributes of Information System	.766	.071	.765	10.815	.000

a. Dependent Variable: Performance of Customer Service Advisors in Call Centers

The coefficients table provides the necessary information to predict the performance of customer service advisors at call centers from non-functional attributes of information systems, as well as determines whether non-functional attributes of an information system contribute statistically significantly to the model.

4.4.3 Findings on performance of customer service advisors in call centers at MTN Uganda

The researcher sought the opinion of the respondents on the performance of customer service advisors in call centers at MTN Uganda. Using a five point Likert scale format, the researcher captured responses from the questionnaire either by responding as Strongly Disagree=1, Disagree = 2, undecided = 3 Agree = 4 or Strongly Agree = 5. Table 4.12 below displays the results.

Table 4.12: Descriptive statistics on resolution basing on system attributes

Variables	Responses				
	1	**2**	**3**	**4**	**5**
I am able to resolve customer queries faster when the information systems at the call center is clear, simple and easy to use	2.4%	2.4%	0%	17.6%	77.6%
I am able to resolve customer queries faster when the information systems at the call center require less steps for me to log into	3.5%	1.2%	1.2%	18.8%	75.3%
I am able to resolve customer queries faster when the information systems at the call center return the information I require quickly and accurately	3.5%	1.2%	2.4%	15.3%	77.6%
I am able to resolve customer queries faster when the information systems at the call center are up and running/functioning	2.4%	0%	1.2%	15.3%	81.2%
I am able to resolve customer queries faster when the information systems at the call center can return all the information I require to resolve the customer's queries	3.5%	0%	2.4%	12.9%	81.2%

4.4.3.1 Ability to resolve queries in relation to clarity of user interface

In a bid to assess the performance of customer service advisors in call centers at MTN Uganda, the researcher asked the respondents to state whether they were able to resolve customer queries faster when the information systems at the call center are clear, simple

and easy to use. 95.2% of the respondents answered in the affirmative and only 4.8% dissented. This clearly indicated that information systems' user interfaces affected the performance of customer service advisors.

4.4.3.2 Ability to resolve queries in relation to system authentication

On whether they were able to resolve customer queries faster when the information systems at the call center require less steps for the advisors to log into, 94.1% of the respondents said yes to the statement and only 4.7% disagreed with it and only 1.2% of them were un decided.

4.4.3.3 Ability to resolve queries in relation to information generation attributes of a system

Similarly, 92.9% of the respondents indicated that they were able to resolve customer queries faster when the information systems at the call center return the information required quickly and accurately. 4.7% of them said they were not able to, while 2.4% remained undecided.

4.4.3.4 Ability to resolve queries in relation to system availability

The researcher was also interested in knowing whether respondents were able to resolve customer queries faster when the information systems at the call center are up and running/functioning. 96.5% agreed to that effect, while 2.4% of them said they were not able to resolve customer queries faster. 1.2% of them were undecided.

4.4.3.5 Ability to resolve queries in relation to system reliability

Finally, the researcher also inquired from the respondents if they were able to resolve customer queries faster when the information systems at the call center can return all the information required to resolve the customer's queries. 94.1% of the respondents concurred with the statement, 3.5% were not able to resolve customer queries faster and 2.4 % were not able to make a decision to that effect.

In order to find the individual performance of the customer service advisors, the researcher asked the respondents to state their latest monthly average call handling time, latest monthly average Net Promoter Score and latest monthly average First Call Resolution. The results of the responses were summarized by using measures of central tendency and dispersion as indicated in table 4.13.

Table 4.13: Descriptive statistics on performance of customer service advisors

		What is your latest monthly average call handling time? (Seconds)	What is your latest monthly average Net Promoter Score? (%)	What is your latest monthly average First Call Resolution? (%)
N	Valid	83	69	68
	Missing	2	16	17
Mean		124.6024	62.6377	92.7794
Median		124.0000	60.0000	98.0000
Mode		125.00	98.00	100.00
Std. Deviation		26.42981	26.97165	13.66207
Skewness		2.477	-.398	-4.002
Std. Error of Skewness		.264	.289	.291
Kurtosis		27.600	-.502	20.429
Std. Error of Kurtosis		.523	.570	.574

From table 4.13, it can be seen that the monthly average call handling time for the 83 respondents is 124.6 (Seconds); approximately 2 minutes, with a standard deviation of 26 seconds. On the item of monthly average net promoter score for 69 respondents, 62.6% was the mean score; with a standard deviation of 27%. Considering the average first call resolution for 68 respondents, there was an average resolution rate of 92.8% with a standard deviation of 13.7%. This finding implied that, over all, the performance of customer service advisors was better to a greater extent. The finding is also in agreement with the descriptive statistics on speed of resolution obtained earlier on the performance of customer service advisors.

