RATERC MODEL AND CUSTOMER REFERRALS IN AUTOMATED TELLER MACHINE USAGE

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ABSTRACT

This paper aimed at leveraging on RATERC model to identify the dimensions of service quality to propagate so as to boost referrals in ATM usage. To that effect, self-administered questionnaire was used to generate data from ATM users spread over Abia State, Nigeria. Reliability test conducted showed a high degree of internal consistency of the instrument used. A predictive regression model indicating that Cost contributes most to Referral of customers to the use of ATM, followed by Assurance, Reliability, Responsiveness and Tangibles was developed. Findings revealed a moderately strong positive relationship between Referral of customers to ATM and the six independent variables of the study. It further revealed that Reliability, Assurance, Responsiveness and Cost have significant effects on Referrals, but Tangibles and Empathy were found to have no significant effect on Referrals.

Key words: *ServQual, ServPerf, RATERC, Service Quality, Customer Satisfaction.*

1.   INTRODUCTION

Automated Teller Machine (ATM) is a machine that readily dispenses cash and carries out automated teller banking services at all times of the day. It was designed to make banking easier and ultimately decongest banking halls. Due to convenience and other benefits, many bank customers embrace ATMs, despite challenges experienced in its usage. Encomium (2014) reported that Nigerians were the heaviest ATM users in Africa. According to the source, out of 32,000 bank customers in 43 countries, including Nigeria, Kenya and South Africa who were surveyed by EY in 2014, Nigerians were adjudged the heaviest users of ATM. NIBSS (2017) also reported that the average ATM in Nigeria dispenses thrice the number of notes in Ghana, and ten times the number of notes in U.K. That affirms the high usage of ATMs in Nigeria (Bayo, 2017). The acclaimed surge in the use of ATMs suggests that ATM users in this part of the world are satisfied, and service quality of ATMs may have contributed significantly to their state of satisfaction. Notable studies revealed a strong positive correlation between customer satisfaction and service quality (Anderson & Fornell, 1994; Poretia & Thanassoulis, 2005; Yong & Fang, 2004). Hague & Hague (2016) affirmed that satisfied customers usually rebound and buy more. They also network to reach other potential customers by sharing experiences. Phillip et al. (2011) asserted that customers obtained through referrals are both more loyal and valuable than other customers, adoption of RATERC model to build referral of customers to the use of ATM.

1.1   Statement of the Problem

While it is generally believed that service quality increases referrals, it is still not clear whether all the service quality variables (Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost) contribute positively or negatively to referrals. Measuring the contribution of each of these variables to referrals becomes expedient as it will ultimately inform decision makers on which variable to project more than others to build referrals. This is the thrust of this study.

1.2   Research Hypotheses

Ho1:   There is no significant relationship between reliability and referrals.
Ho2:   Assurance does not have a significant relationship with referrals.
Ho3:   Tangibles do not significantly relate with referrals.
Ho4:   The relationship between empathy and referrals is not significant.
Ho5:   There is no significant relationship between responsiveness and referrals.
Ho6:   Cost does not relate significantly with referrals.

