

# ATM Service Quality and Customer Satisfaction: A Study of First Bank of Nigeria Plc and Union Bank of Nigeria Plc

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**Abstract:** *This work, entitled ATM Service Quality and Customer Satisfaction: a Study of First Bank Nigeria Plc and Union Bank Nigeria Plc aims at operationalizing the major constructs: service quality and customer satisfaction; and unveiling the relationship between the independent variable, service quality (made up of reliability, assurance, tangibles, empathy, responsiveness and cost) and dependent variable, customer satisfaction (made up of referral and repeat use) to be able to project the most prominent of these independent variables that banks should seriously improve on to ultimately increase customer satisfaction. Being an empirical study, the researcher made use of primary data. Questionnaires were administered on 503 users of ATMs spread across the three senatorial zones of Abia State. A five point likert scale comprising 37 positive statements covering the variables under study was used. The reliability of the instrument was determined using Cronbach's Alpha and the value is 0.830. This shows a high degree of internal consistency of the measuring instrument used. Fourteen hypotheses tested reveal that there are correlations between the dependent and independent variables. The study reveals that reliability, assurance, responsiveness and cost were significant but tangibles and empathy were not significant at least at 5 percent significance level when regressed with referral. Similarly, a regression of the six independent variables (Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost) and Repeat-Use (another dependent variable) shows that the constant, reliability, responsiveness and cost were significant but assurance, tangibles and empathy were not significant at least at 5 percent significance level. This indicates that reliability, cost and assurance have great effect on both repeat use and referral, hence should not be neglected. The study further reveals that there is no serious problem of multi-collinearity among the independent variables of the study. This implies that each of these variables can stand on their own, validating the acronym, RATERC, used in this study. Finally, the paper recommends that banks should remove the charges attached to the use of ATMs; stop issuing out currencies in bits as a ploy to deduct #65 from customer's account for each withdrawal made; adhere to the CBN policy on the use of other banks ATM cards on own machines, among others.*

**Key Term:** Service Quality, Customer Satisfaction, ServQual, ServPerf, RATERC

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## 1.0 INTRODUCTION

### 1.1 Background of the Study

The Automated Teller Machine (ATM) is a self-service machine that dispenses cash and performs some other human teller functions. Litan (1999) describes the introduction and rapid use of ATM as the most visible revolution in the banking sector. In his words, "ATM offers customers the convenience of banking in many more locations than ever before." Certainly, ATM was launched to decongest long queues at banking halls and to provide 24/7 services designed to rescue people who are constrained by circumstances to go for odd-hour banking. It is also designed to pay bills, transfer funds, check ledger balances, among others. ATM was

introduced into Nigerian market in 1989, when the National Cash Register (NCR) installed it for Societe Generale Bank Nigeria (SGBN). Due to certain challenges, like phobia, illiteracy, irregular power supply, network failure, insecurity, machine breakdown, long queue, among others, the growth in the use of ATM then, was not astronomical, as these factors discouraged many from its use. Acknowledging this ugly trend, Agboola (2006) reports that only one bank had ATM in Nigeria in 1998. However, with the reforms of 2004 in the banking sector, which heralded intense competition among banks, there was a surge in the use of ATM, despite the presence of those intractable challenges. Wole and Louisa (2009) posit that the deployment of ATM by banks and its use by bank customers is just gaining ground and has burgeoned in recent times. Buttressing these points, Fasan (2007) asserts that the growth in the use of ATM is as a result of the consolidation of banks, which made it possible for more banks to deploy ATMs or at least become part of the shared networks. Could the rapid surge in the use of ATMs in Nigeria be a result of the satisfaction derived by ATM users or a simple case of suffering and smiling? This work is poised to take a critical look at service quality variables as they interface with customer satisfaction.

### **1.2 Statement of the Problem**

Is there any relationship between service quality and customer satisfaction? What are the constituents of the two constructs and to what extent do they relate with one another?

### **1.3 Objectives of the Study**

The general objective of this work is to examine the relationship between ATM service quality and customer satisfaction. In specific terms, this work seeks to:

1. examine the extent of correlation between reliability and referrals;
2. identify the extent of correlation between assurance and referrals;
3. examine the extent of correlation between tangibles and referrals;
4. examine the extent of correlation between empathy and referrals;
5. evaluate the extent of correlation between responsiveness and referrals;
6. evaluate the extent of correlation between cost and referrals;
7. examine the extent of relationship between reliability and repeat use;
8. examine the extent of correlation between assurance and repeat use;
9. evaluate the extent of correlation between tangibles and repeat use;
10. examine the extent of correlation between empathy and repeat use;
11. identify the extent of correlation between responsiveness and repeat use;
12. examine the extent of correlation between cost and repeat use;
13. identify the effect of reliability, assurance, tangibles, empathy, responsiveness and cost on referrals;
14. examine the effect of reliability, assurance, tangibles, empathy, responsiveness and cost on repeat use.

### **1.4 Research Questions**

The following research questions shall be considered in this work:

1. To what extent does reliability correlate with referrals?
2. To what extent does assurance correlate with referrals?
3. What is the extent of correlation between tangibles and referrals?
4. What is the extent of correlation between empathy and referrals?
5. To what extent does responsiveness correlate with referrals?

6. What is the extent of correlation between cost and referrals?
7. To what extent is reliability related to repeat use?
8. What is the extent of correlation between assurance and repeat use?
9. To what extent do tangibles correlate with repeat use?
10. To what extent does empathy correlate with repeat use?
11. To what extent does responsiveness correlate with repeat use?
12. To what extent does cost correlate with repeat use?
13. What effect do Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost have on Referrals?
14. What effect do Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost have on repeat use?

