

Service Quality and Customer Satisfaction Models: A Study of ATM Users

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Abstract: *This paper examined some outstanding service quality and customer satisfaction models to identify the extent of relationship between RATERC and customer satisfaction. It also unveiled other variables other than service quality that affect customer satisfaction in the use of ATMs. Structured questionnaire was designed using a five point Likert scale. Five hundred and three copies of the questionnaire were administered on ATM users drawn from the three senatorial zones in Abia State. Reliability test done using Chronbach's Alpha revealed a high internal consistency of 0.830. The hypotheses formulated were tested using the ANOVA, t-test, regression and correlation analyses. The tests revealed a strong correlation between each of the Service Quality dimensions (Reliability, Assurance, Tangibles, Empathy, Responsiveness, and Cost) and Customer Satisfaction. It also revealed that tangibles and empathy have insignificant effects on customer satisfaction. The study identified demographic factors like literacy and age as extraneous variables that affect customer satisfaction. To this end, Nigerian banks were enjoined to take these demographic factors into cognizance to ensure that these prospective ATM users are carried along in their ATM operation plans. Though tangibles and empathy were found to have insignificant effects on customer satisfaction, the paper strongly recommended that all dimensions of the RATERC model as detailed in the questionnaire should be carefully studied and embedded in their overall service quality package to ensure that customer satisfaction in the use of ATMs is guaranteed.*

Keywords: *Service Quality, Customer Satisfaction, ServQual, ServPerf, RATERC, Extraneous Variables*

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1.0 INTRODUCTION

Service quality and customer satisfaction constructs have received considerable academic attention both in the past and now. Many authors (Anderson & Fornell, 1994; Poretia & Thanassoulis, 2005; Yong & Fang, 2004) in their empirical studies claimed that service quality is a predictor of customer satisfaction. However, Sureshchandar, Rajendran & Anantharaman (2002) believed that the nature of the exact relationship between service quality and customer satisfaction (especially in the way the two constructs have been operationalized) is still shrouded with uncertainty, even when the results of their study indicated that an increase in one is likely to lead to an increase in the other. The existence of these divergent views gave rise to different service quality and customer satisfaction models, which this paper explores.

1.1 Statement of the Problem

Parasuraman, Berry & Zeithamal (1995) argued that quality evaluations are not made solely on outcome of service; they involve evaluations of the service delivery process using the concept of expectation and perception of service quality which they used the Gap model of service Quality to represent. On the contrary, Cronin & Taylor (1994) questioned the conceptualization of the ServQual model and found it confusing with customer satisfaction. They suggested that the Expectation component (E) of ServQual be discarded, while the performance component only be used, hence ServPerf model was propounded. Though the ServPerf model was a welcome development, it still does not fit into ATM service quality as it failed to incorporate the cost, which is a key component in the evaluation of ATM service quality. To this end, the RATERC model proposed in this work tries to bridge the gap between the two models. Beyond service quality dimensions, are there other extraneous variables that affect customer satisfaction? This work, therefore, is carried out to provide answers to this conundrum.

1.2 Objectives of the study

This paper strictly seeks to:

1. find out if service quality dimensions (RATERC) has any relationship with customer satisfaction;
2. unveil other factors (if any) that lead to customer satisfaction.

1.3 Research Questions

Critical questions to be answered in this study are:

1. Is there any relationship between each of the service quality variables (represented by RATERC) and customer satisfaction?
2. What is the multiple effect of RATERC on customer satisfaction?
3. Which other variable(s) affect customer satisfaction?

1.4 Research hypotheses

The following hypotheses shall be tested in this work:

H₀1: There is no significant correlation between Reliability and CSat.

H₀2: There is no significant correlation between Assurance and CSat.

H₀3: There is no significant correlation between Tangibles and CSat.

H₀4: There is no significant correlation between Empathy and CSat.

H₀5: There is no significant correlation between Responsiveness and CSat.

H₀6: There is no significant correlation between Cost and CSat.

H₀7: Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost do not have a significant effect on CSat.

2.0 REVIEW OF RELATED LITERATURE

This section is designed to review some articles that are relevant to this work. The major constructs of this work, service quality (SQ) and customer satisfaction (CSat) shall be operationalized, much as some models shall be expounded for easy comprehension.

2.1 Theoretical Review

Service

A service is an activity or series of activities of more or less intangible nature that normally, but not necessarily, take place in interactions between the customer and service employees and/or

physical resources or goods and/or system of the service provider, which are provided as solutions to customer problems (Gronroos, 1990). Kotler (2003) defined service as any act or performance that one party can offer to another that is essentially intangible and does not result in the ownership of anything.

Quality

Various experts define quality as “fitness for use,” “conformance to requirements,” “freedom from variation”, and so on (Kotler, 2003). American Society for Quality Control defines Quality as the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs (Miller, 1993). This definition fits into this study, as the features of ATM that make it possible for ATM users’ needs to be satisfied shall be represented with RATERC.

Service Quality

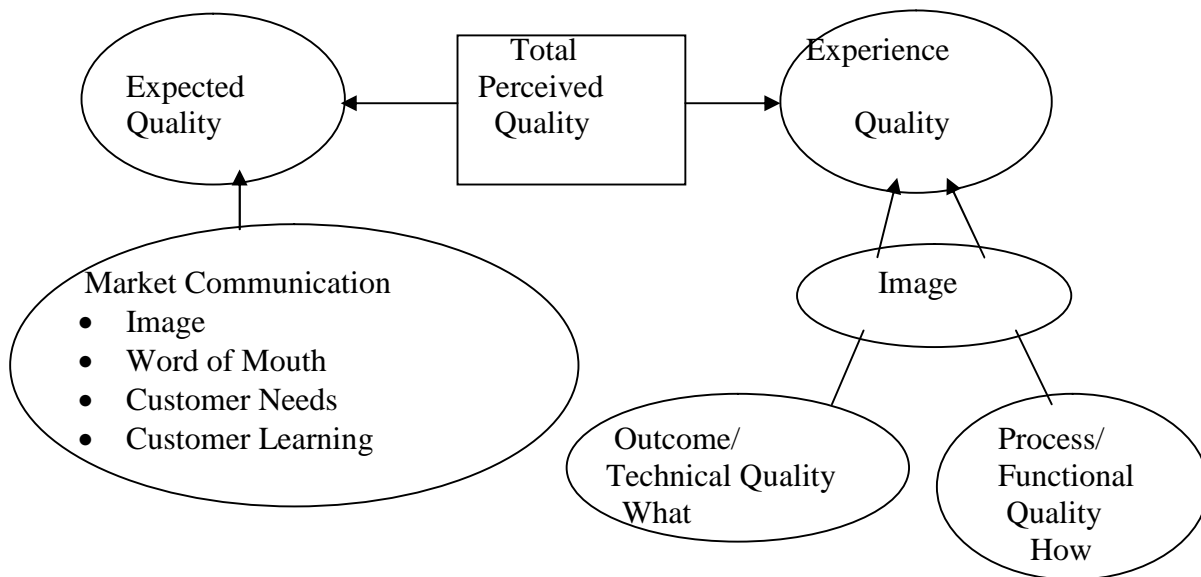
Service Quality is defined as the global overarching judgment or attitude relating to the overall excellence or superiority of the service (Parasuraman, Berry & Zeithamal, 1988). Service quality can also be seen as how well the service level delivered matches the expectations of the customer (Lewis &Booms, 1983).