2.   REVIEW OF RELATED LITERATURE

2.1   Conceptual Review

The operational conceptual model in Fig 2.1 projects the two major variables, Service Quality (independent variable) made up of Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost (RATERC) , and Customer Satisfaction (dependent variable), expressed in the form of Referrals. The relationship among these variables is captured by the lines linking the variables to each other and this is what gave rise to the hypotheses tested in this work.
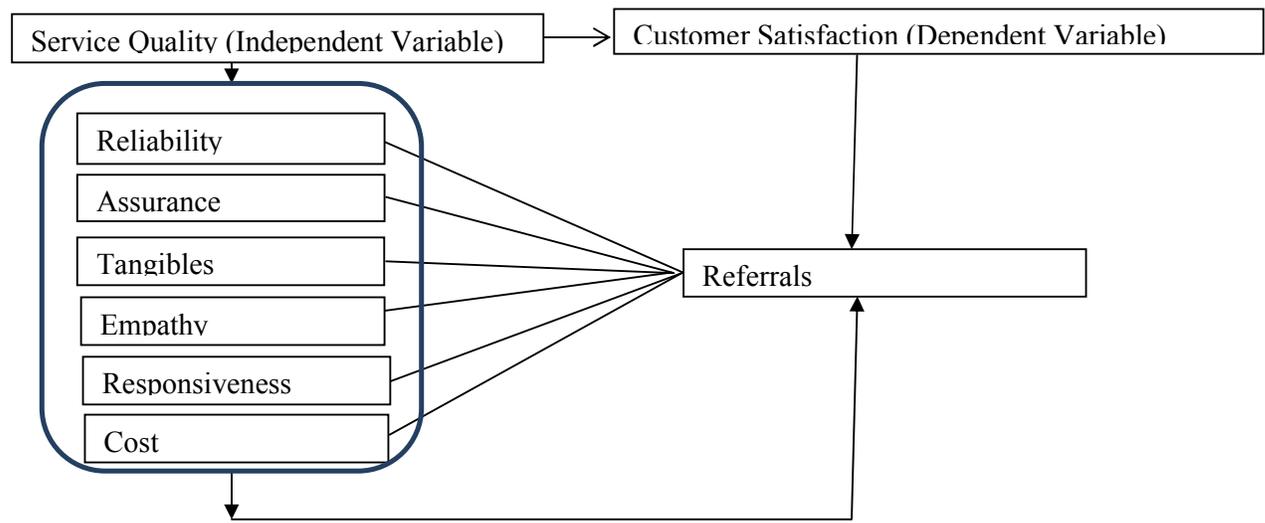
2.1 Conceptual Model

Fig. 2.1 RATERC/Referrals Interface

Source: Researchers (2020)

2.2 Theoretical Review

Service Quality

Eldin (2011) defined quality as those features of products which meet customer needs and thereby provide customer satisfaction. Similarly, 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). Bitner & Hubbert (1994), on the other hand, defined service quality as customer's overall conception of the relative inferiority or greatness of the organisation and its service. Like Bitner and Hubbert, Bhandari & Sharma (2009) defined service quality as the delivery of excellent or superior service relative to customer expectations. Lethinen & Lethinen (1991) cited in Chen (2016) averred that service quality is derived from the interaction between customers and service providers and is classified into process quality and output quality. According to these authors, process quality is the customers' subjective remark on services, while output quality refers to customer measurement of service achievement.

Customer Satisfaction

Satisfaction, according to Oliver (1997) is a pleasurable level of consumption related fulfilment that is arrived at after the consumption of a product. In the words of Zeithmal & Bitner (2003), satisfaction is a consumer fulfilment response. It is a judgment that a good or service feature, or the good or service itself, provides a pleasurable level of consumption-related fulfillment. While Cacioppo (2000) defined customer satisfaction as customer's state of mind after product consumption when their expectations have been met or exceeded over the lifetime of a good or service, Churchill & Surprenant (1982) defined it as the summation of satisfaction derived from various attributes of a product. Though the later definition obviously will not fit into every product, this work relies on it, as every dimension of ATM service quality needs to be critically examined for a user to know if they are satisfied or not.

Referrals

Cambridge Dictionary defined referral as the act of directing someone to a different place or person for information, help, or action, often to a person or group with more knowledge or power. It is the act of telling someone the positive features of a product. Customers obtained through referrals are more loyal and valuable than other customers (Philipp et al., 2011).

Service Quality and Customer Satisfaction

It is pertinent to note that Service Quality (SQ) is an essential construct in Customer Satisfaction studies. Anderson & Fornell (1994) supported this assertion when they affirmed that SQ is relevant to customer satisfaction. Authors who align with this view include Poretia & Thanassoulis (2005), Naik et al. (2010), Hazlina (2011), Yong & Fang (2004), Caruana (1982), among others. Establishing the relationship between service quality and customer satisfaction has spurred most firms to measure their service quality to know whether they are offering the desired service quality levels capable of boosting customer referrals.

Three service quality theories relevant to this study are discussed below.