Relationship between information system attributes and performance of customer service advisors

In conclusion, a Pearson product-moment correlation coefficient was computed using SPSS to find the relationship that exists between information system attributes and performance of customer service advisors. The results were used to determine the strength and direction of the existing relationship between Independent and Dependent variables. Table 4.14 below shows that there was a significant correlation between the two variables, $r = 0.778^{**}$, $n = 85$, $p = 0.000$. The scatter plot (figure 4.6) was used to establish the strength and the direction of the relationship between the two variables and it established that there was a strong and positive relationship between the information systems attributes and performance of customer service advisors.

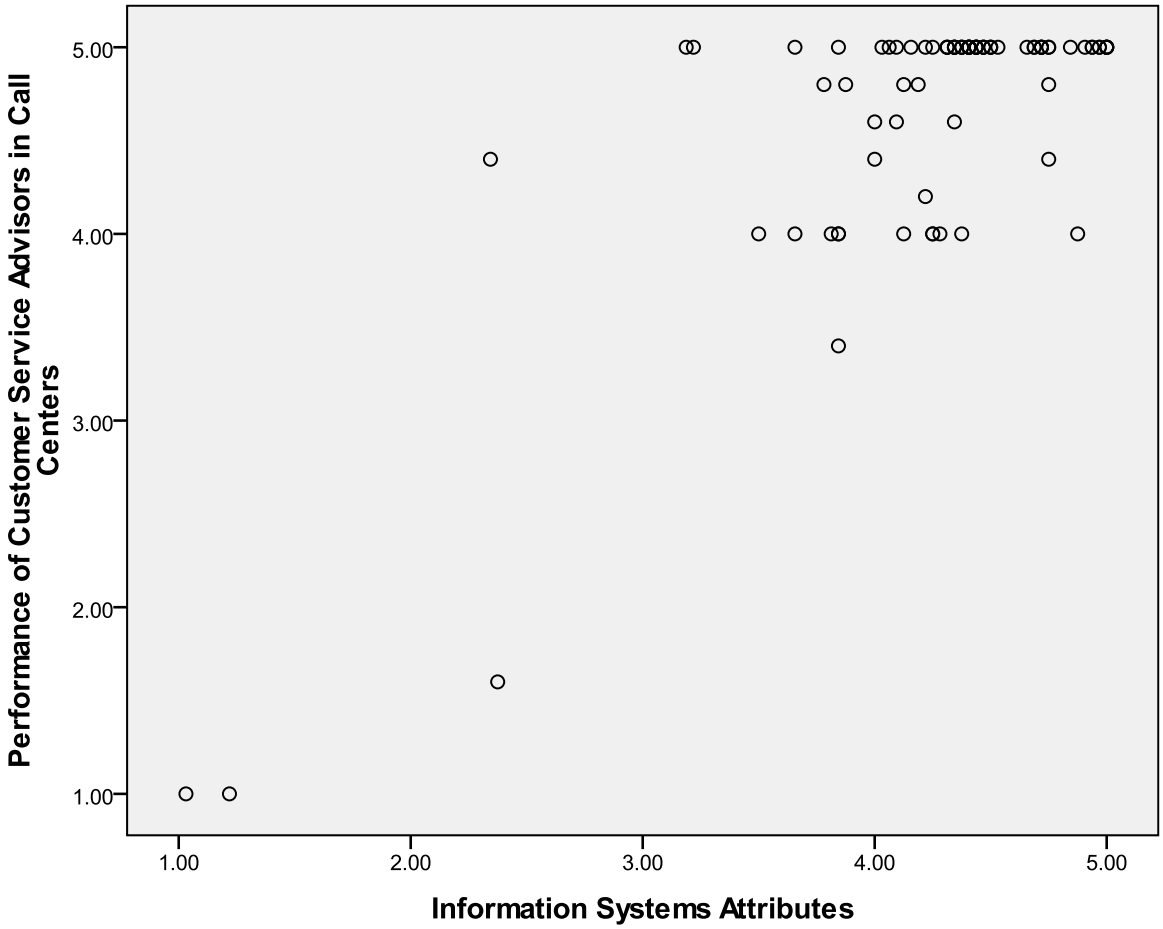
Table 4.14: Correlation between information systems attributes and performance

		Information Systems Attributes	Performance of Customer Service Advisors in Call Centers
Information Systems Attributes	Pearson Correlation	1	.778**
	Sig. (2-tailed)		.000
	N	85	85
Performance of Customer Service Advisors in Call Centers	Pearson Correlation	.778**	1
	Sig. (2-tailed)	.000	
	N	85	85

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Source: Primary data analysed using SPSS

Figure 4.6: Scatter plot for information systems attributes and performance



From the scatter plot above, the dots seem to form a straight line and are densely positioned in one place. This indicates that performance of customer service advisors has a strong relationship with attributes of information systems. Similarly, the straight line slopes upwards from one, indicating that a positive correlation exists between the two variables. Improvements in functional attributes are correlated with improvements in performance of customer service advisors.