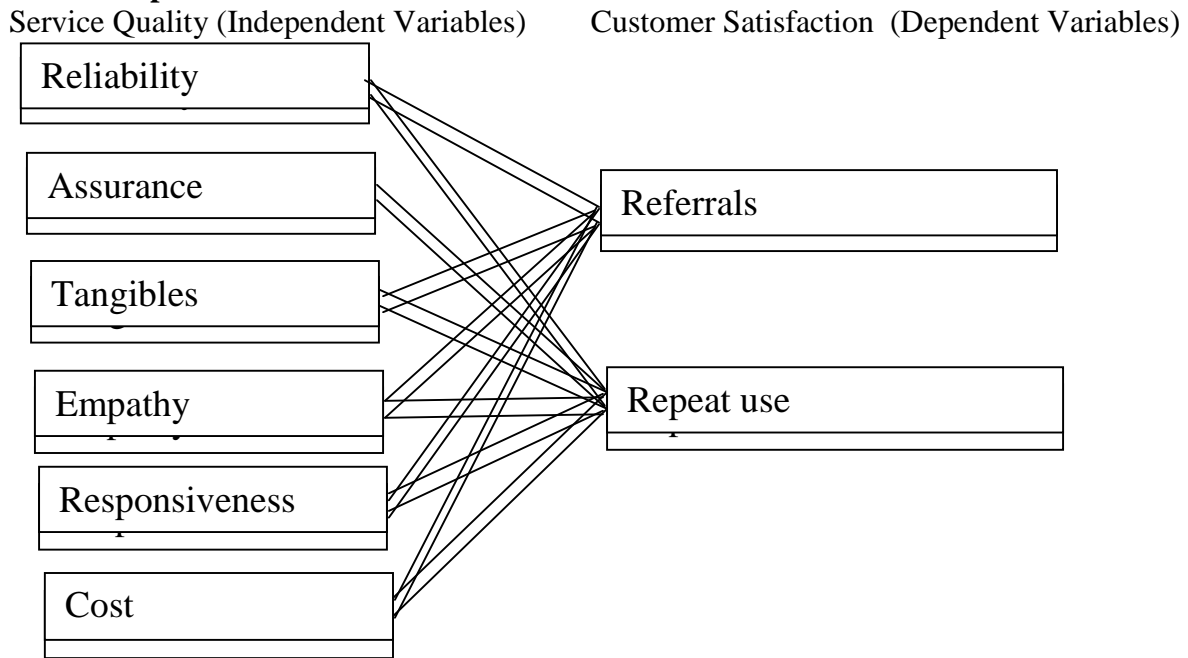
### **1.5 Research Hypotheses**

The following hypotheses shall be tested in this study:

- Ho1: There is no significant correlation between reliability and referrals.
- Ho2: There is no significant correlation between assurance and referrals.
- Ho3: There is no significant correlation between tangibles and referrals.
- Ho4: There is no significant correlation between empathy and referrals.
- Ho5: There is no significant correlation between responsiveness and referrals.
- Ho6: There is no significant correlation between cost and referrals.
- Ho7: There is no significant relationship between reliability and repeat use.
- Ho8: There is no significant correlation between assurance and repeat use.
- Ho9: There is no significant correlation between tangibles and repeat use.
- Ho10: There is no significant correlation between empathy and repeat use.
- Ho11: There is no significant correlation between responsiveness and repeat use.
- Ho12: There is no significant correlation between cost and repeat use.
- Ho13: Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost do not have any significant effect on referrals.
- Ho14: Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost do not have any significant effect on repeat use.

## 2.0 REVIEW OF RELATED LITERATURE

### 2.1 Conceptual Framework



**Fig. 2.1 Service Quality/Customer Satisfaction Interface**

Source: Researcher (2018).

From the operational conceptual model above, it is obvious that we have two variables - dependent and independent. Service Quality, which is the independent variable is made up of reliability, assurance, tangibles, empathy, responsiveness and cost (RATERC) while Customer Satisfaction, the dependent variable, is expressed in the form of referrals and repeat use. The relationship among these variables are captured by the lines linking the variables to each other and this is what gives rise to the hypotheses which shall be tested in this work.

## 2.2 THEORETICAL REVIEW

### 2.2.1 Conceptualization of Service Quality and Customer Satisfaction

Kotler (2003) defines 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. He stresses that the production of service may or may not be tied to a physical product.

#### **Service Quality**

Jiang, Klein, Chen and Tesch (2003), define Service Quality as the comparison between what the customers feel should be offered (expectations) and what is actually delivered (perceptions).

#### **Customer Satisfaction**

Customer Satisfaction is a transaction specific affective response from customers' comparison of product performance to some pre-purchase standard (Halstead, David and Sandra, 1994). Churchill and Surprenant (1982) define customer satisfaction as summation of satisfaction with

various attributes of a product. Fornell (1992) defines customer satisfaction as an overall post purchase evaluation. From a psychological perspective, Cacioppo (2000) sees customer satisfaction as the state of mind that customers have when their expectations have been met or exceeded over the lifetime of a good or service. It is a key performance indicator within business, and is often part of a Balanced Scorecard. In a competitive market place where business competes for customers, customer satisfaction is seen as a key differentiator and increasingly has become a key element of business strategy (Farris, 2010). Customer satisfaction is a measure of the degree to which a good or service meets the customers expectation.

### **2.2.2 Service Quality Vis-À-Vis Customer Satisfaction**

So far, we have seen the conceptualization of the key terms in this study, service quality and customer satisfaction, and it is pertinent to note that Service Quality (SQ) is an important construct in Customer Satisfaction studies. Anderson and Fornell (1994) support this assertion by affirming that SQ is important in the study of customer satisfaction because many empirical researches have shown that SQ is an antecedent of customer satisfaction. Research on SQ and its relationship with customer satisfaction has been broadly conducted in literature. Poretia and Thanassoulis (2005) corroborate this when they assert that SQ influences performance superiority and that performance directly affects customer satisfaction.

### **2.2.3 Operationalizing the Construct, Service Quality**

In empirical studies, constructs are usually operationalized to make them measurable. To that effect, many authors have tried to operationalize service quality using different models. One of these models is the ServPerf.

## **SERVPERF MODEL**

Servperf was propounded on the foundation of ServQual model by Parasuraman, Berry & Zeithaml (1988). ServQual is a multi-dimensional research instrument, designed to capture consumer expectations and perceptions of a service along the five dimensions that are believed to represent service quality. It is built on the expectancy-disconfirmation paradigm. It is one of the major models of conceptualizing service quality and has been the basis of many SQ models (Examples: Kettinger and Lee, 1997; Johns and Jyas, 1997; Aspinwall, 1998; Wang, Xie and Goh, 1999; Wong, Dean and White, 1999, Frochot and Hughes, 2000). The ServPerf model, which is the model used in this study, was developed by Cronin and Taylor (Cronin and 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 and Performance component (P) alone be used. Therefore, ServPerf is the performance component of the Service Quality scale (ServQual), which measures five ServQual dimensions: Reliability, Assurance, Tangibles, Empathy and Responsiveness. ServPerf model requires less time for the implementation of the survey, as each item or characteristic of the service is addressed once. ServPerf is more convenient than ServQual since only one set of questionnaire is used as against ServQual that requires two sets of questionnaire. To this end, the Servperf model stands appropriate as the basis of this study, though with a little modification. The modification is the inclusion of 'cost', a variable that is critical to the assessment of service quality of ATMs, hence we have RATERC (Reliability, Assurance, Tangible, Empathy, Responsiveness and Cost).

### **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 an ATM user considers before he decides whether to use or not to use an ATM.

### **3.0 METHODOLOGY**

The researcher adopted the descriptive research design which is a variant of cross - sectional research design. The questionnaire designed for ATM users is made up of Five Point Likert Scale comprising 37 positive statements that cut across the RATERC model. The questionnaire was divided into two major parts – Performance and Customer Satisfaction. It was analyzed using various statistical tools like the mean deviation, standard deviation, correlation analysis and multiple regression analysis. This study is domiciled in two banks: First Bank of Nigeria Plc. (Aba Main Branch, Arochukwu Branch and Umuahia Branch) and Union Bank Nigeria. Plc. (Aba Factory Road Branch, Arochukwu Branch and Umuahia Library Avenue Branch). The six branches of the two banks as specified above cover the three senatorial districts (Abia North, Abia Central and Abia South) of Abia State. The sampling elements comprise of customers of banks who are users of First Bank and Union Bank ATMs located in the three senatorial districts of Abia. The population of ATM users in Abia is not known, hence proportion method was used to obtain a sample size of five hundred and three (503) persons selected using the convenience sampling technique. The Cronbach's alpha was used to test the validity of the instrument used and a value of 0.830 was obtained. This shows a high degree of internal consistency in the measuring instrument used.