1.   ServQual Model

ServQual is a multi-dimensional research instrument designed basically to measure consumer expectations and perceptions of service along the five dimensions believed to represent service quality (Kettinger & Lee, 1997; Wang et al., 1999; Wong et al., 1999, Johns & Jyas, 1997, Frochot & Hughes, 2000).The five quality dimensions expounded by Parasuraman et al. (1985)are: Reliability -the ability to perform the promised service dependably and accurately; Assurance – the ability to inspire trust and confidence; Tangibles -physical facilities, features or parts of a product; Empathy -the caring, individualized attention given to customers; and Responsiveness -the willingness to respond speedily to customers' requests. Despite the acclaimed wide acceptance of ServQual model in service quality operationalization, its universality has been questioned (Cronin & Taylor, 1994, Carman, 1990).

2.   ServPerf Model

Having questioned the conceptualization of the ServQual model, Cronin and Taylor (1994) developed ServPerf model that excluded the Expectation component (E) of ServQual and retained only Performance component (P).

3.   RATERC Model

After a critical study on some notable service quality models, Ikechi (2019) observed the absence of Cost element in the operationalization of service quality by notable service quality models, like ServQual and ServPerf. Sequel to that, Ikechi proposed the adoption of RATERC model. RATERC is an acronym for Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost. It is an inclusion of Cost dimension to the notable five service quality dimensions earlier discussed. The incorporation of cost is critical, as it is a critical dimension of financial service quality operationalization.

2.3　　Empirical Review

Danlami & Mayowa (2014) carried out an empirical study entitled, Automated Teller Machine (ATMs) and customer satisfaction in Nigeria: a study of Ilorin, Kwara State. The study was domiciled in three commercial banks (First Bank of Nigeria Plc, Guaranty Trust Bank Plc and First City Monument Bank Plc) and the samples were randomly selected from customers of these banks who were seen at ATM terminals during transaction. Findings revealed a significant relationship between ATM usage and customer satisfaction.

Akinmayowa & Ogbeide (2014) surveyed the effect of Automated Teller Machine service quality on customer satisfaction in the banking sector of Nigeria. Data obtained were analysed with the aid of SPSS 20.5 using regression analysis. The study revealed that convenience, efficient operations, security and privacy, reliability and responsiveness are significant dimensions of ATM service quality. The study further revealed that ATM service quality has a significant positive relationship with customer satisfaction.

Krishnamoorthy et al. (2016) carried out a study entitled exploring the influence of ATM service quality on customer satisfaction. The study, domiciled in Tirupur district, Tamilnadu, aimed at examining the various dimensions of ATM service quality and their impact on customer satisfaction. The researchers used self-administered questionnaire to collect data from ATM users. Eight dimensions of ATM service quality emerged at the end of the study. They are: Trust, Ease of use, Appearance, Security, Accuracy, Grievance handling, Fulfilment, and Responsiveness. Among the identified dimensions, research findings revealed that Appearance is the most vital dimension and it has a positive impact on customer satisfaction. The study further revealed that there is no significant impact of Ease of Use, Security, and Accuracy on customer satisfaction.

Felix (2017) conducted an empirical study designed to ascertain the relationship between service quality and customer satisfaction in Banque Populaire du Rwanda, Kigali branches. A self-administered questionnaire was used to collect primary data from 498 customers, using convenient sampling technique. Data were analyzed using frequencies and percentages, mean, and Pearson's Linear Correlation Coefficient with the aid of SPSS. The findings from PLCC showed a significant and positive relationship between service quality and customer satisfaction.

Salami & Olannye (2013) investigated customer perception of service quality in selected banks in Asaba, Delta State. Using a 25-item closed-ended questionnaire based on five dimensions of service quality of Parasuraman et al. (1988), a sample size of 240 respondents made up of customers of the five banks under study were randomly selected from Asaba, Delta State, Nigeria. ANOVA was used to analyze the data collected and at the end of the analysis, the study found that empathy, tangibles, assurance and responsiveness significantly affect customer perception of service quality.