From the regression analysis, non-functional attributes contribute more (58.5%) to the deviations in performance of customer service advisors compared to functional attributes at 55.5%. This finding shows that factors such as system capacity, system availability and system reliability are more crucial in determining the performance of customer service advisors compared to the systems' user interface, authentication techniques and format of information generation.

CHAPTER FIVE

SUMMARY, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The study examined the relationship between information systems' attributes and performance of customer service advisors in call centers at MTN Uganda. This chapter presents the summary of the findings, discussions of the study findings, conclusions and recommendations. These are based on the objectives which were establishing the relationship that exists between functional attributes of Information systems and the performance of customer service advisors, and examining the relationship between non-functional attributes of information systems and performance of customer service advisors in call centers at MTN Uganda

5.2 Summary of major findings

The summary of the major findings of the study are made as per the study objectives below;

5.2.1 Relationship between functional attributes of Information systems and performance of customer service advisors in call centers at MTN Uganda

The study established a strong positive significant/strong relationship between functional attributes of Information systems and performance of customer service advisors in call centers at MTN Uganda ($r = 0.745^{**}$, $n = 85$, $p = 0.000$). The scatter plot was used to establish the strength and the direction of the relationship between the two variables and it established that there was a strong and positive relationship between the two variables. This implies that, overall, improvements in functional attributes of Information systems were correlated with improvements in performance of customer service advisors. Regression

analysis showed that improvements in functional attributes influenced performance of customer service advisors by 55.5%, which is significantly large.

5.2.2 Relationship between non-functional attributes of information systems and performance of customer service advisors in call centers at MTN Uganda

The study established a positive significant relationship between non-functional attributes of Information systems and performance of customer service advisors in call centers at MTN Uganda ($r = 0.765^*$, $n = 85$, $p = 0.000$). The scatter plot was used to establish the strength and the direction of the relationship between the two variables and it established that there was a strong and positive relationship between the two variables. This implies that, overall, improvements in non-functional attributes of Information systems were correlated with improvements in performance of customer service advisors and influenced the performance of customer service advisors by 58.5%, which is large to a greater extent.

5.3 Discussion of the study Findings

The discussion of the study findings is made as per the objectives below;

5.3.1 Relationship between functional attributes of Information systems and performance of customer service advisors in call centers at MTN Uganda

The study established a positive significant relationship between functional attributes of Information systems and performance of customer service advisors in call centers at MTN Uganda. This would imply that, improvements in functional attributes of Information systems were correlated with improvements in performance of customer service advisors. This finding is in agreement with the Task Technology Fit model by Goodhue and Thompson (1995) which stipulated that information technology is more likely to positively

impact individual performance and be useful if the capabilities of the information technology match the tasks that the users perform. Earlier findings by Abugabah and other researchers in 2009 on how information systems affect user performance correlate with the findings of this study when they revealed that the performance of users is affected by factors such as how easy it is to use the system, the quality of the systems as well as the quality if information generated from the systems, among others.

In this study, functional attributes investigated included user interface, authentication and information generated by the systems used at call centers at MTN. From the responses, most respondents seem to be satisfied with the functional attributes of the systems used at the call center. Under responses about the user interfaces, most of the respondents agreed to systems providing the required options and menus for achievement of tasks, interfaces being clear and concise, systems being easy to use, systems using a language they understand as well as having menus that provide simple directions. With almost all of the respondents saying that they manage to resolve queries in a timely manner when the above attributes are available, this shows that the user interfaces of the systems are positively impacting user performance. This is supported by findings from a study by AlTaboli & Abou-Zeid (2007) who found that factors of user interfaces such as fonts, colours, and locations impacted on the performance and satisfaction of users.

From responses about the authentication attributes of systems, most of the respondents agreed to the use of usernames and passwords to access most, that the information system generally accepted and verified users' login details quickly and that the number of steps

required for a call center advisor to login into a system were few and did not cause delays. With most of the respondents saying that they manage to resolve queries in a timely manner when authentication is not complicated, this shows that authentication required to use the systems positively impacts user performance. Abugabah et al. (2009) in their study revealed something similar to these findings when they found that among other factors, how easy it is to use a system does affect the users' performance. This is in agreement with findings on the ease of authentication positively affecting users' performance.

When it came to responses on the information generation of systems, majority of the respondents intimated that they can generally obtain a response from the systems fast and precisely using the systems at the call center, that systems generally facilitate faster storage and retrieval of data in and out of the system, that the information returned by systems is useful and that the systems update you on what is happening as they do their roles. With most of the respondents saying that they manage to resolve queries in a timely manner when such features of systems are met, this shows that information generation of systems at the call center in MTN Uganda positively impacts user performance. This is also similar to findings by Abugabah et al. (2009), Nwone (2006), and Stone, Good and Baker-Eveleth (2008) who among several factors found that the quality of information generated impacts the performance of users.