### **4.0 DATA PRESENTATION, ANALYSIS AND INTERPRETATION**

#### **4.1 Introduction**

The research data collected in this study are presented, analyzed and interpreted in this section. Correlation analysis, regression analysis, ANOVA and t-test are applied to analyze the data and the results of the analyses interpreted via the discussion of the results and findings.

#### **4.2 Data Presentation**

##### **4.2.1 Respondents Scores from Questionnaire**

The scores of the respondents' opinion in the questionnaire based on 5 points Likert scale are presented in Table 4.1 below. The full data for the 503 respondents are given in Appendix II.

#### **4.3 Data Analysis and Interpretation**

##### **4.3.1 Analysis of Demographic Profile of Respondents**

Demographic characteristics of respondents are analysed with frequency distribution showing their frequencies and percentages as given in Table 4.3 below.

**Table 4.3: Frequency Distribution of Respondents Demographic Characteristics (n=503)**

Characteristics	Categories	Frequency	Percentage (%)
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Sex	1. Female	255	50.7
	2. Male	248	49.3
ATM Literacy status	1. I can use ATM	293	58.3
	2. I cannot use ATM	210	41.7

Source: Analysis of Field Survey Data (2018)

### Discussion of Results and Findings of Demographic Profile of Respondents

The result of the frequency distribution of Table 4.3 above shows that out of the 503 ATM users sampled 255 (50.7%) are females, while 248 (49.3%) are males. This reveals that more females than males (50.7% - 49.3% = 1.4%) use ATM. The ATM Literacy status reveals that 293 (58.3%) can use ATM on their own without any assistance while 210 (41.7%) of the respondents cannot use ATM on their own without any assistance.

### 4.3.2 Descriptive Statistics Analysis of the Dependent and Independent Variables

The descriptive statistics analysis of the dependent and independent variables is presented in table 4.4 below in this section and the descriptive statistics considered are the mean, standard deviation, skewness and kurtosis of the study variables: Independent variables (Reliability, ( $X_1$ ), Assurance( $X_2$ ), Tangibles( $X_3$ ), Empathy ( $X_4$ ), Responsiveness( $X_5$ ) and Cost( $X_6$ )) and the dependent variables (Referral ( $Y_1$ ), Repeat Use ( $Y_2$ )).

**Table 4.4: Mean, Standard Deviation, Skewness and Kurtosis of  $X_1, X_2, X_3, X_4, X_5, X_6, Y_1, Y_2$**

	Mean	Standard Deviation	Skewness	Kurtosis
Reliability ( $X_1$ )	19.30	4.621	-1.259	1.694
Assurance ( $X_2$ )	30.03	6.426	-0.652	0.394
Tangibles ( $X_3$ )	22.04	4.982	-0.496	0.226
Empathy ( $X_4$ )	17.28	4.643	-0.153	-0.556
Responsiveness ( $X_5$ )	16.24	5.476	0.067	-0.890
Cost ( $X_6$ )	14.73	3.812	-0.649	0.162
Referral ( $Y_1$ )	11.49	2.784	-0.883	0.706
Repeat Use ( $Y_2$ )	15.11	3.529	-0.811	0.773

(Source: Analysis of Field Survey Data 2018)

### Discussion of Results and Findings of descriptive statistics of study variables

The result of Table 4.4 above shows that in this study, the mean score of the Reliability( $X_1$ ) is 19.30 (above an expected mean score of 15.00) with a standard deviation score of 4.621 (a relatively low standard deviation), a skewness score of -1.259 (indicating 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 30.03 (above an expected mean score of 24.00) with a standard deviation score of 6.426 (the highest standard deviation value but within the expected standard score), a skewness score of -0.652 (indicating a

very low 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 22.04 (above an expected mean score of 18.00) with a standard deviation score of 4.982 (a relatively low standard deviation), a skewness score of -0.496 (indicating a very low negative departure from the normal 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 17.28 (above an expected mean score of 15.00) with a standard deviation score of 4.643 (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 approximately normal peak for the distribution curve). Responsiveness ( $X_5$ ) has a mean score of 16.24 (above an expected mean score of 15.00) with a standard deviation score of 5.476 (a relatively low standard deviation), a skewness score of 0.067 (indicating a very low negative departure from the normal distribution assumed value of 0) and kurtosis score of -0.890 (showing approximately normal peak for the distribution curve). Cost ( $X_6$ ) has a mean score of 14.73 (above an expected mean score of 12.00) with a standard deviation score of 3.812 (a very low standard deviation), a skewness score of -0.649 (indicating 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). Referral ( $Y_1$ ) has a mean score of 11.49 (above an expected mean score of 9.00) with a standard deviation score of 2.784 (a very low standard deviation), a skewness score of -0.883 (indicating a very low negative departure from the normal distribution assumed value of 0) and kurtosis score of 0.706 (showing approximately normal peak for the distribution curve). Repeat Use ( $Y_2$ ) has a mean score of 15.11 (above an expected mean score of 12.00) with a standard deviation score of 3.529 (a very low standard deviation), a skewness score of -0.811 (indicating a very low negative departure from the normal distribution assumed value of 0) and kurtosis score of 0.773 (showing approximately normal peak for the distribution curve).

Generally, each of independent and dependent variables has a mean score that is higher than each expected mean score; their standard deviations are low and approximately equal indicating a constant variance (homoscedasticity) assumption required by the regression analysis and the t-test. The skewness and kurtosis values that are approximately 0 indicate that the variables are approximately normally distributed. These support the use of these variables for the t-test, ANOVA, correlation analysis and regression analysis proposed in chapter three.