SERVICE QUALITY MODELS

1. Perceived Service Quality Model

Gronroos, in 1982, came up with this model called the Perceived Service Quality Model. According to Gronroos (1991), Service Quality should be based on the customer’s perception of quality and not that of designers or operations. In his terms, “the quality of service as perceived by the customer is the result of comparison between the expectations of the customer and his/her real life experiences. If the “experienced quality” exceeds “expected quality”, the total perceived quality is positive, but if expectations are not met by performance or the actual experience, the perceived quality is low.

FIG. 2.1 Gronroos’ Nordic Model



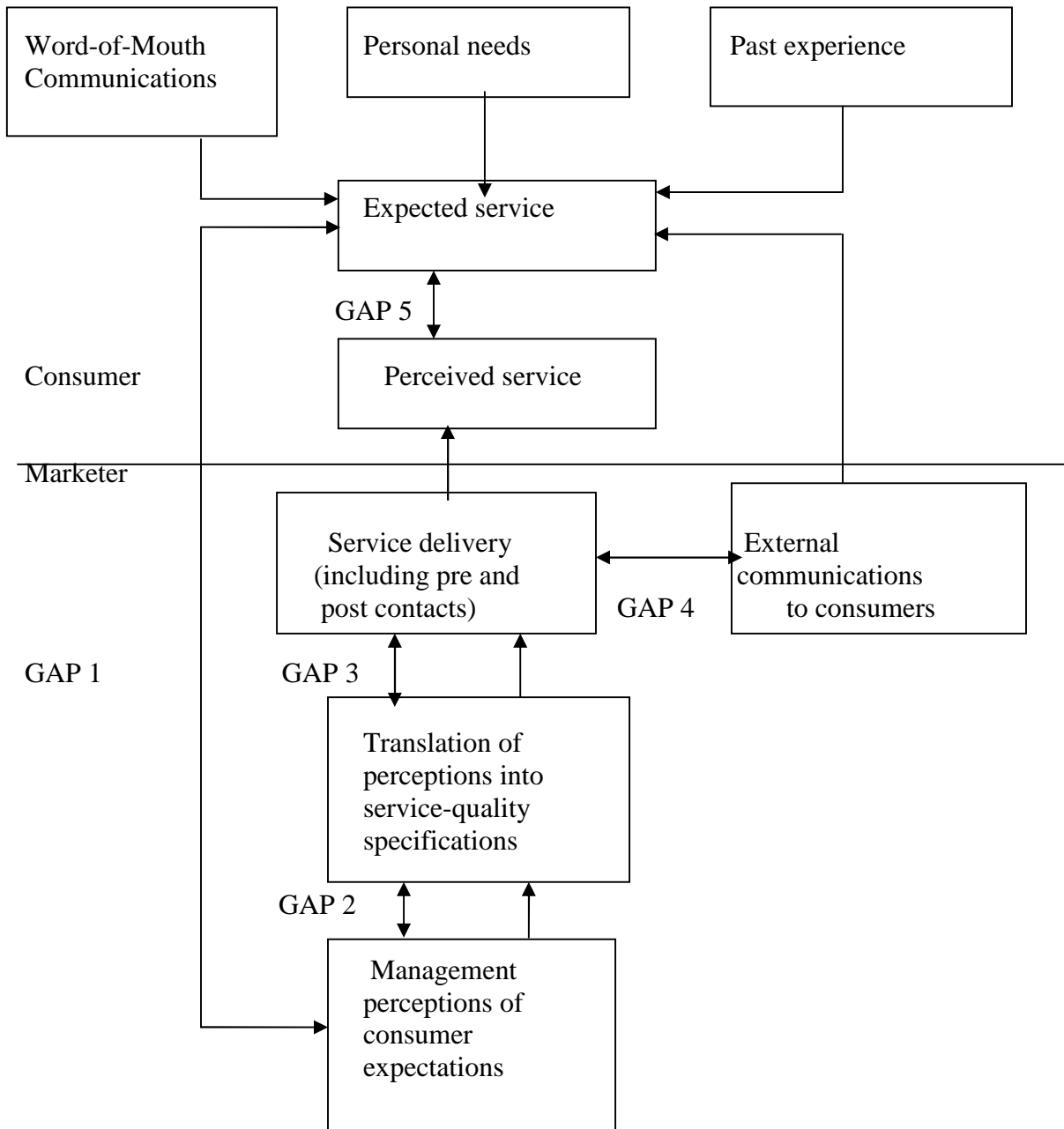
Source: Gronroos, C. (1991). Quality Comes to Service: The Service Quality Handbook.

Gronroos model sees service quality from two (2) dimensions: expected and experience quality. According to this model, while expected quality is a function of market communication, image, word-of-mouth, customer needs and customer learning; experience quality is a function of technical quality and functional quality which in turn forms the image of the service that the customer has.

ServQual Model

ServQual is a multi-dimensional research instrument, designed to measure consumer expectations and perceptions of a service along the five dimensions believed to represent service quality. The foundation of ServQual is the expectancy-disconfirmation paradigm, which in simple terms, means that service quality is the extent to which consumers' pre-consumption expectations of quality are confirmed or disconfirmed by their actual perceptions of the service experience. Parasuraman, *et al.* (1995) argued that quality evaluations are not made solely on outcome of service; they involve evaluations of the service delivery process using the concept of expectation and perception of service quality which they used the Gap model of service Quality to represent.

Fig 2.2 Gap Model of Service Quality



Source: Kotler, P. (2003). Marketing Management. India: Pearson Education, Inc.

The gaps in the model are the cause of unsuccessful delivery. They are:

1. Gap between consumer expectation and management perception. Management does not always correctly perceive what customers want.
2. Gap between management perception and service quality specification. Management might correctly perceive customer's want, but not set a performance standard.

3. Gap between service quality specifications and service delivery. Personnel might be poorly trained or incapable or unwilling to meet the standard; or they may be held with conflicting standards.
4. Gap between service delivery and external communications. Consumer expectations are affected by statements made by company representatives and ads.
5. Gap between perceived service and expected service. This gap occurs when the consumer misperceives the service quality.

Initially, the model comprised of ten (10) dimensions of service quality, namely: tangible, reliability, responsiveness, competence, access, courtesy, communication, credibility, security and understanding/knowing the customer (Berry, Zeithaml & Parasuraman, 1985). A critical study of these variables revealed some cases of interchangeability of words. The paper identified the use of two words, which are closely related and ought to be treated as one. For instance, reliability and credibility are closely related that the adoption of one as a key variable in this model would have sufficed. Similarly, courtesy, communication, understanding/knowing the customer are also closely knit. Owing to criticisms like these and more, Parasuraman, *et al.* (1995) reduced the ten (10) dimensions of their earlier model to five (5), which they called the ServQual (RATER) model. These dimensions are:

1. Reliability. The ability to perform the promised service dependably and accurately.
2. Assurance. The knowledge and courtesy of employees and their ability to inspire trust and confidence.
3. Tangibles. Physical facilities, features or parts of the tangible part of a service. Examples, screen and buttons of ATM.
4. Empathy. The caring, individualized attention given to customers.
5. Responsiveness. The willingness to provide prompt services; ability to respond speedily to customers' requests.

