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An empirical investigation of queue management and users satisfaction of MTN service: A study of Sultan Abubakar Road MTN service Centre Sokoto, Nigeria

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Abstract
This paper empirically assesses the effect of queue management on MTN service users, using Sultan Abubakar road MTN service center Sokoto as a case study. The study employed survey research design. Purposive sampling technique was used by the present study, because, the study is interested in customers that come to the MTN service center to receive service such as sim card registration, welcome back, upgrading and so on. Moreover, the study adopted primary data through questionnaire where 384 copies were administered but 356 were validly returned by the respondents. The questionnaire were designed in open and closed ended patterns and administered directly to the customers of MTN service centre. Both descriptive and inferential statistics were employed to analyze the data. Descriptive statistics was used to describe the demographic features for the respondents. On the other hand, the multiple regression model was used in testing hypothesis. The study rejected all hypotheses and concluded that queue management components were all significant determinants of customer satisfaction. The study therefore concluded that improving the queue management practices will inherently increase customers' satisfaction towards MTN service quality.

Keywords: Queuing Model, MTN Service Centre, MTN Users, Waiting Time Management, Waiting environment, Mind-engagement Strategy, Apology for Delay

1. Introduction

Queues or waiting lines are most common features in our daily-life lives. The work of A. K. Erlang of the Copenhagen Telephone Company, who derived several essential formulas for teletraffic engineering that today bear his name, gave rise to queuing theory in the early 1900s. When the corporation asked Erlang to work on the holding in a telephone switch, he was the first person to tackle congestion problems generated by telephone calls in the beginning of 20th century. He discovered that the number of telephone conversations and the amount of time spent waiting for a call fit into Poisson distribution and exponentially distributed. This was the beginning of the study of queuing theory (Mwangi & Ombuni 2015) [27]. Queuing situations arise in all aspects of work and life and are typified by the process of queuing for services, i.e., a set of physical units (people or things) which wait in a queue or queues subject to certain rules of behavior before some services are performed on or for each unit in the queue one after the other (Burodo, Suleiman and Shaba, 2019) [8]. Wherever there is competition for limited resource queuing is likely to occur (Koko, Burodo & Suleiman, 2018; Adeniran, Burodo & Suleiman, 2022; Suleiman and Abdulkadir, 2022) [17, 1, 34]. Queues emerge when individuals requesting service, usually called customers, arrive at a service facility and cannot be served on time (Suleiman, Burodo & Ahmed, 2022) [35]. Queuing theory utilizes mathematical models and performance indicators to evaluate and hopefully enhance the flow of customers through a queuing system. Queuing theory has a wide range of applications and has is widely utilized in the service industry (Yusuf, Blessing & Kazeem, 2015) [42]. It has been used in the past to assess such things as staff schedules, working environment, customers waiting time, and customers waiting environment. However, Yusuf, Blessing and Kazeem, (2015) [42] argued that queuing problem arises when the current service rate of facility falls short of the current service rate of customers.

However, the study mentioned the telephone exchange first because the first problems of queuing theory were raised by calls. Today, cellular wireless networks are popular among users because of their ease of use and ability to go anywhere at any time. User's mobility also present a problem to the network engineers for achieving the desired quality of service. Wireless connectivity also influence different factors like the arrival and the departure of the calls of the system due to propagation condition and irregular user behaviour. As a result, the classical traffic model, which assumes exponential inter-arrival and service times may not accurately assess the performance of the cellular wireless networks (Kumar Bhattacharjee & Sanyal 2009) [20].

A customer paying a visit to any MTN service centre is expecting to be served in a very short time possible and in an efficient manner. Unfortunately, this is not the case in the majority of our MTN service centres. Poor adherence to MTN service centre working ethics, queue management practices and working staff apathy could all be some of reasons for the delays of services in our MTN service centre. Customer satisfaction is affected not just by waiting time but also by customer expectations or attribution of the causes for the waiting (Taylor, 1994) [39]. A customer satisfaction is an ambiguous and abstract concept. Actual manifestation of the state of satisfaction will vary from person to person, product to product and service to service. The state of satisfaction depends on a number of factors which consolidate as psychological, economic and physical factors (Suleiman and Usman 2016) [36]. As a result, one of the difficulties in queue management is not just the actual amount of time the customer has to wait, but also the customer's perceptions of that wait.