### **4.3.3 Correlation Analysis**

The correlation matrix shown in Table 4.5 below is the Pearson Correlation Coefficients between the pairs of these variables: Reliability, Assurance, Tangibles, Empathy, Responsiveness, Cost, Referral and Repeat Use. 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 4.5: Correlation Matrix of ATM Users Study Variables (n = 503) with associated p-values in bracket**

Variables	Reliability	Assurance	Tangibles	Empathy	Responsiveness	Cost	Referral	Repeat Use
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)	0.317 (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)	0.372 (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)	0.369 (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)	0.350 (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)	0.442 (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)	0.477 (0.000)
Referral	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	0.668 (0.000)
Repeat Use	0.317 (0.000)	0.372 (0.000)	0.369 (0.000)	0.350 (0.000)	0.442 (0.000)	0.477 (0.000)	0.668 (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 Table 4.5 shows that the degree of correlation between Referral and Reliability is 0.392 with a p-value of 0.000 which indicates a significant correlation between Referral and Reliability as its p-value is less than 0.05; the degree of correlation between Referral and Assurance is 0.438 with a p-value of 0.000 which indicates a significant correlation between Referral and Assurance as its p-value is less than 0.05; the degree of correlation between Referral and Tangible is 0.385 with a p-value of 0.000 which indicates a significant correlation between Referral and Tangible as its p-value is less than 0.05; the degree of correlation between Referral and Empathy is 0.354 with a p-value of 0.000 which indicates a significant correlation between Referral and Empathy as its p-value is less than 0.05; the degree of correlation between Referral and Responsiveness is 0.361 with a p-value of 0.000 which indicates a significant correlation between Referral and Responsiveness as its p-value is less than 0.05; the degree of correlation between Referral and Cost is 0.385 with a p-value of 0.000 which indicates a significant correlation between Referral and Cost as its p-value is less than 0.05. Each of them is significant at 0.01 level as shown in the SPSS output in the appendix.

The degree of correlation between Repeat-use and Reliability is 0.317 with a p-value of 0.000 which indicates a significant correlation between Repeat-use and Reliability as its p-value is less than 0.05; the degree of correlation between Repeat-use and Assurance is 0.372 with a p-value of 0.000 which indicates a significant correlation between Repeat-use and Assurance as its p-value is less than 0.05; the degree of correlation between Repeat-use and Tangible is 0.369

with a p-value of 0.000 which indicates a significant correlation between Repeat-use and Tangible as its p-value is less than 0.05; the degree of correlation between Repeat-use and Empathy is 0.350 with a p-value of 0.000 which indicates a significant correlation between Repeat-use and Empathy as its p-value is less than 0.05; the degree of correlation between Repeat-use and Responsiveness is 0.442 with a p-value of 0.000 which indicates a significant correlation between Repeat-use and Responsiveness as its p-value is less than 0.05; the degree of correlation between Repeat-use and Cost is 0.477 with a p-value of 0.000 which indicates a significant correlation between Repeat-use and Cost as its p-value is less than 0.05. Each of them is significant at 0.01 level as shown in the SPSS output in the appendix.

The correlation among the independent variables helps us to ascertain the multi-collinearity among the independent variables. The results of Table 4.5 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, Cost) explains the other independent variable that would have led to the dropping of the explained variable. 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.

### **4.3.4 Regression Analysis**

#### **4.3.4.1 Multiple Regression Analysis of Referral, $Y_1$ on $X_1, X_2, X_3, X_4, X_5$ and $X_6$**

The multiple regression analysis results of the dependent variable Referral,  $Y_1$  on the independent variables (Reliability, ( $X_1$ ), Assurance( $X_2$ ), Tangibles( $X_3$ ), Empathy ( $X_4$ ), Responsiveness( $X_5$ ) and Cost( $X_6$ )) are summarized in Table 4.6 below.

**Table 4.6: Result of Multiple Regression Analysis of  $Y_1$  on  $X_1, X_2, X_3, X_4, X_5$  and  $X_6$ .**

<b>Variable</b>	<b>Coefficient</b>	<b>Standard Error</b>	<b>Test statistic</b>	<b>p-value</b>
<b>(Constant)</b>	<b>3.698</b>	<b>0.572</b>	<b>6.469</b>	<b>0.000</b>
<b>Reliability (<math>X_1</math>)</b>	<b>0.100</b>	<b>0.032</b>	<b>3.149</b>	<b>0.002</b>
<b>Assurance (<math>X_2</math>)</b>	<b>0.064</b>	<b>0.027</b>	<b>2.406</b>	<b>0.016</b>
<b>Tangibles (<math>X_3</math>)</b>	<b>0.017</b>	<b>0.033</b>	<b>0.517</b>	<b>0.606</b>
<b>Empathy (<math>X_4</math>)</b>	<b>-0.002</b>	<b>0.033</b>	<b>-0.062</b>	<b>0.950</b>
<b>Responsiveness (<math>X_5</math>)</b>	<b>0.052</b>	<b>0.026</b>	<b>2.017</b>	<b>0.044</b>
<b>Cost (<math>X_6</math>)</b>	<b>0.188</b>	<b>0.036</b>	<b>5.154</b>	<b>0.000</b>

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

Using the abbreviation below because of space: Ref – Referral, Rel – Reliability, Ass – Assurance, Tan = Tangibles, Emp = Empathy, Res = Responsibility, Cos = Cost. The fitted multiple regression model from the study data is:

$$\widehat{Ref} = 3.698 + 0.100Rel + 0.064Ass + 0.017Tan - 0.002Emp + 0.052Res + 0.188Cos \quad (4.1)$$

The coefficients in the fitted model (Equation 4.1) given in Table 4.6 indicate the marginal effect of each of the independent variables on Referral, when all the other independent variables are held constant, that is, an increase in Referral when one independent variable is increased by one unit, while holding the other independent variables constant. The coefficient of Constant,  $b_0 = 3.698$  is the average referral score without the effect of the six independent variables ( $X_1, X_2, X_3, X_4, X_5$  and  $X_6$ ) and the effect is significant as its p-value = 0.000 is less than 0.05. This indicates that it is necessary to predict the Referral of customers to the use of ATM with the intercept (constant term). The marginal effect of Reliability on Referral,  $b_1 = 0.100$ , which means that the Referral of customers to the use of ATM is increased by 0.100 (10.0%), when the Reliability of the ATM is improved by one unit has a standard error of 0.032 with test statistic value of 3.149 and p-value of 0.002 which implies that the marginal effect of Reliability on the Referral of customers to the use of ATM is significant at 0.2%. The marginal effect of Assurance on Referral,  $b_2 = 0.064$ , means that the Referral of customers to the use of ATM is increased by 0.064 (6.4%) when the Assurance of the ATM is improved by one unit. It has a standard error of 0.027 with test statistic value of 2.406 and p-value of 0.016 which implies that the marginal effect of Assurance on the Referral of customers to the use of ATM is significant at 1.6%. The marginal effect of Tangibles on Referral,  $b_3 = 0.017$  means that the Referral of customers to the use of ATM is increased by 0.017 (1.7%) when the Tangibles of the ATM is improved by one unit. It 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 the Referral of customers to the use of ATM is significant at 60.6%. The marginal effect of Empathy on Referral,  $b_4 = -0.002$  means that the Referral of customers to the use of ATM is decreased by 0.002 (0.2%) when the Empathy of the ATM is improved by one unit. It has a standard error of 0.033 with test statistic value of -0.062 and p-value of 0.950 which implies that the marginal effect of Tangibles on the Referral of customers to the use of ATM is significant at 95.0%. The marginal effect of Responsiveness on Referral,  $b_5 = 0.052$  means that the Referral of customers to the use of ATM is increased by 0.052 (5.2%) when the Responsiveness of the ATM is improved by one unit. It has a standard error of 0.026 with test statistic value of 2.017 and p-value of 0.044 which implies that the marginal effect of Responsiveness on the Referral of customers to the use of ATM is significant at 4.4%. The marginal effect of Cost on Referral,  $b_6 = 0.188$  means that the Referral of customers to the use of ATM is increased by 0.188 (18.8%) 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 the Referral of customers to the use of ATM is significant at almost 0.0%.