The use of ServQual model as a framework for operationalizing Service Quality has been criticized from its dimensional structure to its implementation. Cabello & Chirinos (2012) affirmed that the methodology of ServQual model is complicated. These authors questioned the yardstick for determining customers' expectations. Corroborating the assertions of these authors, In all, the universality of ServQual's five dimensions has been questioned and this led to the development of ServPerf Model (Cronin & Taylor, 1994, Carman, 1990).

ServPerf Model

The ServPerf model was developed by Cronin & Taylor (Cronin & Taylor, 1994). These authors questioned the conceptualization of the ServQual model and found it confusing with customer satisfaction. They suggested that the Expectation component (E) of ServQual be discarded, giving room for the adoption of only the Performance component (P). Therefore, ServPerf is the performance component of the Service Quality scale (ServQual), which measures five ServQual dimensions: Reliability, Assurance, Tangibles, Empathy and Responsiveness.

RATERC Model

This is simply an extension of the RATER model, which incorporates cost as one of the variables for assessing the service quality of ATMs. The incorporation of cost is critical as it is one of the

factors that ATM users consider in their use of ATMs. The variables as they affect ATMs are reliability, assurance, tangibles, empathy, responsiveness, and cost.

Customer Satisfaction

Farris, Neil, Phillip & David (2010) averred that Customer satisfaction (CSat) is a common term in Marketing that measures how goods and services supplied by a company meet or surpass the expectation of customers. Customer satisfaction is defined as an overall evaluation based on the total purchase and consumption experience with the good or service over time. Customer satisfaction is a barometer that predicts the future customer behaviour (Hill, Roche & Allen 2007). Satisfaction can be either cumulative (overall) or transaction-specific (Jones & Suh, 2000). Transaction-specific satisfaction indicates consumer's satisfaction/dissatisfaction judgment of a single purchase experience or a particular service encounter. On the other hand, cumulative satisfaction is viewed as an overall evaluation of total purchase experiences or all previous service encounters with a particular product or service (Jones & Suh, 2000).

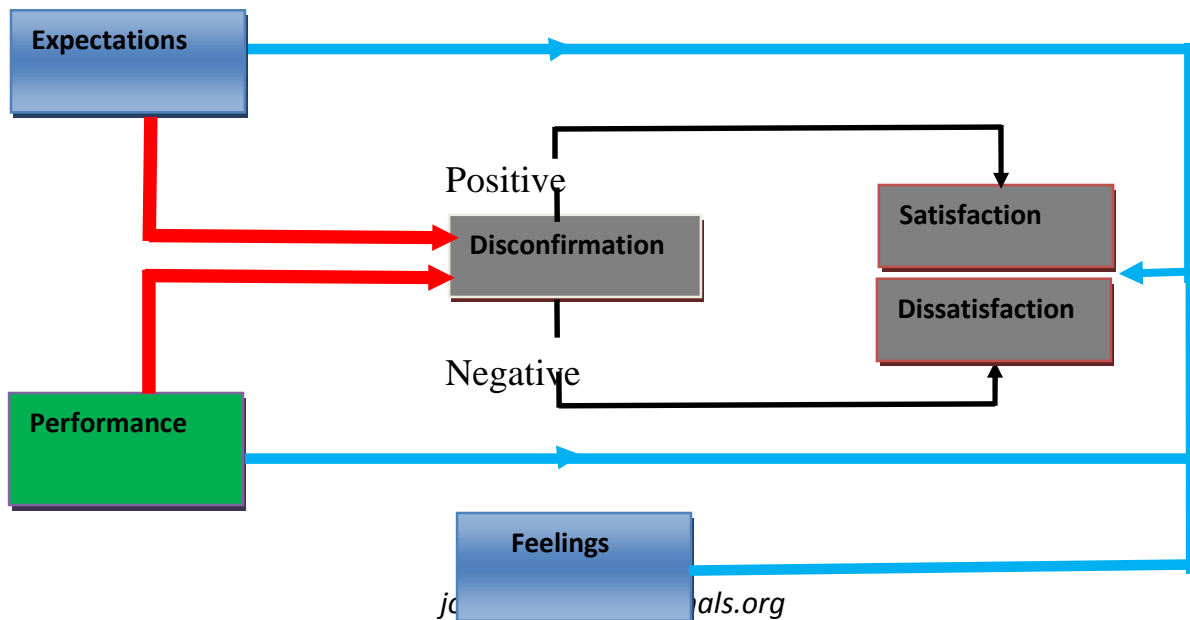
Customer Satisfaction Models

There are many customer satisfaction theories in our literature today. These include: Disconfirmation Paradigm, Kano Model, Cognitive Dissonance Theory, Attribution Theory, Correspondent Inference Theory, Equity Theory, Assimilation Theory, Adaptation Level Theory, among others, but this work shall be focusing on the first three, as they relate to ATM operations.

1. Disconfirmation Paradigm

According to Hoyer & MacInnis (1997), disconfirmation occurs when there is a disparity between prior expectations and actual performance. In this case, expectations are desired goods/services outcomes and include pre-consumption beliefs about overall performance, or ...the levels or attributes possessed by a product (service). Performance is the yardstick for determining whether expected outcomes have been achieved or not. Performance can be objective or subjective. It is objective when the assessment is based on actual performance and subjective when the assessment is based on personal feelings, which is highly individualistic. Disconfirmation, therefore, occurs when performance is more or worse than expected. If it is more than expected, then disconfirmation is positive and satisfaction is derived. If performance is lower than expected, negative disconfirmation results.

Figure 2.3 Disconfirmation Paradigm



Source: Hoyer, W. D & Macinnis, D. J (1997). Consumer Behaviour. USA:

Houghton Mifflin Company.

2. Kano Model

Kano model of customer satisfaction was propounded by Noriaki Kano, Professor (emeritus) of Tokyo University of Science in 1978. The model describes the link between customer satisfaction and the realization of customer requirements. It classifies product attributes based on how they are perceived by customers and their effect on customer satisfaction. According to Wikipedia, Kano classified customer preferences into five categories:

Threshold Attributes (Must-be Qualities)

These are the expected attributes or 'musts' of a product. They do not provide an opportunity for product differentiation. These attributes are taken for granted when present but result in dissatisfaction when they are not there. For instance, ATM users expect every ATM to dispense cash. This is a threshold attribute, as the ability of an ATM to dispense cash does not make it unique, while its inability to dispense cash leads to dissatisfaction of customers.