Queue management is a critical part of the service industry as it addresses the issue of fair treatment of customers in order to reduce waiting time and improve service quality (Desta and Belele 2019). Queue management is concerned with situations in which a customer's arrival is random, and thus the service rendered to them is also random (Burodo, Suleiman & Yusuf, 2021) [9]. According to Lee (2019) [22] queue management refers to set of principles aimed at customer flow and streamlining the queuing experience.

Unmanaged queues are unfavourable to the gainful operation of service systems and results in a lot of other managerial problems (Chase, Aquilano, and Jacobs, 2001).

A call centre is a collection of resources (communication equipment, employees, computers, and so on) that allow services to be delivered over the phone. If all of the center's phone lines are busy at the time a customer calls, he may be blocked and receive a busy signal. Calls may be connected through an interactive voice response (IVR) unit at first. The call centre is usually the first contact of a customer with a company, the quality of a service and efficient performance of the call centre is of key importance to the company (Brezavšček & Baggia 2013) [7]. The majority of a call centre's operating cost (about 3/4) are labor costs. Customer's support, phone orders and sales, marketing, governmental information services, emergency services (police, ambulance) are handled by these call centres (Brezavšček & Baggia 2013) [7].

1.1 Statement of the Problem

Over the years, the queuing theory has been the only panacea for mobile user satisfaction in the MTN service centre but most of the MTN staff fail to properly implement this application effectively and efficiently thereby prompting the present study. A Queuing problem arises when the current service rate of facility falls short of the current service rate demands of customers, in our case when mobile users are confronted with problems that need to be tackled by the MTN service centre. As more customers are coming with their different complains there will be long queue at the MTN service centre, which has negative consequences to the normal running of the MTN service centres. Long queues form at the MTN service centre which could be avoided so as to enhance service delivery. As a result, a customer spends a lot of time in the queue which he could have used for other purpose. However, extra hands are required in order to increase the service rate and improve customer satisfaction. Therefore, an empirical investigation of queue management and customer satisfaction MTN service centre is important to be done to try to remedy the existing problem.

1.2 Objectives of the Study

The main objective of this study is to examine how queuing management has been used in offering satisfactory service to customers of MTN service centre.

The specific objectives of the study include:

1. To determine whether waiting environment comfort to customer satisfaction with MTN service.
2. To examine whether mind-engagement strategy significantly influences customer satisfaction with MTN service.
3. To determine whether or not apology for delay have significant influence on customer satisfaction with MTN service.

2. Literature Review

To support the claims of any study, there is need for an empirical review of authorities who conducted studies in the area of discussion. In the course of conducting this study, similar studies were consulted as follows;

Osahenvemwen and Odiase (2016) [29] examined the Effective Utilization of Mobile Call Center Using Queuing Models. The purpose of this study achieve an effective utilization (management) of queue in service delivery in mobile communication network call center and other relative public infrastructures. The data were obtained from MTN, Globacom, Airtel (Zain) and Estisalat (mobile communication operators) in Nigeria network call centers for a period of one year, and one agent or staff was considered in this analysis. Analytical mathematical models of queue theory were developed, which is based on Markov chain analysis of continuous time and discrete space, are used to model the effective utilization of mobile call center based on arrival calls (or rate of subscribers) and service rate. These following parameters were determined which includes; the mean number of customer in service or being served (Ls), the mean number of customer in a waiting queue (Lq), the mean waiting time of customers in the queue (Wq), The mean waiting time of customers in the system (W) (also called sojourn time) and system utilization (p). The study revealed that increase in capacity, such as increase in the number of staff (servers) will leads to underutilization of the system, increase in idleness time from the staff. However, if there are low capacities due to low number of staff, it will lead to increase waiting time of the customer.