#### **4.3.4.2 Multiple Regression Analysis of Repeat-Use, $Y_2$ on $X_1, X_2, X_3, X_4, X_5$ and $X_6$**

The multiple regression analysis results of the dependent variable, Repeat-Use,  $Y_2$  on the independent variables (Reliability, ( $X_1$ ), Assurance ( $X_2$ ), Tangibles ( $X_3$ ), Empathy ( $X_4$ ), Responsiveness ( $X_5$ ) and Cost ( $X_6$ )) are summarized in Table 4.7 below.

**Table 4.7: Result of Multiple Regression Analysis of  $Y_2$  on  $X_1, X_2, X_3, X_4, X_5$  and  $X_6$ .**

<b>Variable</b>	<b>Coefficient</b>	<b>Standard Error</b>	<b>Test statistic</b>	<b>p-value</b>
<b>(Constant)</b>	<b>5.940</b>	<b>0.722</b>	<b>8.231</b>	<b>0.000</b>
<b>Reliability (X<sub>1</sub>)</b>	<b>0.085</b>	<b>0.040</b>	<b>2.123</b>	<b>0.034</b>
<b>Assurance (X<sub>2</sub>)</b>	<b>0.029</b>	<b>0.034</b>	<b>0.868</b>	<b>0.386</b>
<b>Tangibles (X<sub>3</sub>)</b>	<b>0.050</b>	<b>0.042</b>	<b>1.192</b>	<b>0.234</b>
<b>Empathy (X<sub>4</sub>)</b>	<b>-0.034</b>	<b>0.042</b>	<b>-0.809</b>	<b>0.419</b>
<b>Responsiveness (X<sub>5</sub>)</b>	<b>0.148</b>	<b>0.032</b>	<b>4.583</b>	<b>0.000</b>
<b>Cost (X<sub>6</sub>)</b>	<b>0.255</b>	<b>0.046</b>	<b>5.539</b>	<b>0.000</b>

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

Using the abbreviation below because of space: Rep =Repeat-Use, Rel = Reliability, Ass = Assurance, Tan = Tangibles, Emp = Empathy, Res = Responsibility, Cos = Cost. The fitted multiple regression model from the study data is:

$$\widehat{Rep} = 5.940 + 0.085Rel + 0.029Ass + 0.050Tan - 0.034Emp + 0.148Res + 0.255Cos \quad (4.2)$$

The coefficients in the fitted model (Equation 4.2) given in Table 4.7 indicate the marginal effect of each of the independent variables on Repeat-Use, when all the other independent variables are held constant, that is, an increase in Repeat-Use when one independent variable is increased by one unit, while holding the other independent variables constant. The coefficient of Constant,  $b_0 = 5.940$  is the average referral score without the effect of the six independent variables ( $X_1, X_2, X_3, X_4, X_5$  and  $X_6$ ) and the effect is significant as its p-value = 0.000 is less than 0.05. This indicates that it is necessary to predict the Repeat-Use of ATM by customers with the intercept (constant term). The marginal effect of Reliability on Repeat-Use,  $b_1 = 0.100$ , which means that the Repeat-Use of ATM by customers is increased by 0.085 (8.5%), when the Reliability of the ATM is improved by one unit. It has a standard error of 0.040 with test statistic value of 2.123 and p-value of 0.034 which implies that the marginal effect of Reliability on the Repeat-Use of ATM is significant at 3.4%. The marginal effect of Assurance on Repeat-Use,  $b_2 = 0.029$ , means that the Repeat-Use of ATM is increased by 0.029 (2.9%) when the Assurance of the ATM is improved by one unit. It has a standard error of 0.034 with test statistic value of 0.868 and p-value of 0.386 which implies that the marginal effect of Assurance on the Repeat-Use of ATM is not significant at 38.6%. The marginal effect of Tangibles on Repeat-Use,  $b_3 = 0.050$  means that the Repeat-Use of ATM is increased by 0.050 (5.0%) when the Tangibles of the ATM is improved by one unit. It has a standard error of 0.042 with test statistic value of 1.192 and p-value of 0.234 which implies that the marginal effect of Tangibles on the Repeat-Use of ATM is not significant at 23.4%. The marginal effect of Empathy on Repeat-Use,  $b_4 = -0.034$  means that the Repeat-Use of ATM is decreased by 0.034 (3.4%) when the Empathy of the ATM is improved by one unit. It has a standard error of 0.042 with test statistic value of -0.809 and p-value of 0.419 which implies that the marginal effect of Tangibles on the Repeat-Use of ATM is not significant at 41.9%. The marginal effect of Responsiveness on Repeat-Use,  $b_5 = 0.148$  means that the Repeat-Use of ATM is increased by 0.148 (14.8%) when the Responsiveness of the ATM is improved by one unit. It has a standard error of 0.032 with test statistic value of

4.583 and p-value of 0.000 which implies that the marginal effect of Responsiveness on the Repeat-Use of ATM is significant at almost 0.0%. The marginal effect of Cost on Repeat-Use,  $b_6 = 0.255$  means that the Repeat-Use of ATM is increased by 0.255 (25.5%) when the Cost of the ATM is improved by one unit. It has a standard error of 0.046 with test statistic value of 5.539 and p-value of 0.000 which implies that the marginal effect of Cost on the Repeat-Use of ATM is significant at almost 0.0%.

#### **4.3.4.3 Multiple R and R<sup>2</sup> of Referral, Y<sub>1</sub> on X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>, X<sub>5</sub> and X<sub>6</sub>**

To assess the combined effect of X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>, X<sub>5</sub> and X<sub>6</sub> on Referral, Y<sub>1</sub>, to determine the goodness of fit of the regression model, we obtained the multiple correlation coefficient, R and the multiple coefficient of determination R<sup>2</sup> which are shown in table 4.8 below:

**Table 4.8: Result of Multiple R and R<sup>2</sup> of Referral, Y<sub>1</sub> on X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>, X<sub>5</sub> and X<sub>6</sub>.**

R	R Square	Adjusted R Square
0.541	0.293	0.284

The result of Table 4.8 shows that the multiple correlation coefficient, R = 0.541 and this signifies that there is a moderately strong positive relationship between Referral of ATM and the six study independent variables. The multiple coefficient of determination R<sup>2</sup> = 0.293 indicates that Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost jointly account for 29.3% of the variance in Referral of customers to the use of ATM. Then, 100% - 29.3% = 70.7% of the variance in Referral of customers to the use of ATM is unexplained by this study independent variables. The Adjusted R Square is 0.284 = 28.4%, implying that in the minimum, 28.4% of the variation in Referral of customers to the use of ATM is explained by Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost.