3.   METHODOLOGY

Descriptive research design was adopted in this study. A set of questionnaire made up of Five Point Likert Scale comprising 43 positive statements cutting across the RATERC model was used for the survey. The questionnaire was further divided into two major parts – Service Quality Performance and Customer Satisfaction, which are major constructs of the study. The data generated were analyzed using the mean, standard deviation, correlation analysis and multiple regression analysis. Given the fact that the population of ATM users in Abia State is not within public domain, proportion method of sample size determination was used to determine the sample size of 503 used for this analysis. Convenience sampling technique was used to select ATM users who had the questionnaire personally administered on them. The reliability test was done using Cronbach's Alpha (SPSS) and the result was 0.830. This result shows that the measuring instrument has a high degree of internal consistency.

Table 4.1: Descriptive Statistics of ATM Users' Responses

SN	Statements	S	%	D	%	U	%	A	%	SA	%	Mean	SD
1	ATMs dispense cash and carry out commands as specified	5	10.3	2	4.2	1	3.4	238	47.3	175	34.8	3.92	1.215
2	ATMs dispense accurate amount of cash	3	6.8	2	4.6	3	6.2	236	46.9	179	35.6	4.00	1.101
3	ATMs print balance slips that always show customers' true balance	5	10.1	3	7.2	3	7.6	233	46.3	145	28.8	3.77	1.229
4	ATMs do not dispense fake currencies	4	8.7	6	13.3	4	8.2	210	41.7	141	28.0	3.67	1.255
5	Balance after each transaction is always accurate	3	6.2	3	6.4	3	7.4	238	47.3	165	32.8	3.94	1.100
6	ATMs work 24 hours a day	6	12.3	6	12.3	4	8.2	193	38.4	145	28.8	3.59	1.345
7	Only one customer is allowed to enter the ATM cabin	2	4.4	4	9.5	2	5.2	250	59.7	157	31.2	3.94	1.067
8	Voice prompt does not announce transactions to others	3	6.2	6	11.9	4	9.3	227	45.1	138	27.4	3.76	1.159
9	There are security officers at ATM points at all times	4	8.2	6	12.5	4	9.5	207	41.2	144	28.6	3.70	1.236
10	Cards are retracted after third attempt of keying in wrong PIN	2	4.2	4	8.2	5	11.3	217	43.1	168	33.2	3.93	1.070
11	There is always light at ATM points (no darkness)	2	4.6	4	9.3	4	9.3	229	45.5	157	31.2	3.89	1.087
12	Hackers can never hack my accounts, even if they know my pins	6	13.7	7	13.9	5	10.7	171	34.0	139	27.6	3.48	1.381
13	Security cameras capture every ATM user, even if he hides his face	3	6.6	5	10.7	8	15.9	177	35.2	159	31.6	3.75	1.197
14	Key pads of ATMs are easy to press	2	5.6	4	9.7	6	13.5	237	47.1	121	24.1	3.74	1.097
15	Touch screen is easy to manipulate	4	8.0	5	10.1	8	16.9	198	39.4	129	25.6	3.65	1.193
16	ATMs rarely break down	6	13.3	6	12.1	9	19.7	168	33.4	108	21.5	3.38	1.307
17	Menu options match corresponding menu keys	3	6.2	4	8.3	7	14.3	231	45.9	127	25.2	3.76	1.108
18	ATMs can accept deposits as well as perform other functions	4	8.7	3	7.4	4	8.9	230	45.7	147	29.2	3.79	1.193
19	ATMs are not easily worn out and outdated	3	6.2	5	10.9	8	15.9	195	38.8	142	28.2	3.72	1.165
20	ATM displayed language is easy to understand	2	4.6	4	8.3	4	9.3	217	43.1	174	34.6	3.95	1.088
21	ATM users are shaded from sunshine and rainfall	5	11.7	4	9.3	8	16.1	173	34.4	143	28.4	3.58	1.306
22	Long queues are not always seen at ATM points	8	17.3	7	14.9	7	14.9	154	30.6	112	22.3	3.26	1.406
23	Customer Care staff of banks assist ATM card users who need help	6	12.9	5	10.7	7	15.3	181	36.0	126	25.0	3.50	1.321
24	ATM users are provided with seats	1	24.3	8	16.3	7	15.7	118	23.5	102	20.3	2.99	1.478
25	I use ATMs on my own volition - not because I am constrained .	5	11.1	4	8.9	9	19.3	191	38.0	114	22.7	3.52	1.246
26	I use ATMs because I am satisfied with their performance	5	10.1	4	9.1	9	18.5	195	38.8	118	23.5	3.56	1.229
27	Customers are dissatisfied with ATM service quality due to the	1	20.3	2	44.3	7	15.7	54	10.7	45	8.9	2.44	1.186
28	Customers face many challenges in their use of ATMs	6	12.7	6	13.7	8	16.3	184	36.6	104	20.7	3.39	1.301
29	ATM errors are reversed immediately	9	19.7	9	18.5	8	16.3	129	25.6	100	19.9	3.08	1.422
30	Retracted cards are always retrieved immediately	9	18.1	1	20.7	8	17.3	118	23.5	103	20.5	3.08	1.408
31	It doesn't take time for ATMs to respond to users' request	7	15.7	7	15.7	6	12.1	158	31.4	126	25.0	3.34	1.410
32	ATMs are reloaded the moment they run out of cash	7	15.5	8	16.9	8	16.9	133	26.4	122	24.3	3.27	1.398
33	New ATM cards are issued immediately they are requested	6	11.9	7	14.3	8	16.3	148	29.4	141	28.0	3.47	1.347
34	ATM users are charged for new cards, only when they request for	4	8.5	3	7.6	4	8.9	215	42.7	162	32.2	3.83	1.206
35	SMS alert charge for a transaction does not exceed #2 (bulk SMS	6	11.9	7	13.9	7	14.3	156	31.0	145	28.8	3.51	1.351
36	There are no charges on ATM transactions	7	15.5	6	12.1	6	13.5	161	32.0	135	26.8	3.43	1.399
37	Using other banks' ATMs up to three times in a month attracts a	3	7.0	2	5.2	3	6.6	236	46.9	173	34.4	3.97	1.115
1	I refer friends to ATM points when they have urgent need for cash	2	5.2	4	8.2	3	6.8	261	51.9	141	28.0	3.89	1.063
2	I refer people to ATM points when I see them queue before cash	2	5.6	7	14.9	4	9.5	193	38.4	159	31.6	3.76	1.205
3	I refer friends to ATM points where there are no long queues	3	7.2	3	7.0	3	7.4	263	52.3	132	26.2	3.83	1.111
4	I keep using ATMs because I am satisfied with its service quality	3	7.0	6	12.3	4	9.3	249	49.5	110	21.9	3.67	1.151
5	I keep using ATMs because I have no better alternative	3	6.0	6	13.1	5	5.9	215	42.7	142	28.2	3.74	1.174
6	I use ATMs whenever I am in dire need of cash	2	5.2	3	7.8	4	8.2	220	43.7	177	35.2	3.96	1.100
7	I am generally satisfied with the quality of service of ATMs	4	9.3	4	8.2	4	9.3	231	45.9	137	27.2	3.74	1.211