Brezavšček and Baggia (2013) [7] conducted a study on Stochastic Queuing Models as a Useful Tool for a Call Centre

Performance Optimization. The aim of this paper was to determine the minimal number of servers in a particular period of a working day to ensure the expected waiting time should not exceed 20 seconds. The study analysed the arrival and service patterns, and established that the call centre under consideration can be described by the *M*/*M*/*r* {infinity/infinity/FIFO} queuing model. The expected waiting time was selected as a key performance criterion in the process of the call centre optimization. Results obtained prove that stochastic queuing models represent an applicable and useful tool for a call centre performance optimization. Such models enable rather easily determination of an appropriate number of active operators regarding a specific key performance criterion. This is a preliminary condition to ensure the optimal service level and therefore minimal cost of queuing system performance.

Kumar, Bhattacharjee and Sanyal (2009) [21] conducted a research on the Performance Analysis of Cellular Wireless Network by Queuing Priority Handoff calls. In this paper, a mathematical model is proposed to estimate the dropping probabilities of cellular wireless networks by queuing handoff instead of reserving guard channels. Usually, prioritized handling of handoff calls is done with the help of guard channel reservation. To evaluate the proposed model, gamma inter-arrival and general service time distributions have been considered. The results discovered that the scheme with queuing handoff requests can achieve the probability of forced termination at the desired level almost as that obtained from the guard channel scheme whereas the probability of blocking of new calls reduced significantly. Different mobility (slow or fast) of the users has also been considered. Therefore, it can be concluded that a non-classical model with queuing handoff requests can be used for optimum system performance instead of classical model with guard channels.

Avramidis and Ecuyer (2005) [3] carried out an investigation on Modeling and Simulation of Call Centers. The objective of this study is to determine the waiting arrival time and service time of customers and to model suitable queuing system using simulation technique. The results obtained from the simulation model showed that modern call centers operate under many uncertainties and complexities, notably, uncertain and/or time-varying primitives and complex daily control and routing control actions. These realities stretch the limits of existing analytical models from queueing theory, optimal queueing control, and stochastic programming. Simulation appears to be the most viable option for accurate performance measurement and subsequent decision support.

2.1 Concept of Customer Waiting Time

Waiting time is a regular occurrence in most service-related industries. We wait in hospitals, clinics, MTN service center, banks, supermarkets and many other places. Customer waiting time for service usually represents the first or initial direct interaction connecting customers and service delivery process. Waiting time is defined by Kotler and Keller, (2016); Lin, Xia and Bei, (2015) [23]; Taylor, (1994) [39] as the average time customers wait for the completion of services they require from a service provider over a period of time. The concept of customer waiting time has different dimensions and typologies, according to psychology and marketing literature. First, waiting time might be either objective or subjective (Pruyn and Smidts, 1993; Smidts and Pruyn, 1994; Taylor, 1994) [32, 33, 39]. The objective or actual waiting time refers to the length of time a customer has been waiting for service. This could be calculated consciously and objectively by looking at the clock to see how long a customer has been waiting to be served by a service provider. Subjective waiting, also known as perceived waiting time, it is length of time that a customer feels he/she has been waiting for the service (Bae and Kim, 2014) [4].

Iqbal, Whitman and Malzahn, (2012); Jones and Peppiatt, (1996) [13], discovered that, if a customer waiting time is longer than expected, their degree of satisfaction drops. It is therefore important that service providers should not overlook customer perceived waiting time (PWT), rather they should develop effective strategies to manage customer PWT throughout the service delivery process (Lee, Chen, & Ilie,., 2012; Taylor, 1994) [22, 39].