#### **4.3.4.4 Multiple R and R<sup>2</sup> of Repeat-Use, Y<sub>2</sub> on X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>, X<sub>5</sub> and X<sub>6</sub>**

To assess the combined effect of X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>, X<sub>5</sub> and X<sub>6</sub> on Repeat-Use, Y<sub>2</sub> to determine the goodness of fit of the regression model, we obtained the multiple correlation coefficient, R and the multiple coefficient of determination R<sup>2</sup> which are shown in table 4.9 below:

**Table 4.9: Result of Multiple R and R<sup>2</sup> of Repeat-Use, Y<sub>2</sub> on X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>, X<sub>5</sub> and X<sub>6</sub>.**

R	R Square	Adjusted R Square
0.546	0.298	0.289

The result of Table 4.9 shows that the multiple correlation coefficient, R = 0.546 and this signifies that there is a moderately strong positive relationship between Repeat-Use of ATM and the six study independent variables. The multiple coefficient of determination R<sup>2</sup> = 0.298 indicates that Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost jointly account for 29.8% of the variance in Repeat-Use of ATM. Then, 100% - 29.8% = 70.2% of the variance in Repeat-Use of ATM is unexplained by this study independent variables. The Adjusted R Square is 0.289 = 28.9%, implying that in the minimum, 28.9% of the variation in

Repeat-Use of ATM is explained by Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost.

**4.3.4.5 ANOVA of Regression Analysis of Referral,  $Y_1$  on  $X_1, X_2, X_3, X_4, X_5$  and  $X_6$**

The ANOVA of Regression Analysis of Referral,  $Y_1$  on  $X_1, X_2, X_3, X_4, X_5$  and  $X_6$  tests if there is a significant relationship between Referral of customers to the use of ATM and the independent variables  $X_1, X_2, X_3, X_4, X_5$  and  $X_6$  and its result are shown in Table 4.10 below.

**Table 4.10 ANOVA of Regression Analysis of Referral,  $Y_1$  on  $X_1, X_2, X_3, X_4, X_5$  and  $X_6$**

Source of Variation	SS	DF	MS	F	Sig (p-value)
Regression	1138.329	6	189.721	34.178	0.000
Residual	2753.310	496	5.551		
Total	3891.638	502			

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

**Discussion of Results and Findings of ANOVA of Referral,  $Y_1$  on  $X_1, X_2, X_3, X_4, X_5, X_6$**

The result of Table 4.10 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 Referral of customers to the use of ATM and the six independent variables-  $X_1, X_2, X_3, X_4, X_5$  and  $X_6$  included in the regression model.

**4.3.4.6 ANOVA of Regression Analysis of Repeat-Use,  $Y_2$  on  $X_1, X_2, X_3, X_4, X_5$  and  $X_6$**

The ANOVA of Regression Analysis of Repeat-Use,  $Y_2$  on  $X_1, X_2, X_3, X_4, X_5$  and  $X_6$  tests if there is a significant relationship between Repeat-Use of ATM and the independent variables  $X_1, X_2, X_3, X_4, X_5$  and  $X_6$  and its result are shown in Table 4.11 below.

**Table 4.11 ANOVA of Regression Analysis of Repeat-Use,  $Y_2$  on  $X_1, X_2, X_3, X_4, X_5$  and  $X_6$**

Source of Variation	SS	DF	MS	F	Sig (p-value)
Regression	1860.615	6	310.102	35.040	0.000
Residual	4389.588	496	8.850		
Total	6250.203	502			

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

**Discussion of Results and Findings of ANOVA of Repeat-Use,  $Y_2$  on  $X_1, X_2, X_3, X_4, X_5, X_6$**

The result of Table 4.10 reveals that the test statistic, F, also called F-ratio or F calculated = 35.040 with p-value of 0.000 indicates that there is a significant regression between Repeat-Use of ATM and the six independent variables  $X_1, X_2, X_3, X_4, X_5$  and  $X_6$  included in the regression model.

#### **4.4 HYPOTHESES TEST RESULTS INTERPRETATION**

The hypotheses formulated in chapter one are addressed in this section using the ANOVA, t-test, regression analysis and correlation analysis on the field survey data.

##### **4.4.1 Hypothesis Test with Correlation Analysis**

Correlation analysis results presented in Table 4.5 are used to test hypotheses 1 to 12 of this study and the regression analysis results of Tables 4.6 and 4.7 lend more explanations to these tests as explained below.

##### **Hypothesis 1**

H<sub>0</sub>1: There is no significant correlation between Reliability and Referrals.

Since the correlation coefficient between Referrals 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 that indicates there is a significant correlation between Referral and Reliability. The marginal effect of reliability on Referrals is 0.100 with a p-value of 0.002 which is less than 0.05. This confirms the decision of rejecting null hypothesis 1 and this also implies that the effect of reliability on referral is significant at 0.2% significance level.

##### **Hypothesis 2**

H<sub>0</sub>2: There is no significant correlation between Assurance and Referrals.

Since the correlation coefficient between Referrals 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 that indicates there is a significant correlation between Referral and Assurance. The marginal effect of Assurance on Referrals is 0.064 with a p-value of 0.016 which is less than 0.05. This confirms the decision of rejecting null hypothesis 2 and this also implies that the effect of Assurance on Referrals is significant at 1.6% significance level.

##### **Hypothesis 3**

H<sub>0</sub>3: There is no significant correlation between Tangibles and Referrals.

Since the correlation coefficient between Referrals and Tangibles is 0.385 with a p-value of 0.000 which is less than 0.05, we reject the null hypothesis 3 and that indicates there is a significant correlation between Referral and Tangibles. The marginal effect of Tangibles on Referrals is 0.017 with a p-value of 0.606 which is greater than 0.05. This indicates that though the correlation between Tangibles on Referrals is not significant at 60.6% significance level.

##### **Hypothesis 4**

H<sub>0</sub>4: There is no significant correlation between Empathy and Referrals.

Since the correlation coefficient between Referrals 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 Referral and Empathy. The marginal effect of Tangibles on Referrals is -0.002 with a p-value of 0.950 which is greater than 0.05. This indicates that though the correlation between Empathy on Referrals is not significant at 95% significance level.

### **Hypothesis 5**

H<sub>0</sub>5: There is no significant correlation between Responsiveness and Referrals.

Since the correlation coefficient between Referrals 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 that indicates there is a significant correlation between Referral and Responsiveness. The marginal effect of Responsiveness on Referrals is 0.052 with a p-value of 0.044 which is less than 0.05. This confirms the decision of rejecting null hypothesis 5 and this also implies that the effect of Responsiveness on Referrals is significant at 4.4% significance level.

### **Hypothesis 6**

H<sub>0</sub>6: There is no significant correlation between Cost and Referrals.