All these findings discussed above show the presence of a Task-Technology Fit. These findings could be aligned with the assertion made by Kennedy (2013) that functional attributes create a concrete link between what is wanted and what will be created and allows

the right technologies to be used. This, points to the fact that if the system is easy to use and easy to learn, returns the required information and has good authentication features, it will result in better individual performance.

To answer the objective on establishing the relationship between functional attributes of information systems and performance of customer service advisors in call centers at MTN Uganda, findings from this study indicate that there is a significant positive relationship between the function attributes of information systems and performance of customer service advisors in call centers at MTN Uganda. The study further shows that changes in the functional attributes of the systems significantly impact the performance of advisors.

5.3.2 Relationship between non-functional attributes of information systems and performance of customer service advisors in call centers at MTN Uganda

The study established a positive significant relationship between non-functional attributes of Information systems and performance of customer service advisors in call centers at MTN Uganda. This implies that, overall, improvements in non-functional attributes of Information systems were correlated with improvements in performance of customer service advisors.

The findings of this study are in line with the earlier findings of Goodhue and Thompson in 1995, which showed that factors such as the system reliability, how easy the system us to use, as well as authorization/authentication affect users' performance. They found that these factors, along with others such as utilization, predicted improved performance and

effectiveness on the job. In this case non-functional attributes of the information systems used by customer service advisors directly affect the performance of customer service advisors. This view is similarly held by Torkestani et al (2014) when they stated that, information system quality and capability allow organizations to focus specifically on the areas that have the greatest impact on organizational performance. While investigating the role of information systems attributes in determining user performance, Noor and other researchers in 2010 pointed out that the degree of sophistication of a system determines performance measures.

These findings do not come as a surprise because a majority of the customer service advisors stated that at MTN Uganda call centers, the systems have adequate capacity to handle multiple clients, are readily available 90% of the time and are systematically reliable. This confirms the earlier findings of Al-Mamary et al. (2014) who revealed that the quality of the systems significantly impact the efficiency and effectiveness of the organization's performance. Other scholars such as Bejjar & Boujelbene (2013) have established similar findings as well in which they revealed that user performance is affected by the systems' quality as well as the quality of information from the systems. In addition, Bejjar & Boujelbene (2013) explained that system quality includes measures such as accuracy, accessibility, correctness and reliability among other factors. This points to the fact that if the system is easy to use and learn, it can then give good quality of information which will result in better organizational performance. The quality of the system and quality of the information are considered as key factors affecting Information System

acceptance and improve the organizational performance. This is a phenomenon that is experienced at MTN Uganda call centers.

To answer the objective on establishing the relationship between non-functional attributes of information systems and performance of customer service advisors in call centers at MTN Uganda, findings from this study indicate that there is a significant positive relationship between the function attributes of information systems and performance of customer service advisors in call centers at MTN Uganda. The study further shows that changes in the functional attributes of the systems impacts the performance of advisors by 58.5% which is significant.

5.4 Conclusions

The study made conclusions as per each objective as follows;

5.4.1 Functional attributes of Information systems and Performance

The study thus concluded that functional attributes of information systems have a positive significant relationship with performance of customer service advisors in call centers at MTN Uganda**.** Improvements in functional attributes of Information systems correlate with improvements in performance of customer service advisors. However, the functional attributes of systems in the call center are not the main reason for the low performance of MTN Uganda in the market performance surveys because most of the respondents generally indicated that the functional attributes of information systems in the call center impact call center advisors' performance positively.

5.4.2 Non-functional attributes of Information systems and Performance

The study also concluded that; non- functional attributes of information systems have a positive significant relationship with performance of customer service advisors in call centers at MTN Uganda**.** Improvements in non-functional attributes of information systems correlate with improvements in performance of customer service advisors. However, the non-functional attributes of systems in the call center are not the main reason for the low performance of MTN Uganda in the market performance surveys because most of the respondents generally indicated that the non-functional attributes of information systems in the call center impact call center advisors' performance positively.

5.5 Recommendations

The study made recommendations as per each objective as follows;

5.5.1 Recommendations on functional attributes of information systems

The study recommends to management that all applications should be integrated together into one or a few platforms so that the customer services advisors don't have to go through many links to access different information. This would make system more user-friendly and reduce time taken looking for information among many different systems. The study also recommends that agents be granted more access levels to perform more tasks on several systems (such as system for data rebates and lost airtime rebates). This would make resolving queries faster so that the customer doesn't have to wait for long to get simpler challenges resolved. Also, systems should remain open from the time the agent logs in up to when he/she signs out to avoid interference from the strong security features; hence improving the call handling time.