Lin, Xia and Bei, (2015) [23], stated that waiting for service occurs when demand for a service exceeds supply. Customers in MTN service center may have to wait minutes or hours to be served (Obamiro, 2010) [28]. According to Patel, Chaudhary, Patel and Makwana (2012) [31], waiting in lines or queuing is an annoying or negative experience for many customers. The unpleasant experience of waiting in line can often have a detrimental impact on a customer's overall experience with a particular MTN service center. The way in which managers address the waiting line issue is critical to their long term success of companies (Davis & Heineke, 2003) [10]. Majority of customers do not want to spend their valuable time in the MTN service center would not like to spend their valuable time (Kahandawa & Wijayanayake, 2014) [15].

2.2 Waiting Time Management

Waiting time management (WTM) strategies are a set of waiting time fillers designed to reduce the customer's perceived waiting time PWT dissatisfaction (Joseph & Simon, 2018) [14]. It is a number of strategies that a service providers use to manage customers perceived waiting time (PWT) in order to influence customer satisfaction. Specifically, the more effective the organisation's waiting time management strategies, the greater the satisfaction on MTN customers.

2.3 Waiting Environment Comfort

Waiting Environment Comfort (WEC) refers to the extent to which a customer feels comfortable in the waiting environment while waiting to be served. Service providers could manage the waiting environment by ensuring that the waiting environment provides customers' comfort while they wait for MTN service. Magnus, Joseph and Anthony, (2015) [24] discovered that in a high contact service environment, wait comfort is required in reducing customer complaint. Previous studies have shown that when customers perceive the waiting environment to be comfortable by looking neat, not congested, welcoming, refreshing, pleasant, attractive with appropriate temperature and seating for relaxation, it might positively contribute to making customers satisfied with waiting periods in MTN service centre (Antonides *et al*., 2002; Bielen *et al*., 2007; Lee *et al*., 2012; Lin *et al*., 2015) [2, 5, 22, 23].

2.4 Mind engagement strategies

Mind engagement strategies refer to a set of methods and tactics used by service providers' to keep customers' mind occupied while they wait for services (Antonides *et al*., 2002;

Bae and Kim, 2014; Katz *et al*., 1991) [4, 2]. These strategies are intended to help customers in finding something entertaining, useful and thoughtful doing while they wait for service. In the literature, Lee *et al*., (2012) [22] referred to mind-engagement as "filler interfaces" (Lee *et al*., 2012) [22]. In this regard, fillers or mind engagement strategies refers to businesses that provide music, television and video shows in the waiting environment such as the MTN service centre for customer to fill the time with something worthwhile as they wait to be served. Additionally, service providers may offer customers water, coffee, candies, and chocolates for customers' consumption, and may provide menu information while they wait for service to be completed (Bae and Kim, 2014) [4]. These mind engagement strategies (MES) are not compensations rather they are a means of reducing the perceived waiting time (PWT) and helping waiting customers to have positive moods and feelings instead of thinking about and being concerned about the issue of having to wait for service (Lee *et al*., 2012; Palawatta, (2015) [22, 30]. Similarly, Palawatta, (2015) [30] discovered that musical entertainment reduced perceived waiting time in one of their experiments. According to Lee *et al*., (2012) [22] mind-engagement fillers have positive influence on customer online waiting perceptions and web satisfaction experience. Furthermore Bae and Kim (2014) [4] argued that providing menu information and playing appropriate music in the service environment have positive effect on customer perceived waiting time. Moreover, Lee *et al*. (2012) [22] discovered that different fillers such as background music, news and entertainment, have positive effect on customer evaluation of waiting time. Thus, generally, the literature suggests that efficient use of mind-engagement fillers can improve customer's satisfaction with waiting times by reducing customers' perception of waiting time throughout the service encounter stage.