Performance Attributes (One-Dimensional Qualities)

Performance attributes result in satisfaction when fulfilled and dissatisfaction when not fulfilled. They are parts of the attributes a customer would easily speak of and the ones in which companies compete for, so it is better a product has more of them. If a product has more of them, customer satisfaction increases accordingly. Bright screens and soft buttons of ATMs can be seen as performance attributes, as their presence leads to satisfaction, while their absence leads to dissatisfaction. If the screen of an ATM is so dark that customers barely see the menu, then customers will be dissatisfied. In this same way, if the buttons of ATMs are so stiff to touch that the machine hardly responds to commands, definitely there is going to be a high level of dissatisfaction among ATM users who will be frustrated when they use such ATMs.

Excitement Attributes (Attractive Qualities)

These are the attributes that customers would not ordinarily speak of because they don't expect to have them in a product. They provide satisfaction when they are there, but their absence do not lead to dissatisfaction. An ATM that accepts deposits has excitement attribute, as this is an uncommon attribute in this part of the world. The presence of this attribute leads to the excitement of the user, but its absence does not necessarily lead to dissatisfaction.

Indifferent Qualities

Indifferent qualities are attributes that are neither good nor bad and have no effect, positive or negative, on customer satisfaction. The colour of ATM does not really make any difference.

Reverse Qualities

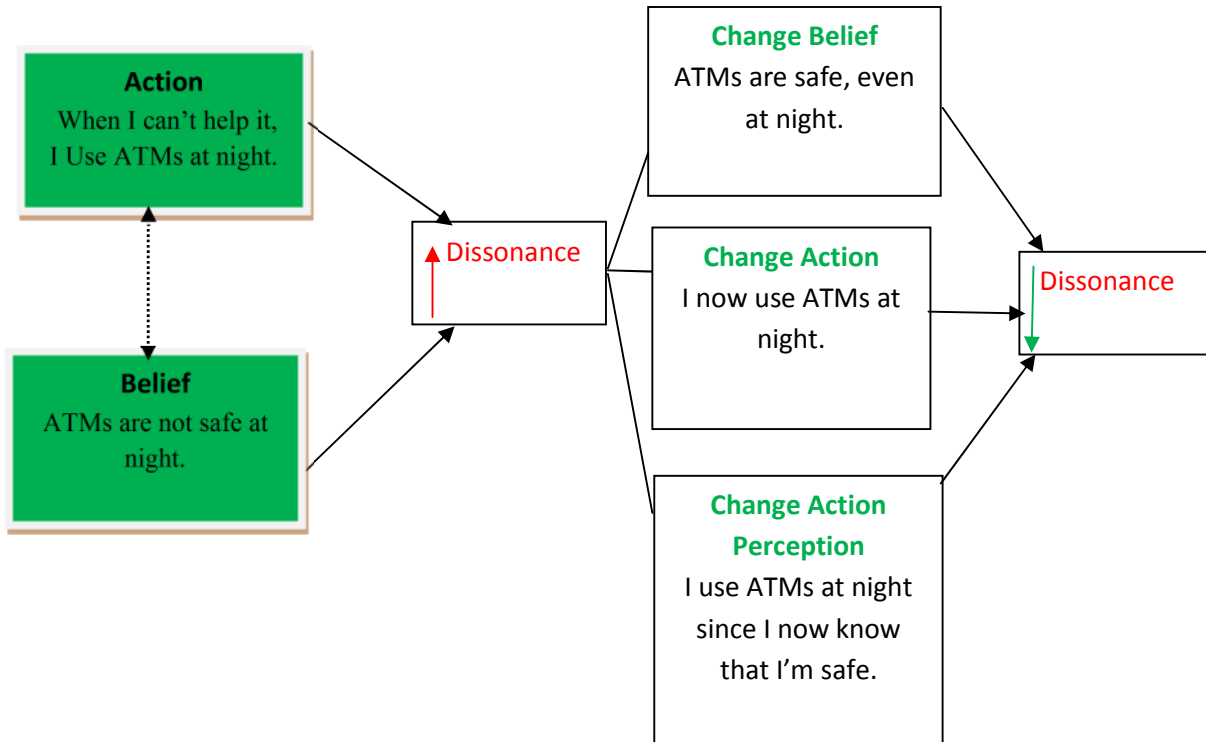
If these aspects exist, they lead to dissatisfaction; if they do not exist, they do not lead to satisfaction. If an ATM loudly announces a user's private operation, it is seen as an evasion of privacy, which in turn leads to dissatisfaction of customers. The absence of this loud voice prompt does not lead to satisfaction.

3. Cognitive Dissonance Theory

According to Festinger (1957), Cognitive dissonance theory is based on three basic assumptions:

1. Human beings are sensitive to inconsistencies between actions and beliefs. The theory suggests that humans, at certain times of their lives, put up actions that are not consistent with their beliefs, attitudes or opinions.
2. Recognition of the inconsistency above leads to dissonance, which invariably spurs an average human to look for avenues to resolve through any of these three basic ways:
 - (i) Change Beliefs
 - (ii) Change Actions
 - (iii) Change Perception of Actions

Figure 2.4 Cognitive Dissonance Theory



Source: web.mst.edu

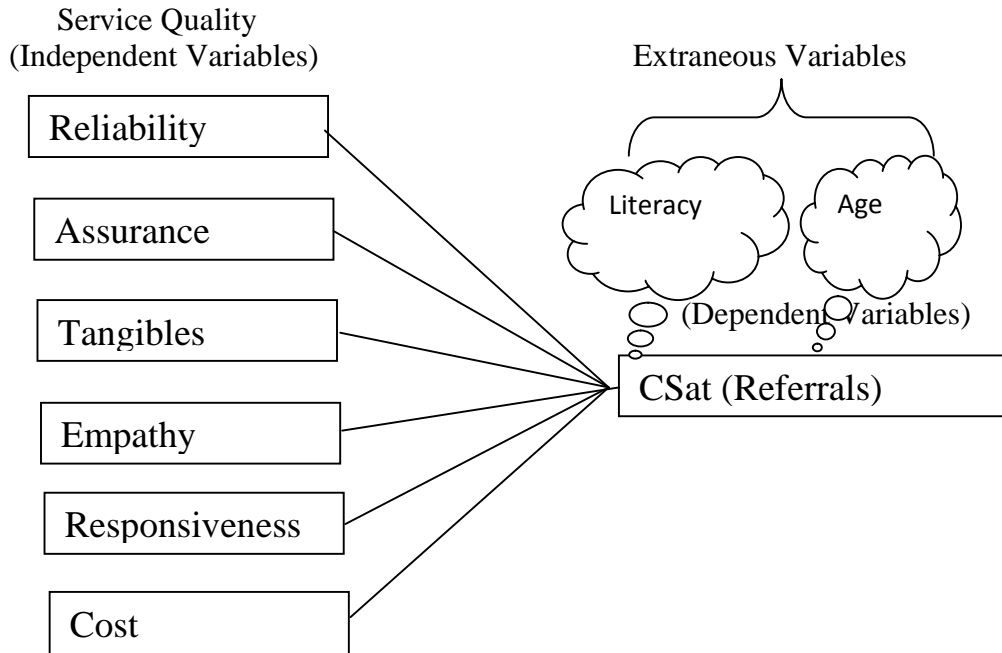
Modified by Researcher (2018)

In the diagram above, it is glaring that the belief about ATM, conflicts with the action taken, and that gives rise to dissonance, but dissonance can be reduced by changing the belief, or the action or the action perception. All these adjustments in real life may not be feasible.