This study further recommends that reference (incidence numbers) on a query raised by a customer should be sent to the customer via SMS as opposed to reading it verbally so as to reduce time spent waiting for customers to get somewhere to note them down. Finally, the study recommends that, a function for undoing and redoing of tasks queried wrongly be provided so as reduce errors, and that systems should be installed on portable devices like smart phones and tablets so as to help customers on the go at anytime and anywhere.

5.5.2 Recommendations on non-functional attributes of information Systems

In order to ensure availability of systems, the study recommends that the back end failures be closed in time so as to improve customer services. The study recommends to management that Information systems such as call details be updated to avail up-to-date report instantly within the affected seconds as opposed to two hours later. This would allow faster resolution of queries.

The study also recommends provision of backup options in case the main system fails to work. This would improve continuity of work even when one system fails. Finally, the study recommends routine reviews of the systems to check for improperly functioning systems and proactively deal with challenges before the system fails.

5.5.3. Recommendations on the performance of Customer advisors

In order to improve performance of customer service advisors, the study recommends that the call center advisors be given more rest days to allow for refreshing of the customer service advisors and the systems being used. The study also recommends that knowledge sharing among teams of customer service advisors be improved and increased. Regular training of customer service advisors is recommended as well.

The study recommends to management to motivate customer service advisors through regular refresher engagement, increase transport allowances, granting paid sick leaves and salary increments. The study also recommends continuous monitoring and evaluation of customer service advisors by conducting regular surveys to get feedback from customers; and more involvement of customer service advisors in decision making processes in encouraged as well.

The study went ahead to recommend that team leaders should be supportive of customer service advisors so as to change attitude of the customer service advisors from viewing the job as a burden to viewing it as a service. Finally, management should consider increasing the staffing levels of the customer service advisors, since frontline advisors are not enough to adequately handle the traffic.

5.6 Suggestions for Further Research

This study was carried out to examine how information systems' attributes under dimensions of functional and non-functional attributes impact on performance of customer service advisers in call centers at MTN Uganda. Further studies could focus on additional variables, such as work-life balance, attitude, intervention of Information Technology departments and motivation of the customer service advisors.

REFERENCES

Abugabah, A. J., Cemal, A., Cemal Ardil, Abugabah, Ahed Jabor, Sanzogni, Louis, & Poropat, Arthur Eugene. (2009). *The impact of information systems on user performance: A critical review and theoretical model*. United States: WASET.

Al-Mamary,Y.H., Shamsuddin,A., and Aziati,N.(2014). The Relationship between System Quality, Information Quality, and Organizational Performance: *International Journal of Knowledge and Research in Management & E-Commerce,4(3):7-10*.

AlTaboli A., Abou-Zeid M.R. (2007) Effect of Physical Consistency of Web Interface Design on Users' Performance and Satisfaction. In: Jacko J.A. (eds) Human-Computer Interaction. HCI Applications and Services. HCI 2007. Lecture Notes in Computer Science, vol 4553. Springer, Berlin, Heidelberg.

AL-Gharaibeh, M. A., and Malkawi, N. M. M. (2013). The Impact of Management Information Systems on the Performance of Governmental Organizations- Study at Jordanian Ministry of Planning. *International Journal of Business and Social Science. Vol. 4 No. 17*

Amoako, J. F. (2014). *Keep your posture when the storms are raging*.

Amin, M. (2005). *Foundations of Statistical Inference for Social Science Research*. Makerere University Printer, Kampala, Ug.

Andreolini, M., Colajanni, M., & Lancellotti, R. (2006) Impact of technology trends on the performance of current and future Web-based systems. University of Modena and Reggio Emilia, Department of Information Engineering Via Vignolese 905, 41100 Modena, Italy

Bejjar, M. A., & Boujelbene, Y. (2013). The Impact of Information Systems on user Performance: An Exploratory Study.

Chung, L. (2013).*Non-Functional Requirements:*Department of Computer Science, the University of Texas at Dallas

Cohen, L., Manion, L., Morrison, K., Bell, R., Martin, S., MacCulloch, G., & O'Sullivan, C. (2011). *Research methods in education*. London and New York: Routledge.

Dishaw, M., Strong, D. & Bandy, D. B, "The Impact of Task-Technology Fit in Technology Acceptance and Utilization Models". AMCIS 2004 Proceedings, Paper 416. org/amcis2006/324.

Forkner, I., & McLeod, R. (1982). *Computerized business information systems: An introduction to data processing*. New York: Wiley.

Furneaux, B.(2012). *Task-Technology Fit Theory*: A Survey and Synopsis of the Literature 28(2): 87 – 106

Irick, M.L., "Task-Technology Fit and Information Systems Effectiveness, Journal of Knowledge Empirical Test", Information Systems Research (17:3), 2008, pp. 228-246.