2.5 Apology for Delay

Apology refers to a MTN office's expression of regret for inconveniencing customers or making them wait too long for service. Company may decide to apologise to customers for any delays in the service delivery process that they may have caused. Customers appreciate polite, sincere and unconditional apologies from service providers when things go wrong with service provider's ability to deliver on time (Antonides *et al*., 2002; Bae and Kim, 2014; Lee *et al*., 2012; Lin *et al*., 2015) [2, 4, 22]. Where service provider do not apologise to customers, it could be perceived by customers as irresponsibility and lack of care for customers. This could result in customers' dissatisfaction with the service delivery process. According to Wirtz and Mattila, (2004) [40] apology is most appropriate when social or process-related service failures occur. Effective complaint handling at MTN service centre positively impacts satisfaction with complaining, overall satisfaction and credibility (Bougoure *et al* 2015). They also discovered that the higher the perceived magnitude of failure, the more difficult it is to satisfy a customer. McQyuilken (2017) apology to customer can contribute to their happiness in a high contact service environment. Tarofder *et al* (2016) [37] stated that apology for a service failure, together with an excuse and justification, is one of the key components of MTN service centre explanation on service failure, which might lead to improved customer satisfaction if applied effectively. Moreover, Maher and Sobh (2014) [25] considered apology to be an effective strategy to reduce customer complaints about waiting time and increasing customer satisfaction. As a result, there is empirical evidence that rendering appropriate and timely apologies to service customers for delays and other service failures resulting from long waiting for service provision is an effective complaint management strategy for achieving some level of customer satisfaction with waiting situations in MTN service centre.

3. Methodology

The study adopted survey research design. The present study used purposive sampling technique, because, the study is interested in customers that come to the MTN service center to receive service. Moreover, the study adopted primary data through questionnaire where 384 copies were administered but 356 were validly returned by the respondents. The questionnaire were designed in open and closed ended patterns and administered directly to the customers of MTN service centre. In this study, descriptive and inferential statistics were employed to analyze the data. Descriptive statistics was used to describe the demographic features for the respondents. On the other hand, the multiple regression model was used in testing hypothesis. The population of customers that patronize MTN service in Sokoto metropolis is considered unlimited (essentially infinite). In most statistical research studies, population parameters are usually unknown and have to be estimated from the sample (Heizer, Render, 2004) [12].

The formula for calculating sample size with infinite population using Kriejcie and Morgan (1970) [19] is stated below:

$$SS = \frac{Z^2 P(1-P)}{C^2}$$

Where:
Z = Z value (e.g. 1.96 for 95% confidence level)
P = population proportion (expressed as decimal) assumed to be 0.5 (50%), it is the margin of error
C = confidence level = 0.05
Hence, given P = 0.5, Z = 1.96 and C = 0.05
The above formula returns a sample size of:

$$SS = \frac{1.96^2 \times 0.5(1-0.5)}{0.05^2}$$
$$= \frac{3.8416 \times 0.5(0.5)}{0.0025}$$
$$= \frac{3.8416 \times 0.25}{0.0025}$$
$$= 384.$$