In trying to offer explanation to the Cognitive Dissonance Theory, Cardozzo (1965) asserted that a person who expected a high-value product and received a low-value product would recognize the disparity and experience a cognitive dissonance. In affirmation, Yi (1990) opined that the disconfirmed expectation creates a state of dissonance or a psychological discomfort. This theory suggests that the existence of these contrary views produces an uncomfortable feeling or pressure for the elimination or reduction which can be achieved by adjusting the perceived disparity. Dissonance can be eliminated by reducing the importance of the conflicting beliefs, acquiring new beliefs that change the balance, or removing the conflicting attitude or behaviour.

2.2 Conceptual Framework

Fig. 2.1 RATERC/ CSat and Extraneous Variables Interface



Source: Researchers (2019)

The conceptual framework above reveals the relationship between RATERC (service quality dimensions) and customer satisfaction (CSat), as well as the presence of these extraneous variables (literacy and age) which also affect customer satisfaction. From this model, Service Quality, which is the independent variable, is made up of Reliability, Assurance, Tangibles, Empathy, Responsiveness, and Cost and each of these SQ dimensions has a direct relationship with CSat.

Extraneous Variables Affecting Customer Satisfaction

McLeod (2018) defined extraneous variables as all variables, which are not the independent variable, but could affect the results (e.g. dependent variable) of the experiment. They are those variables that the researcher is not intentionally studying, which have the capacity of affecting the dependent variable. The extraneous variables that affect the satisfaction of ATM users in this work are literacy and age.

Literacy

Literacy is the ability to read and write. It is also seen as knowledge and competence in a specific area. It includes the ability to use language, numbers, images, computers, and other basic means to understand, communicate, gain useful knowledge, solve mathematical problems and use the dominant symbol systems of a culture (Wikipedia). ATM literacy is the ability of a bank customer to use ATMs without any human assistance. Not being able to use ATMs can lead to dissatisfaction. Empirical study carried out by Aguboshim (2018) revealed that illiterate and semiliterate Nigerians do not perceive ATMs as useful or easy-to-use despite the fact that this technological innovation has significant importance and benefits in Nigeria. Similarly, Akin, Aysan, Ozcelik & Yidiran (2014) in their study tried to identify the determinants of customer satisfaction in the Turkish credit card market and their study revealed that financial literacy is a

major determinant of satisfaction. In substantiating their findings, they added that when people know more about financial matters and use their knowledge in their financial activities, they make more efficient decisions and have fewer financial problems, which in turn leads to higher satisfaction. All these are pointers to the fact that ATM literacy affects customer satisfaction.

Age

Age is an important factor in the satisfaction of ATM users. The study conducted by Naureen & Sahiwal (2013) revealed that age (one of the demographic factors in the study) has an impact on the loyalty of bank customers. Ranasinghe, Sudath & Kosala (2017) also confirmed that age of respondents and their educational qualification influence the satisfaction levels of the customer towards the ATM services. It is not out of place to aver that old persons may not derive satisfaction in their use of ATMs as the ability to see clearly (even to see ATM commands) goes down with age. This is known as presbiopia, a condition associated with the aging of the eye that results in progressively worsening ability to focus clearly on close objects (Wikipedia).

3.0 METHODOLOGY

Descriptive research design was adopted in this study. 503 copies of questionnaire made up of Five Point Likert Scale comprising 37 positive statements cutting across the RATERC model was used to collect the data which were analyzed using various statistical tools like the mean, standard deviation, correlation analysis and multiple regression analysis. Since the population of ATM users in Abia is not known, the researchers used the proportion method to determine the sample size of the study. Hence, 503 ATM users spread over the three senatorial zones of Abia State were sampled. By administering the questionnaire on respondents in the three senatorial zones, who were willing to complete it, the study adopted cluster and convenience sampling techniques. The test of reliability conducted using Cronbach's Alpha (SPSS) yielded a value is 0.830. This result shows a high degree of internal consistency in the measuring instrument used.

4.0 DATA ANALYSIS AND INTERPRETATION

4.1 Descriptive Statistics Analysis of RATERC (independent variable) and Customer Satisfaction (dependent variable)

The independent variables (X_1, X_2, X_3, X_4, X_5 and X_6) scores here are obtained as follows:

$$\text{Reliability } (X_1) = \text{CP1} + \text{CP2} + \text{CP3} + \text{CP4} + \text{CP5}$$

$$\text{Assurance } (X_2) = \text{CP6} + \text{CP7} + \text{CP8} + \text{CP9} + \text{CP10} + \text{CP11} + \text{CP12} + \text{CP13}$$

$$\text{Tangibles } (X_3) = \text{CP14} + \text{CP15} + \text{CP16} + \text{CP17} + \text{CP18} + \text{CP19}$$

$$\text{Empathy } (X_4) = \text{CP20} + \text{CP21} + \text{CP22} + \text{CP23} + \text{CP24}$$

$$\text{Responsiveness } (X_5) = \text{CP29} + \text{CP30} + \text{CP31} + \text{CP32} + \text{CP33}$$

$$\text{Cost } (X_6) = \text{CP34} + \text{CP35} + \text{CP36} + \text{CP37}$$

The scores of the dependent variable, Customer satisfaction (Y_1), are obtained as follows:

$$\text{CSat } (Y_1) = \text{CS1} + \text{CS2} + \text{CS3}$$

Table 4.1 Mean, Standard Deviation, Skewness and Kurtosis of $X_1, X_2, X_3, X_4, X_5, X_6$ and Y_1

Variables	Mean	Standard Deviation	Skewness	Kurtosis
Reliability	3.86	0.924	-1.259	1.694
Assurance	3.75	0.803	-0.652	0.394
Tangibles	3.67	0.830	-0.496	0.226
Empathy	3.46	0.929	-0.153	-0.556
Responsiveness	3.25	1.095	0.067	-0.890
Cost	3.68	0.953	-0.649	0.162
CSat	3.83	0.928	-0.883	0.706

Source: Analysis of Field Survey Data (2018)