Goodhue, D.L., and Thompson, R. L. (1995). Task-technology fit and individual performance *MIS Quarterly journal*, 19(2): 213-219 Institute for Social Science Research (ISSR).(2015). *Data analysis guidelines*. University of Queensland, Australia.

Munirat, Y (Ph.D), Isyaka, M. S. & Aina O. K. (2014) The Impact of Management Information System (Mis) on the Performance of Business Organization in Nigeria, *International Journal of Humanities Social Sciences and Education (IJHSSE),*

Volume 1, Issue 2, February 2014, PP 76-86, https://www.arcjournals.org/pdfs/ijhsse/v1-i2/8.pdf

Kennedy, C. (2013).Why Functional Requirements are so important. Nueron.

Krejcie, R.V & Morgan D.V 1970. *Determining the Sample Size for Research Activities. Educational & Psychological Measurement*, 30, 607-610

Kvale, S. (1996) *Interviews*. London: Sage Publications.

Laudon, K. C., & Laudon, J. P. (2002). *Management information systems: Managing the digital firm*. Upper Saddle River, NJ: Pearson Prentice Hall.

Macharia, F.M. (2013).Factors influencing adoption of information systems in private healthcare facilities in kiambu county, Kenya

Malan, R. & Bredemeyer, D. (2001).Functional Requirements and Use Cases: Bredemeyer Consulting

Mugenda, O. M., & Mugenda, A. G. (1999). *Research methods: Quantitative and qualitative approaches*. Nariobi, Kenya: African Centre for Technology Studies.

Noor, A., Mohd, S., Ruzita, J., Che, R.I. (2010) *Relationship between information systems sophistication and performance measurement*: Industrial Management & Data Systems, 110 (7): 993 – 1017

Nwone, S.A.(2014). *Exploratory Study of Information System User Satisfaction*: A Study of University of Ibadan Post Graduate School Web Portal: International Journal of Computer and Information Technology, 3(6):1372-1381

PAPAJORGJI, P. E. T. R. A. Q. J. (2016). *SOFTWARE ENGINEERING TECHNIQUES APPLIED TO AGRICULTURAL SYSTEMS: An object-oriented and ... uml approach*. Place of publication not identified: SPRINGER.

Oshikoya, T. W., Hussain, N., & African Development Bank. (1998). *Information technology and the challenge of economic development in Africa*. Abidjan: African Development Bank.

Sekaran, U. (2003). *Research methods for business: A skill building approach*: John Wiley & Sons,Inc.

Schuler, R., & Jackson, S. (2001), HR Issues and Activities in Mergers and Acquisitions, *European Management Journal Vol. 19*, No. 3, pp. 239–253, http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.576.6320&rep=rep1&type=pdf

Ssewanyana, J. K. (2009). ICT Usage in Microfinance Institutions in Uganda:*The African Journal of Information Systems*, 1 (3): 3-6

Schwalbe, K. (2015). *Information technology project management*. Australia: Course Technology.

Sepahvand, R., & Arefnezhad, M. (2013) Prioritization of Factors Affecting the Success of Information Systems with AHP (A Case study of Industries and Mines Organization of Isfahan Province). *International Journal of Applied Operational Research Vol. 3*, No. 3, pp. 67-77, Summer 2013 Journal homepage: www.ijorlu.ir

Torkestani,M.S., Mazloomi,N., and Haghighat,F.(2014). The Relationship between Information Systems Success, Organizational Learning and Performance of

Insurance Companies. *International Journal of Business and Social Science,5(10):125-132*

Tweheyo, P.C., and Chika, Y. (2016). IEEE/ACIS 15th International Conference on Computer and Information Science (ICIS). (June 01, 2016). Factors affecting the adoption of ICT in malnutrition monitoring. Case study: Western Uganda. 1-6.

Yuan, X. (2013). Investigating the Effect of Visualization on User Performance of Information Systems

Zandbergen, P. (2004).*Transaction Processing Systems (TPS):* Batch and Real-Time Systems. University of British Columbia

APPENDIX 1: RESPONDENTS' CONSENT FORM

Dear respondent

This questionnaire is developed purposely for data collection in exploring the relationship between information systems' attributes/characteristics and performance of customer service advisors in call centers. I am pleased to inform you that you have been selected as a resourceful person to provide useful and reliable data that will help in researching how systems affect user performance. This is in requirement for a research study to attain a Masters' degree in Business Administration at Uganda Management Institute.

Please take note of the following:

1) This study is purely for academic research purposes to complete studies in Business Administration at Uganda Management Institute
2) You are not required to show your name on the research tools (i.e. interview and questionnaire guides) in which you will provide responses
3) The responses you provide will remain anonymous and will not be shared for any purposes outside this academic research study
4) The responses and quotes you make in this study will remain exactly as you have given them to avoid misrepresenting and/or misquoting your response
5) The research tools (i.e. questionnaire and interview guide) have been designed in such a way to avoid your responses being traced back to the respondent for anonymity purposes
6) You are free to request for clarity on any question that seem unclear to you as you respond

I agree to respond to the research tools provided for the academic research purposes of exploring the relationship between information systems' attributes/characteristics and performance of customer service advisors in call centers at MTN Uganda

Date of response: …….