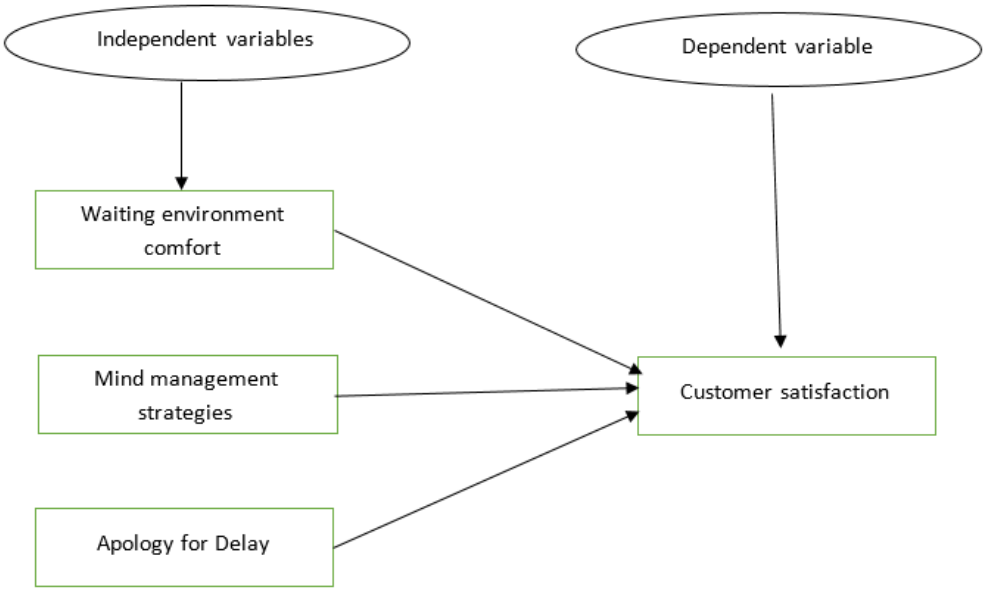

Fig 1

4. Results and Discussion

4.1 Reliability

Questionnaires were first administered to fifty (50) respondents randomly selected for reliability testing of the instrument. Internal consistency was measured using the Cronbach's alpha, and the results were within the acceptable range of 0.70 to 0.95 (Tavakol & Dennick, 2011) [38] as presented in Table 1.

Table 1: Summary of Cronbach's alpha results

Section	No. of items	Cronbach's alpha
Waiting environment comfort	5	0.842
Mind engagement strategy	4	0.762
Apology for delay	4	0.746
Customer satisfaction	9	0.781

4.2 Socio-Demographic Profile of Customers

Table 2 presents the socio-demographic characteristics of 356 respondents' recovered questionnaires out of 384 administered. It shows that 191(53.7%) and 165(46.3%) of the respondents are male and female respectively. The age distribution of the respondents shows that 37(10.3%), 164(46.1%), 121(33.9%) and 34(9.7%) aged less than 20 years, 21 to 40 years, 41 to 60 years and above 60 years respectively. Educational qualification profile of the customers shows that 41(11.6%), 88(24.7%), 98(27.5%) and 129(36.2%) possessed Quranic/Islamiyya, Primary school certificate, Secondary School certificate and tertiary certificate respectively. Employment status profile of the customers reveals that 60 (16.7%), 36(10.2%), 112(31.5%), 117(32.8%) and 31(8.8%) of the respondents are civil servants, retired workers, self-employed, students and other specified employments respectively. Finally, marital status of the customers shows that 118(33.2%), 136(38.1%), 63(17.6%) and 39(11.1%) of the respondents are single, married, divorced and widowed respectively.

Table 2: Socio-Demographic Characteristics of Patients

Gender		**Frequency**	**Percentage (%)**
	Male	191	53.7
	Female	165	46.3
	Total	356	100.0
Age		**Frequency**	**Percentage (%)**
	≤ 20	37	10.3
	21-40	164	46.1
	41-60	121	33.9
	Above 60	34	9.7
	Total	356	100.0
Highest educational qualification		**Frequency**	**Percentage (%)**
	Quranic/Islamiyya School	41	11.6
	Primary School	88	24.7
	Secondary school	98	27.5
	Tertiary school	129	36.2
	Total	356	100.0
Employment status		**Frequency**	**Percentage (%)**
	Civil servant	60	16.7
	Retired	36	10.2
	Self employed	112	31.5
	Student	117	32.8
	Other specify	31	8.8

	Total	356	100.0
Marital Status		**Frequency**	**Percentage (%)**
	Single	118	33.2
	Married	136	38.1
	Divorced	63	17.6
	Widowed	39	11.1
	Total	356	100.0

Source: Field Data, 2022

4.3 Test of Hypothesis

Hypothesis 1: waiting environment comfort has no significant effect on customers' satisfaction of MTN services.
Hypothesis 2: mind engagement strategy has no significant effect on customers' satisfaction of MTN services.
Hypothesis 3: apology for delay has no significant effect on customers' satisfaction of MTN services.
In order to test the hypotheses, data gathered were subjected to multiple regression analysis to examine whether the waiting environment comfort, mind engagement strategy and apology for delay predict customers' satisfaction towards their MTN services. Tables 3, 4 and 5 present the multiple regression analysis for the hypotheses formulated.