Discussion of Results and Findings of descriptive statistics of study variables

The result of Table 4.1 above shows that in this study, the mean score of the Reliability (X_1) is 3.86 (above an expected mean score of 3.0) with a standard deviation score of 0.924 (a relatively low standard deviation), a skewness score of -1.256 (showing a little high negative departure from the normal distribution assumed value of 0) and kurtosis score of 1.694 (showing a tall peak for the distribution curve). Assurance (X_2) has a mean score of 3.75 (above an expected mean score of 3.0) with a standard deviation score of 0.803, a skewness score of -0.652 (indicating a very high negative departure from the normal distribution assumed value of 0) and kurtosis score of 0.394 (showing approximately normal peak for the distribution curve). Tangibles (X_3) has a mean score of 3.67 (above an expected mean score of 3.0) with a standard deviation score of 0.830 (a relatively low standard deviation), a skewness score of -0.496 (indicating a very low negative departure from the distribution assumed value of 0) and kurtosis score of 0.226 (showing approximately normal peak for the distribution curve). Empathy (X_4) has a mean score of 3.46 (above an expected mean score of 3.0) with a standard deviation score of 0.929 (a relatively low standard deviation), a skewness score of -0.153 (indicating a very low negative departure from the normal distribution assumed value of 0) and kurtosis score of -0.556 (showing a negative departure from a normal distribution curve). Responsiveness (X_5) has a mean score of 3.25 (above an expected mean score of 3.0) with a standard deviation score of 1.095 (a relatively low standard deviation), a skewness score of 0.067 (showing approximately a normal peak for the distribution assumed value of 0) and kurtosis score of -0.890 (showing a negative departure from the normal distribution curve). Cost (X_6) has a mean score of 3.68 (above an expected mean score of 3.0) with a standard deviation of 0.953 (a very low standard deviation), a skewness score of -0.649 (showing a very low negative departure from the normal distribution assumed value of 0) and kurtosis score of 0.162 (showing approximately normal peak for the distribution curve). CSat (Y_1) has a mean score of 3.83 (above an expected mean score of 3.0) with a standard deviation score of 0.928 (a very low standard deviation), a skewness score of -0.883 (indicating a negative departure from the normal distribution value of 0) and kurtosis score of 0.706 (showing approximately normal peak for the distribution curve).

4.2 Correlation Analysis

The correlation matrix shown in Table 4.2 below is the Pearson Correlation Coefficients between the pairs of these variables: Reliability, Assurance, Tangibles, Empathy, Responsiveness, Cost and CSat. The correlation coefficients show the degree of association (correlation) between the pair of the study variables with their corresponding p-values enclosed in brackets. The statistical decision is taken using the p-value (**the correlation is significant if the p-value is less than 0.05, otherwise it is not significant**).

Table 4.2: Correlation Matrix of ATM Users Study Variables (n = 503) with associated p-values in bracket

Variables	Reliability	Assurance	Tangibles	Empathy	Responsiveness	Cost	CSat
Reliability	1	0.675 (0.000)	0.555 (0.000)	0.361 (0.000)	0.236 (0.000)	0.338 (0.000)	0.392 (0.000)
Assurance	0.675 (0.000)	1	0.686 (0.000)	0.547 (0.000)	0.412 (0.000)	0.457 (0.000)	0.438 (0.000)
Tangibles	0.555 (0.000)	0.686 (0.000)	1	0.638 (0.000)	0.448 (0.000)	0.461 (0.000)	0.385 (0.000)
Empathy	0.361 (0.000)	0.547 (0.000)	0.638 (0.000)	1	0.573 (0.000)	0.544 (0.000)	0.354 (0.000)
Responsiveness	0.236 (0.000)	0.412 (0.000)	0.448 (0.000)	0.573 (0.000)	1	0.576 (0.000)	0.361 (0.000)
Cost	0.338 (0.000)	0.457 (0.000)	0.461 (0.000)	0.544 (0.000)	0.576 (0.000)	1	0.451 (0.000)
CSat	0.392 (0.000)	0.438 (0.000)	0.385 (0.000)	0.354 (0.000)	0.361 (0.000)	0.451 (0.000)	1

Source: Correlation Analysis of Field Survey Data (2018).

Discussion of Results and Findings of Correlation between the Dependent and the Independent Variables

The result of the correlation in Table 4.2 shows that the degree of correlation between CSat and Reliability is 0.392, with a p-value of 0.000. This shows a significant correlation between CSat and Reliability as its p-value is less than 0.05. The degree of correlation between CSat and Assurance is 0.438 with a p-value of 0.000. These figures show that there is a significant correlation between CSat and Assurance as p-value is less than 0.05. The degree of correlation between CSat and Tangible is 0.385 with a p-value of 0.000, indicating a significant correlation between CSat and Tangible as its p-value is less than 0.05. The degree of correlation between CSat and Empathy is 0.354 with a p-value of 0.000. This indicates a significant correlation between CSat and Empathy as its p-value is less than 0.05. The degree of correlation between CSat and Responsiveness is 0.361 with a p-value of 0.000, showing a significant correlation between CSat and Responsiveness as its p-value is less than 0.05. The degree of correlation between CSat and Cost is 0.385 with a p-value of 0.000, which indicates a significant correlation between CSat and Cost as its p-value is less than 0.05. Each of them is significant at 0.05 level.

The correlation among the independent variables helps us to ascertain the multi-collinearity among the independent variables. The results of Table 4.2 also show the coefficients of the simple correlation between each pair of independent variables (Reliability, Assurance, Tangibles,

Empathy, Responsiveness, and Cost), and they yield low positive correlation lying between 0.236 and 0.686. This indicates that there is no serious problem of multi-collinearity among the independent variables of the study (Reliability, Assurance, Tangibles, Empathy, Responsiveness, and Cost), as none of them is up to 0.700; that is, no single independent variable (Reliability, Assurance, Tangibles, Empathy, Responsiveness, and Cost) explains the other. If one had explained the other, we would have merged the two variables. Therefore, all the six independent variables (Reliability, Assurance, Tangibles, Empathy, Responsiveness, and Cost) individually contribute significantly to the dependent variables and each will be used in the multiple regression analysis.

4.3 Regression Analysis

Multiple Regression Analysis of CSat, Y₁ on X₁, X₂, X₃, X₄, X₅ and X₆

The multiple regression analysis results of the dependent variable CSat, Y₁, on the independent variables (Reliability, (X₁), Assurance(X₂), Tangibles(X₃), Empathy (X₄), Responsiveness (X₅), and Cost(X₆)) are summarized in Table 4.3 below.

Table 4.3: Result of Multiple Regression Analysis of Y₁ on X₁, X₂, X₃, X₄, X₅ and X₆.

Variable	Coefficient	Standard Error	Test statistic	p-value
(Constant)	1.233	0.191	6.469	0.000
Reliability (X ₁)	0.166	0.053	3.149	0.002
Assurance (X ₂)	0.171	0.071	2.406	0.016
Tangibles (X ₃)	0.034	0.066	0.517	0.606
Empathy (X ₄)	-0.003	0.056	-0.062	0.950
Responsiveness (X ₅)	0.086	0.043	2.017	0.044
Cost (X ₆)	0.250	0.049	5.154	0.000

Source: Multiple regression analysis of field survey data (2018).