APPENDIX 2: QUESTIONNAIRE FOR CALL CENTER ADVISORS AND TEAM LEADERS

Dear respondent,

This questionnaire is developed purposely for data collection in examining the relationship between information systems attributes and performance of customer service advisors in call centers. I am pleased to inform you that you have been selected as a resourceful person to provide useful and reliable data that will help management in improving the quality of customer care at MTN Uganda.

The study is for academic purposes and will be submitted to Uganda Management Institute in partial fulfillment of the requirement for the award of a Master's Degree in Business Administration. Please kindly contribute to the study by completing the attached questionnaire honestly. Your responses will be treated with the confidentiality it deserves.

Thank you in advance for your cooperation and contribution.

Yours sincerely,

Immaculate Kanyunyuzi

Section A: Background Information

Please tick where appropriate:

1. **Gender:**Male ☐ Female ☐

2. **Age group:**

a) Below 25 years ☐ b) 25 -29 years ☐ c) 30-34 years ☐

d) 35- 39 years ☐ e) Above 40 years ☐

3. **Marital Status:**

a) Single ☐ b) Married ☐ c) Divorced ☐ d) Widowed ☐

4. Highest Level of Education

a) Certificate ☐ b) Diploma ☐ c) Bachelor's Degree ☐

d) Post graduate Diploma/Masters ☐ e) Other (Specify) ☐

5) For how long have you worked with MTN Uganda?

a) Less than 2 years ☐ b) 2-5 years ☐ c) 6-10 years ☐ d) Above 10 years ☐

6) Which helpline do you support in the call center?

a) General Helpline ☐ b) Mobile Money Helpline ☐ c) Data Helpline ☐

d) Retention Helpline ☐ e) High Value customers' Helpline ☐

Please note:

For purposes of this study, information systems are technically a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making, coordination, and control in an organization. Examples of such systems include all computerized systems used to resolve customers' queries in the call center.

Section B: Functional Attributes

For each of the statements below, please indicate the extent of your agreement or disagreement by placing a tick on the appropriate box. The reference scale is as follows:

1. **Strongly Disagree, 2. Disagree, 3. Undecided, 4. Agree, 5. Strongly Agree**

Variables	1	2	3	4	5
User Interface					
1. The information systems used by call center advisors make all needed options and materials for a given task visible; without distracting the user with redundant information					
2. The appearance of information systems used by call center advisors at the call center is clear and concise to users					
3. The appearance of information systems used by call center advisors at the call center make simple, common tasks easy					
4. The information systems used by call center advisors operate in a language that the advisors clearly understand					
5. The information systems used by call center advisors at the call center have clear menus that direct a user to required information					
Authentication					
6. Information systems used by call center advisors request for individual usernames and passwords before being used					
7. The information systems used by the customer care advisors at the call center generally accept and verify users' login details quickly					
8. Information systems used by call center advisors require different levels of access which result in delays to acquire required information					
9. The number of steps required for a call center advisor to login into a system are few and do not cause delays					
10. The systems used by the advisors generally have many or strong security features or requirements that cause delays when working					
Information generation					
11. The customer care advisor can generally obtain a response from the systems fast and precisely using the systems at the call center					
12. The information systems generally facilitate faster storage and retrieval of data in and out of the system					

13. Information generated from information systems in the call center at MTN Uganda can easily be interpreted and used to resolve queries					
14. The information systems are flexible, allowing for undoing and re-doing of tasks as requested by the customer care advisor					
15. The information systems keep users informed of actions, changes, and errors that are relevant and of interest to the user e.g. airtime has been loaded, error loading airtime e.t.c.					

16. On the same scale of 1 – 5 as above, how satisfied are you with the user interface, authentication and information generation of systems used in the call center?

    ……
    ……

17. In your opinion, what other changes would you recommend for the information systems functional attributes at the call centers so as to improve on the quality of customer care at MTN Uganda?

    ……
    ……
    ……
    ……

SECTION C: Non- Functional Attributes

1. **Strongly Disagree, 2. Disagree, 3. Undecided, 4. Agree, 5. Strongly Agree**

Variables	1	2	3	4	5
System Capacity					
1. Information systems used in the call center are capable of storing all relevant information required to resolve a given customer's query					
2. The information systems used in the call center areable to support all customer care advisors required to use those systems at a given time					
3. The information systems used at MTN Uganda's call center can remain functional when additional users are added to use those systems.					