Since the correlation coefficient between Referrals 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 that indicates there is a significant correlation between Referral and Cost. The marginal effect of Cost on Referrals is 0.188 with a p-value of 0.000 which is less than 0.05. This confirms the decision of rejecting null hypothesis 6 and this also implies that the effect of Cost on Referrals is significant at almost 0.0% significance level.

### **Hypothesis 7**

H<sub>0</sub>7: There is no significant correlation between Reliability and Repeat-Use.

Since the correlation coefficient between Repeat-Use and Reliability is 0.317 with a p-value of 0.000 which is less than 0.05, we reject the null hypothesis 7 and that indicates there is a significant correlation between Repeat-Use and Reliability. The marginal effect of reliability on Repeat-Use is 0.085 with a p-value of 0.034 which is less than 0.05. This confirms the decision of rejecting null hypothesis 7 and this also implies that the effect of reliability on Repeat-Use is significant at 3.4% significance level.

### **Hypothesis 8**

H<sub>0</sub>8: There is no significant correlation between Assurance and Repeat-Use.

Since the correlation coefficient between Repeat-Use and Assurance is 0.372 with a p-value of 0.000 which is less than 0.05, we reject the null hypothesis 8 and that indicates there is a significant correlation between Repeat-Use and Assurance. The marginal effect of Assurance on Repeat-Use is 0.029 with a p-value of 0.386 which is greater than 0.05. This implies that the effect of Assurance on Repeat-Use is not significant at 38.6% significance level.

### **Hypothesis 9**

H<sub>0</sub>9: There is no significant correlation between Tangibles and Repeat-Use.

Since the correlation coefficient between Repeat-Use and Tangibles is 0.369 with a p-value of 0.000 which is less than 0.05, we reject the null hypothesis 9 and that indicates there is a significant correlation between Repeat-Use and Tangibles. The marginal effect of Tangibles on Repeat-Use is 0.050 with a p-value of 0.234 which is greater than 0.05. This indicates that though the correlation between Tangibles on Repeat-Use is not significant at 23.4% significance level.



### **Hypothesis 10**

H<sub>0</sub>10: There is no significant correlation between Empathy and Repeat-Use.

Since the correlation coefficient between Repeat-Use and Empathy is 0.350 with a p-value of 0.000 which is less than 0.05, we reject the null hypothesis 10 and that indicates there is a significant correlation between Repeat-Use and Empathy. The marginal effect of Tangibles on Repeat-Use is -0.034 with a p-value of 0.419 which is greater than 0.05. This indicates that though the correlation between Empathy on Repeat-Use is not significant at 41.9% significance level.

### **Hypothesis 11**

H<sub>0</sub>11: There is no significant correlation between Responsiveness and Repeat-Use.

Since the correlation coefficient between Repeat-Use and Responsiveness is 0.442 with a p-value of 0.000 which is less than 0.05, we reject the null hypothesis 11 and that indicates there is a significant correlation between Repeat-Use and Responsiveness. The marginal effect of Responsiveness on Repeat-Use is 0.148 with a p-value of 0.000 which is less than 0.05. This confirms the decision of rejecting null hypothesis 11 and this also implies that the effect of Responsiveness on Repeat-Use is significant at almost 0.0% significance level.

### **Hypothesis 12**

H<sub>0</sub>12: There is no significant correlation between Cost and Repeat-Use.

Since the correlation coefficient between Repeat-Use and Cost is 0.477 with a p-value of 0.000 which is less than 0.05, we reject the null hypothesis 12 and that indicates there is a significant correlation between Repeat-Use and Cost. The marginal effect of Cost on Repeat-Use is 0.255 with a p-value of 0.000 which is less than 0.05. This confirms the decision of rejecting null hypothesis 12 and this also implies that the effect of Cost on Repeat-Use is significant at almost 0.0% significance level.

### **Hypothesis 13**

H<sub>0</sub>13: Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost do not have a significant effect on Referrals.

Since the test statistic, F, also called F-ratio or F calculated = 34.178 with p-value of 0.000 which is less than 0.05. This shows that there is a significant effect of Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost on Referrals. Therefore, the null hypothesis 13 is rejected at almost 0.0% significance level.

### **Hypothesis 14**

H<sub>0</sub>14: Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost do not have a significant effect on Repeat-Use.

Since the test statistic, F, also called F-ratio or F calculated = 35.040 with p-value of 0.000 which is less than 0.05. This shows that there is a significant effect of Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost on Repeat-Use. Therefore, the null hypothesis 14 is rejected at almost 0.0% significance level.

## **5.1 SUMMARY OF MAJOR FINDINGS**

The major findings of this study are summarized below:

1. The correlation coefficients between each pair of this study six independent variables (Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost) each yields low positive correlation coefficient lying between 0.236 and 0.686 and this indicates that there is no serious problem of multi-collinearity among the independent variables of the study.
2. The degree of correlation between each of this study six independent variables (Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost) and Referrals (an independent variable) as shown by the Pearson Correlation Coefficient is significant at 0.000 significance level. This led to the rejection of hypotheses 1 to 6.
3. The degree of correlation between each of this study six independent variables (Reliability, Assurance, tangibles, empathy, responsiveness and cost) and Repeat-Use (another independent variable) is significant at 0.000 significance level, thereby leading to the rejection of hypotheses 7 to 12.
4. The marginal effect of Reliability on Referrals is 0.100 (10.0%). That is Referrals of customers to the use of ATM is increased by 10.0% when the Reliability of the ATM is improved by one unit and this is significant as its p-value (appropriate significance level) is 0.2%.
5. The marginal effect of Assurance on Referrals is 0.064. That is, Referrals of customers to the use of ATM is increased by 6.4% when the Assurance of the ATM is improved by one unit and this is significant as its p-value (appropriate significance level) is 1.6%.
6. The marginal effect of Tangibles on Referrals is 0.017. That is, Referrals of customers to the use of ATM is increased by 1.7% when the Tangibles of the ATM is improved by one unit and this is not significant as its p-value (appropriate significance level) is 60.6%.
7. The marginal effect of Empathy on Referrals is -0.002. That is, Referrals of customers to the use of ATM is decreased by 0.2% when the Empathy of the ATM is improved by one unit and this is not significant as its p-value (appropriate significance level) is 95%.
8. The marginal effect of Responsiveness on Referrals is 0.052. That is, Referrals of customers to the use of ATM is increased by 5.2% when the Responsiveness of the ATM is improved by one unit and is significant as its p-value (appropriate significance level) is 4.4%.
9. The marginal effect of Cost on Referrals is 0.188. That is, Referrals of customers to the use of ATM is increased by 18.8% when the Cost is improved by one unit and this is significant as its p-value (appropriate significance level) is 0.0%.
10. The estimated regression model for referrals is given as:  
$$\widehat{Ref} = 3.698 + 0.100Rel + 0.064Ass + 0.017Tan - 0.002Emp + 0.052Res + 0.188Cos$$
11. The multiple correlation coefficient, R, of Referrals is 0.541 and the multiple coefficient of determination, R Square is 0.293 and this indicates that Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost jointly account for 29.3% of the variance in Referrals of customers to the use of ATM. The Adjusted R Square is 0.284 = 28.4%, implying that in the minimum, 28.4% of the variation in Referrals of customers to the use of ATM is explained by Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost.