Using the abbreviation below: Customer Satisfaction – CSat, Rel – Reliability, Ass – Assurance, Tan = Tangibles, Emp = Empathy, Res = Responsibility, Cos = Cost, the fitted multiple regression model from the data above is:

$$\widehat{CSat} = 1.233 + 0.166Rel + 0.171Ass + 0.034Tan - 0.003Emp + 0.086Res + 0.250Cos \quad (4.1)$$

The coefficients in the fitted model (Equation 4.1) given above indicate the marginal effect of each of the independent variables on CSat, when all the other independent variables are held constant, that is, an increase in CSat when one independent variable is increased by one unit, while holding the other independent variables constant. The coefficient of Constant, b₀ = 1.233 is the average CSat score without the effect of the six independent variables (X₁, X₂, X₃, X₄, X₅ and X₆) and the effect is significant as its p-value = 0.000 is less than 0.05. This indicates that it is necessary to predict CSat in the use of ATM with the intercept (constant term). The marginal effect of Reliability on CSat, b₁, is equal to 0.166, which means that CSat in the use of ATM is increased by 0.166 (16.0%), when the Reliability of the ATM is improved by one unit. This has a standard error of 0.0053 with test statistic value of 3.149 and p-value of 0.002 which implies that the marginal effect of Reliability on CSat in the use of ATM is significant at 5% level of

significance. The marginal effect of Assurance on CSat, b_2 , is equal to 0.171. This means that CSat in the use of ATM is increased by 0.171 (17.1%) when the Assurance of the ATM is improved by one unit. This has a standard error of 0.071 with test statistic value of 2.406 and p-value of 0.016, which implies that the marginal effect of Assurance on CSat in the use of ATM is significant at 5% level of significance. The marginal effect of Tangibles on CSat, b_3 , is equal to 0.034. This means that the CSat in the use of ATM is increased by 0.034 (3.4%) when the Tangibles of the ATM is improved by one unit. This has a standard error of 0.033 with test statistic value of 0.517 and p-value of 0.606 which implies that the marginal effect of Tangibles on CSat in the use of ATM is significant at 5% level of significance. The marginal effect of Empathy on CSat, b_4 , is equal to -0.003. This means that CSat in the use of ATM is decreased by -0.003 (0.3%) when the Empathy of the ATM is improved by one unit. It has a standard error of 0.056 with test statistic value of -0.062 and p-value of 0.950 which implies that the marginal effect of Empathy on CSat in the use of ATM is significant at 5%. The marginal effect of Responsiveness on CSat, b_5 , is equal to 0.086. This means that the CSat in the use of ATM is increased by 0.086 (8.6%) when the Responsiveness of the ATM is improved by one unit. It has a standard error of 0.043 with test statistic value of 2.017 and p-value of 0.044 which implies that the marginal effect of Responsiveness on CSat in the use of ATM is significant at 5% level of significance. The marginal effect of Cost on CSat, b_6 , is equal to 0.250. This means that CSat in the use of ATM is increased by 0.250 (25.0%) when the Cost of the ATM is improved by one unit. It has a standard error of 0.036 with test statistic value of 5.154 and p-value of 0.000 which implies that the marginal effect of Cost on CSat in the use of ATM is significant at 5% level of significance.

Multiple R and R² of CSat, Y₁ on X₁, X₂, X₃, X₄, X₅ and X₆

To assess the combined effect of X₁, X₂, X₃, X₄, X₅ and X₆ on CSat, Y₁, to determine the goodness of fit of the regression model, we obtained the multiple correlation coefficient, R, and the multiple coefficient of determination, R², which are shown in table 4.4 below:

Table 4.4: Result of Multiple R and R² of CSat, Y₁ on X₁, X₂, X₃, X₄, X₅ and X₆

R	R Square	Adjusted R Square
0.541	0.293	0.284

The result of Table 4.4 shows that the multiple correlation coefficient, R, is equal to 0.541 and this signifies that there is a moderately strong positive relationship between CSat of ATM and the six study independent variables. The multiple coefficient of determination, R², is equal to 0.293. This indicates that Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost jointly account for 29.3% of the variance in CSat in the use of ATM. Then, 100% - 29.3% = 70.7% of the difference in CSat in the use of ATM is unexplained by this study independent variables. The Adjusted R Square is 0.284 (28.4%). This implies that 28.4% of the variation in CSat in the use of ATM is explained by Reliability, Assurance, Tangibles, Empathy, Responsiveness, and Cost.

ANOVA of Regression Analysis of CSat, Y₁ on X₁, X₂, X₃, X₄, X₅ and X₆

The ANOVA of Regression Analysis of CSat, Y₁ on X₁, X₂, X₃, X₄, X₅ and X₆ tests if there is a significant relationship between CSat of customers to the use of ATM and the independent variables X₁, X₂, X₃, X₄, X₅ and X₆ and its results are shown in Table 4.5 below.

Table 4.5 ANOVA of Regression Analysis of CSat, Y₁ on X₁, X₂, X₃, X₄, X₅ and X₆

Source of Variation	SS	Df	MS (Mean Square)	F	Sig (p-value)
Regression	126.481	6	21.080	34.178	0.000
Residual	305.923	496	0.617	_____	_____
Total	432.404	502	_____	_____	_____

Source: Multiple Regression Analysis of field survey data (2018)

Discussion of Results and Findings of ANOVA of CSat, Y₁ on X₁, X₂, X₃, X₄, X₅, X₆

The result of Table 4.5 reveals that the test statistic, F, also called F-ratio or F calculated = 34.178 with p-value of 0.000 indicates that there is a significant regression between CSat in the use of ATM and the six independent variables- X₁, X₂, X₃, X₄, X₅ and X₆ included in the regression model.

4.4 HYPOTHESES TEST RESULTS INTERPRETATION

The hypotheses formulated in the first section are addressed in this section using the ANOVA, t-test, regression analysis and correlation analysis.

Hypothesis 1

H₀1: There is no significant correlation between Reliability and CSat.

Since the correlation coefficient between CSat and Reliability is 0.392 with a p-value of 0.000 which is less than 0.05, we reject the null hypothesis 1 and this shows that there is a significant correlation between CSat and Reliability. The marginal effect of Reliability on CSat is 0.100 with a p-value of 0.002, which is less than 0.05. The result of this test confirms the decision of rejecting null hypothesis 1 and it also implies that the effect of Reliability on CSat is significant at 5% significance level.

Hypothesis 2

H₀2: There is no significant correlation between Assurance and CSat.

Since the correlation coefficient between CSat and Assurance is 0.438 with a p-value of 0.000 which is less than 0.05, we reject the null hypothesis 2 and this shows that there is a significant correlation between CSat and Assurance. The marginal effect of Assurance on CSat is 0.064 with a p-value of 0.016 which is less than 0.05. The result of this test confirms the decision of rejecting null hypothesis 2 and this also implies that the effect of Assurance on CSat is significant at 5% significance level.

Hypothesis 3

H₀3: There is no significant correlation between Tangibles and CSat.

Since the correlation coefficient between CSat and Tangibles is 0.385 with a p-value of 0.000 which is less than 0.05, we reject the null hypothesis 3. The implication of this result is that there is a significant correlation between CSat and Tangibles. The marginal effect of Tangibles on CSat is 0.017 with a p-value of 0.606 which is greater than 0.05. The result of this test shows that though there is a correlation between Tangibles and CSat, the effect of Tangibles on CSat is not significant at 5% significance level.

Hypothesis 4

H₀₄: There is no significant correlation between Empathy and CSat.