4. Information systems can work at optimum speeds even when the entire required number of users at a given time is actively using the system					
5. The information system used at the call center are generally able to interact with other relevant systems in order to store and retrieve relevant information to resolve customers' queries					
System availability					
6. Information systems used in the call center arereadilyaccessibleas and when required by the users					
7. Information systems required to resolve customers' queries are given/availed to customer services agents when required					
8. Information systems required to resolve customers' are up and running for at least 22 hours a day (90% of the day)					
9. The relevant access levels required to adequately resolve customer queries are generally made available to customer service agents					
10. Information systems are uniformly functional/running for all users who require a given system at a given time					
System Reliability					
11. Information systems used in the call center generally return correct and accurate results for queries fed into them to resolve customer queries					
12. Information systems used in the call center perform their intended functions as and when required e.g. a command to load airtime doesn't result in loading of a tune instead					
13. Information systems used in the call center can be relied upon to be up-to-date with relevant information required to resolve customers' queries					
14. The information systems used by customer care advisors are able to perform and maintain their functions in routine circumstances, as well as unexpected circumstances such as power failures, high traffic.					
15. Information systems used by customer care advisors are able to produce consistent results every time the same input requests are made (for example, the same information displayed whenever the same request is made)					

16. On the same scale of 1 – 5 as above, how satisfied are you with the capacity, availability and reliability of systems used in the call center?

……

……

17. In your opinion, what other changes would you recommend for the information systems non- functional attributes at the call centers so as to improve on the quality of customer care at MTN Uganda?

……
……
……
……

SECTION D: Performance of customer service advisors

Variables	1	2	3	4	5
Speed of resolution					
1. I am able to resolve customer queries faster when the information systems at the call center is clear, simple and easy to use					
2. I am able to resolve customer queries faster when the information systems at the call center require less steps for me to log into					
3. I am able to resolve customer queries faster when the information systems at the call center return the information I require quickly and accurately					
4. I am able to resolve customer queries faster when the information systems at the call center are up and running/functioning					
5. I am able to resolve customer queries faster when the information systems at the call center can return all the information I require to resolve the customer's queries					

1. What is your latest monthly average call handling time?

   ……
   ……
   ……

2. What is your latest monthly average Net Promoter Score?

   ……
   ……
   ……

3. What is your latest monthly average First Call Resolution?

   ……
   ……
   ……

4. In your opinion, how else can the performance of customer service advisors be improved at MTN Uganda?
   ……
   ……
   ……
   ……

APPENDIX 3: INTERVIEW GUIDE FOR SUPERVISORS

Section A: Background Information

Please tick where appropriate:

1. **Gender:** Male ☐ Female ☐

2. **Age group:**

a) Below 25 years ☐ b) 25 -29 years ☐ c) 30-34 years ☐

d) 35- 39 years ☐ e) Above 40 years ☐

3. **Marital Status:**

a) Single ☐ b) Married ☐ c) Divorced ☐ d) Widowed ☐

4. Highest Level of Education

a) Certificate ☐ b) Diploma ☐ c) Bachelor's Degree ☐

d) Post graduate Diploma/Masters ☐ e) Other (Specify) ☐

5) For how long have you worked with MTN Uganda?

a) Less than 2 years ☐ b) 2-5 years ☐ c) 6-10 years ☐

d) Above 10 years ☐

6) Which helpline do you support in the call center?

a) General Helpline ☐ b) Mobile Money Helpline ☐ c) Data Helpline ☐

d) Retention Helpline ☐ e) High Value customers' Helpline ☐

Section B: Questions on Call centers information systems

1. Mention any strategies MTN has put in place to ensure effective and efficient customer care at MTN Uganda?

2. How does MTN involve stakeholders such as staff and customers in the strategic acquisition of information systems used in the call center?
3. In your opinion, how have the information system attributes' listed below affected the performance of customer care advisors at MTN Uganda?
    a) System user interface
    b) Authentication
    c) Information generation
    d) System capacity
    e) System availability
    f) System reliability
4. What challenges has management of MTN Uganda encountered while implementing information systems at the call centers.
5. In your opinion, how else can the quality of customer care services be improved at MTN Uganda?

APPENDIX 4: DOCUMENT REVIEW CHECKLIST

This study will review documents related to information systems at MTN Uganda and performance of customer service advisors at MTN Uganda. The documents that will be reviewed include:

1. MTN Uganda annual reports
2. MTN Uganda Call center policies
3. MTN Uganda's call center weekly and monthly reports
4. Quarterly market performance survey reports on telecommunication companies in Uganda
5. Reports on periodical statuses of information systems at MTN Uganda

APPENDIX 5: KREJCIE AND MORGAN TABLE

Table for Determining Sample Size of a Known Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	1000000	384

Note: N is Population Size; S is Sample Size *Source: Krejcie & Morgan, 1970*

APPENDIX 6: LETTER OF INTRODUCTION FOR FIELD RESEARCH

APPENDIX 7: ANTI-PLAGIARISM REPORT