Table 3: Model Summary of constructs

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.620[a]	.385	.369	.51271
a. Predictors: (Constant), apology for delay, mind engagement strategy, Waiting Environment Comfort				

Table 3 shows the overall predictability of the model. The result indicated that 38.5% (R^2=0.385) of the observed variance in customer satisfaction were jointly explained by the queue management practices also known as independent variables (apology for delay, mind engagement strategy, Waiting Environment Comfort). The remaining 61.5% unexplained variance could be attributed to other factors outside the regression model other than the identified independent variables which are outside included in the stochastic error term.

Table 4: ANOVA Summary of Constructs

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.383	3	6.461	24.579	.000[b]
	Residual	31.018	118	.263		
	Total	50.402	121			
a. Dependent Variable: Customer Satisfaction						
b. Predictors: (Constant), apology for delay, mind engagement strategy, Waiting Environment Comfort						

Table 4 presents the overall significance of the regression model in terms of goodness of fit. The F-value was significant as p was less than 0.05. Hence, the model was statistically significant at 0.05 level. This implies that combination of the three queue management practices (independent variables) significantly predicts the dependent variable-customer satisfaction (F=24.579; p<0.05). It indicates that the model and the data did well describing customer satisfaction. Therefore, to increase overall customer satisfaction, it is rational to concentrate on the improvement of queue management practices (waiting environment comfort, mind engagement strategies and apology for delay).

Table 5: Coefficients of Regression Analysis

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.363	.129		2.807	.006
	Waiting Environment Comfort	.233	.087	.284	2.677	.008
	mind engagement strategy	.197	.084	.201	2.352	.020
	apology for delay	.218	.101	.246	2.154	.033
a. Dependent Variable: Customer Satisfaction						

The unstandardized Beta Coefficients that represent the contributions of each variable to the model is presented in Table 5. The t and p-values showed the impact of the independent variables on the dependent variable. The result showed that the construct waiting environment comfort exerted the highest predictive strength on customer satisfaction (the dependent variable), with beta weight of 0.233(the large t-value and corresponding low p-value further buttressed the result for waiting environment comfort which had the highest Beta coefficient (both for standardized and unstandardized). This was followed closely by apology for delay ($\hat{\beta}$=0.218). The least factor influencing customers 'satisfaction towards their MTN services was mind engagement strategy (($\hat{\beta}$=0.197).
Results indicate that improving the quality of queue management practices (waiting environment comfort, mind engagement strategy and apology for delay) will inherently increase customers' satisfaction towards MTN service quality. The standardized beta coefficients in Table 5 can be implied that the independent random variables have strong impact on customer's satisfaction. Here, 100% change in waiting environment comfort leads to 28.4% corresponding change in the level of customer's satisfaction, 100% change in mind engagement strategy leads to 20.1% change in customer's satisfaction level and 100% change in apology for delay leads to 24.6% change in customer's satisfaction level. Results in table 5 also confirmed that all three hypotheses were statistically significant since p-values (sig values) are all less than 5% level of significance.

5. Conclusion and Recommendation

5.1 Conclusion

This research examined the effect of Queue management of MTN Service quality on customer satisfaction. Queue management practices of waiting environment comfort, mind engagement strategy and apology for delay were considered

as determinants of customer satisfaction. Three hypotheses were tested, and the results show that all three null hypotheses that stated that MTN service queue management do not have significant effect on customer satisfaction were rejected in favor of their alternative hypotheses as all p-values are less than 5% level of significance. Based on the above, this study concludes that MTN service queue management in the direction of waiting environment comfort, mind engagement strategy and apology for delay are antecedents to customer satisfaction and the more these services are improved by the MTN authority, the higher the satisfaction their customers will derive.

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