12. The marginal effect of Reliability on Repeat-Use is 0.085. That is, Repeat-Use of ATM is increased by 8.5% when the Reliability of the ATM is improved by one unit and this is significant as its p-value (appropriate significance level) is 3.4%.
13. The marginal effect of Assurance on Repeat-Use is 0.029. That is, Repeat-Use of ATM is increased by 2.9% when the Assurance of the ATM is improved by one unit and this is not significant as its p-value (appropriate significance level) is 38.6%.
14. The marginal effect of Tangibles on Repeat-Use is 0.050. That is, Repeat-Use of ATM is increased by 5.0% when the Tangibles of the ATM is improved by one unit and this is not significant as its p-value (appropriate significance level) is 23.4%.
15. The marginal effect of Empathy on Repeat-Use is -0.034. That is, Repeat-Use of ATM is decreased by 3.4% when the Empathy of the ATM is improved by one unit and this is not significant as its p-value (appropriate significance level) is 41.9%.
16. The marginal effect of Responsiveness on Repeat-Use is 0.148. That is, Repeat-Use of ATM is increased by 14.8% when the Responsiveness of the ATM is improved by one unit and is significant as its p-value (appropriate significance level) is 0.0%.
17. The marginal effect of Cost on Repeat-Use is 0.255. That is, Repeat-Use of ATM is increased by 25.5% when the Cost is improved by one unit and this is significant as its p-value (appropriate significance level) is 0.0%.
18. The estimated regression model for Repeat-Use is given as:  
$$\widehat{Rep} = 5.940 + 0.085Rel + 0.029Ass + 0.050Tan - 0.034Emp + 0.148Res + 0.255Cos$$
19. The multiple correlation coefficient, R, of Repeat-Use is 0.546 and the multiple coefficient of determination, R Square is 0.298 and this indicates that Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost jointly account for 29.8% of the variance in Referrals of customers to the use of ATM. The Adjusted R Square is 0.289 = 28.9%, implying that in the minimum, 28.9% of the variation in Referrals of customers to the use of ATM is explained by Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost.
20. In ascertaining the significance of the relationship between Referrals and Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost, using the Analysis of Variance, the test statistic, F also called F-ratio or F calculated is 34.178 with p-value of 0.000 which indicates that there is a significant regression between Referrals of customers to the use of ATM and Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost.
21. The test of the significance of the relationship between Repeat-Use and Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost, using the Analysis of Variance, yielded test statistic of 35.040 with p-value of 0.000 which indicates that there is a significant regression between Repeat-Use of ATM and Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost.

## 5.2 CONCLUSION

The survey data collected in this study were analyzed with respect to the six independent variables (Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost) and the two dependent variables (Referrals and Repeat-Use) in line with the hypotheses formulated in the introduction and other related and useful suppositions using the correlation analysis, regression analysis, t-test and F test (ANOVA). The null hypotheses one to six which postulate that there is no significant correlation between each of the six independent variables and Referrals were all rejected at almost 0.0 percent level of significance. Also, null hypotheses seven to twelve which postulate that there is no significant correlation between each of the six independent variables and Repeat-Use were all also rejected at almost 0.0 percent level of significance. In the same vein, null hypothesis thirteen which postulate that there is no significant relationship between all the six independent variables and Referrals was also rejected at almost 0.0 percent level of significance. Lastly, null hypothesis fourteen which postulates that there is no significant correlation between all the six independent variables and Repeat-Use was rejected at almost 0.0 percent level of significance.

Additionally, when analyzing the relationship between the six independent variables (Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost) and Referrals (a dependent variable), we obtained this estimated predictive regression model:  $\widehat{Ref} = 3.698 + 0.100Rel + 0.064Ass + 0.017Tan - 0.002Emp + 0.052Res + 0.188Cos$  which shows that the constant, reliability, assurance, responsiveness and cost were significant but *tangibles and empathy were not significant at least at 5 percent significance level*. Similarly, a regression of the six independent variables (Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost) and Repeat-Use (another dependent variable), yielded this estimated predictive regression model:  $\widehat{Rep} = 5.940 + 0.085Rel + 0.029Ass + 0.050Tan - 0.034Emp + 0.148Res + 0.255Cos$  which shows that the constant, reliability, responsiveness and cost were significant but *assurance, tangibles and empathy were not significant at least at 5 percent significance level*.

Lastly, we discovered that the the six independent variables (Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost) explain a minimum of 28.4 percent of the variation of Referrals while they explain a minimum of 28.9 percent of the variation in Repeat-Use.

## 5.3 RECOMMENDATIONS

Based on the findings of this research, the following recommendations are made:

1. Banks in Nigeria should use this models developed from this research work to enhance the efficiency and performance of their ATM service quality delivery. The models are:

$$\widehat{Ref} = 3.698 + 0.100Rel + 0.064Ass + 0.017Tan - 0.002Emp + 0.052Res + 0.188Cos$$

and

$$\widehat{Rep} = 5.940 + 0.085Rel + 0.029Ass + 0.050Tan - 0.034Emp + 0.148Res + 0.255Cos$$

2. As Cost yields the greatest contribution to the prediction of Referrals and Repeat Use, strategies should be adopted to optimize the cost of ATM to the users. Strategies to be adopted should include:

- a) eliminating the charges attached to the use of ATMs as customers are generally charged for banking services offered them at the end of the month;

- b) not issuing currencies in bits as a ploy to deduct #65 from customer's account for each withdrawal made;
  - c) sticking to the CBN policy on the use of other banks ATM cards on own machines.
  - d) Reducing the charges on new ATM cards issued (not debiting any customer for ATM not issued to customers).
3. Policy and procedures on Reliability of ATM must be well-established and well-known by all employees as the effect of reliability on the predictive model is significantly up to 10 percent. This can be done by using double or triple authentication systems that includes the use of bio-data like that of the retina, thumbprint, among others. This will definitely enhance reliability, which stands out among the variables in this study.
4. Since assurance is identified to be the third in line of the magnitude of effect on the predictor variable, banks should work on building confidence in their customers if they want the Referrals of customers to improve significantly.

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**APPENDIX 1: QUESTIONNAIRE DESIGNED FOR ATM USERS**

Please, tick below the option you consider most appropriate:

Sex: 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	S	D	U	A	S
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					
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	<b>Customer Satisfaction Variables</b>	<b>S</b>	<b>D</b>	<b>U</b>	<b>A</b>	<b>SA</b>

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**

<b>Reliability Statistics</b>	
Cronbach's Alpha	N of Items
0.803	37

<b>Scale Statistics</b>			
Mean	Variance	Std. Deviation	N of Items
120.35	317.608	17.822	37