Since the correlation coefficient between CSat and Empathy is 0.354 with a p-value of 0.000 which is less than 0.05, we reject the null hypothesis 4 and that indicates there is a significant correlation between CSat and Empathy. The marginal effect of Empathy on CSat is -0.002 with a p-value of 0.950 which is greater than 0.05, indicating that the effect of Empathy on CSat is not significant at 5% significance level.

Hypothesis 5

H₀₅: There is no significant correlation between Responsiveness and CSat.

Since the correlation coefficient between CSat and Responsiveness is 0.361 with a p-value of 0.000 which is less than 0.05, we reject the null hypothesis 5, and this shows that there is a significant correlation between CSat and Responsiveness. The marginal effect of Responsiveness on CSat is 0.052 with a p-value of 0.044 which is less than 0.05, confirming the decision of rejecting null hypothesis 5. This also implies that the effect of Responsiveness on CSat is significant at 5% significance level.

Hypothesis 6

H₀₆: There is no significant correlation between Cost and CSat.

Since the correlation coefficient between CSat and Cost is 0.451 with a p-value of 0.000 which is less than 0.05, we reject the null hypothesis 6 and this shows that there is a significant correlation between CSat and Cost. The marginal effect of Cost on CSat is 0.188 with a p-value of 0.000 which is less than 0.05. This result confirms the decision of rejecting null hypothesis 6, and it also implies that the effect of Cost on CSat is significant at almost 5% significance level.

Hypothesis 7

H₀₇: Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost do not have a significant effect on CSat.

Since the test statistic, F, also called F-ratio or F calculated is equal to 34.178 with p-value of 0.000 which is less than 0.05, we conclude that there is a significant effect of Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost on CSat. Therefore, the null hypothesis 7 is rejected at almost 5% significance level.

5.0 SUMMARY OF FINDINGS

1. There is a significant correlation between each of the SQ dimensions (Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost) and CSat.
2. The marginal effect of Reliability on CSat is significant.
3. The marginal effect of Assurance on CSat is significant.
4. The marginal effect of Tangibles on CSat is not significant.
5. The marginal effect of Empathy on CSat is not significant.
6. The marginal effect of Responsiveness on CSat is significant.
7. The marginal effect of Cost on CSat is significant.
8. The estimated regression model for CSat is given as:

$$\widehat{CSat} = 1.233 + 0.166Rel + 0.171Ass + 0.034Tan - 0.003Emp + 0.086Res + 0.250Cos$$

9. The multiple correlation between RATERC (Reliability, Assurance, Tangibles, Empathy, Responsiveness, and Cost) and CSat is significant.
10. There is a significant regression between Referrals of customers to the use of ATM and Reliability, Assurance, Tangibles, Empathy, Responsiveness, and Cost.
11. Reviewed works confirmed that demographic factors like literacy and age of an ATM user affect his/her satisfaction.

6.0 CONCLUSION

From this study, it has been established that the correlation between all the Service Quality dimensions and Customer Satisfaction is significant, but the marginal effects of Tangibles and Empathy on CSat are not significant. This does not imply that tangibles and empathy should be downplayed. It is an opportunity to strengthen all dimensions of RATERC to ultimately actualize customer satisfaction. It is also a call for further research on the effect of tangibles and empathy dimensions on CSat.

7.0 RECOMMENDATIONS

1. Banks should ensure that ATM services are so reliable that users do not entertain any fear of being robbed or shortchanged in their use of ATMs.
2. They should ensure that ATM - related matters are handled with dispatch. There should be no delay while using ATMs and handling ATM complaints.
3. Banks should develop an easy-to-use ATM system that accommodates the aged, illiterate and other Nigerians who are physically challenged.
4. All dimensions of service quality (reliability, assurance, tangibles, empathy, responsiveness, and cost) should be seriously taken into cognizance to ensure ATM users' satisfaction in their use of ATMs.
5. CBN should put structures in place to monitor all banks in Nigeria to ensure that they comply with CBN regulations on charges on ATM transactions as well as the operation of ATMs. They should ensure that violators of these regulations are made to face the full weight of the law.
6. More ATMs should be provided by these banks to decongest the queues often seen at ATM points. These machines should measure up with global standards in terms of the quality service they offer.

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APPENDIX 1: QUESTIONNAIRE DESIGNED FOR ATM USERS

Please, tick below the option you consider most appropriate:

Gender: Female Male Literacy Status: I can use ATM I cannot use ATM

KEY: SD = Strongly Disagree; D = Disagree; U = Undecided; A = Agree; SA = Strongly Agree

SN	CUSTOMERS’ PERCEPTION OF ATM SERVICE QUALITY	SD	D	U	A	SA
1	ATMs dispense cash and carries out commands as specified					
2	ATMs dispense accurate amount of cash					
3	ATMs print balance slips that always show customers’ true balance					
4	ATMs do not dispense fake currencies					
5	Balance after each transaction is always accurate					
6	ATMs work 24 hours a day					
7	Only one customer is allowed to enter the ATM cabin					
8	Voice prompt does not announce transactions to others					
9	There are security officers at ATM points at all times					
10	Cards are retracted after third attempt of keying in wrong PIN					

11	There is always light at ATM points (no darkness)					
12	Hackers can never hack my accounts, even if they know my pins					
13	Security cameras capture every ATM user, even if he hides his face					
14	Key pads of ATMs are easy to press					
15	Touch screen is easy to manipulate					
16	ATMs rarely break down					
17	Menu options match corresponding menu keys					
18	ATMs can accept deposits as well as perform other functions					
19	ATMs are not easily worn out and outdated					
20	ATM displayed language is easy to understand					
21	ATM users are shaded from sunshine and rainfall					
22	Long queues are not always seen at ATM points					
23	Customer Care staff of banks assist ATM card users who need help					
24	ATM users are provided with seats					
25	I use ATMs on my own volition - not because I am constrained by banks					
26	I use ATMs because I am satisfied with their performance					
27	Users are dissatisfied with ATM service quality due to the challenges they face in the use of ATMs					
28	Customers face many challenges in their use of ATMs					
29	ATM errors are reversed immediately					
30	Retracted cards are always retrieved immediately					
31	It doesn't take time for ATMs to respond to users' request					
32	ATMs are reloaded the moment they run out of cash					
33	New ATM cards are issued immediately they are requested					
34	ATM users are charged for new cards, only when they request for them					
35	SMS alert charge for a transaction does not exceed #2 (bulk SMS cost)					
36	There are no charges on ATM transactions					
37	Using other banks' ATMs up to three times in a month attracts a charge					
SN	Customer Satisfaction Variables	SD	D	U	A	SA
1	I refer friends to ATM points when they have urgent need for cash					
2	I refer people to ATM points when I see them queue before cash tellers					
3	I refer friends to ATM points where there are no long queues					
4	I keep using ATMs because I am satisfied with its service quality					
5	I keep using ATMs because I have no better alternative					
6	I use ATMs whenever I am in dire need of cash					
7	I am generally satisfied with the quality of service of ATMs					

APPENDIX 2
Reliability Coefficient of Performance

Reliability Statistics	
Cronbach's Alpha	N of Items
0.803	37