Source: Analysis of Field Survey Data (2020)

4. DATA ANALYSIS AND INTERPRETATION

4.1   Analysis of Demographic Profile of Respondents

Demographic characteristics of respondents were analysed with frequency distribution showing their frequencies and percentages as shown in Table 4.2.

Table 4.2: Frequency Distribution of Respondents Demographic Characteristics (n=503)

Characteristics	Categories	Frequency	Percentage (%)
Gender	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 (2020)

Discussion of Results and Findings of Demographic Profile of Respondents

The result of the frequency distribution of Table 4.2 shows that out of the 503 ATM users sampled 255 (50.7%) are females, while 248 (49.3%) are males. This revealed an insignificant difference between the number of males and females who use ATM. Similarly, data on ATM Literacy status show 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.

4.2   Descriptive Statistics Analysis of the Dependent and Independent Variables

The independent variables(X_1, X_2, X_3, X_4, X_5 and X_6) scores shown in appendix 3 are obtained as follows:

Reliability (X_1) = CP1 + CP2 + CP3 + CP4 + CP5

Assurance(X_2) = CP6 + CP7 + CP8 + CP9 + CP10 + CP11 + CP12 + CP13

Tangibles(X_3) = CP14 + CP15 + CP16 + CP17 + CP18 + CP19

Empathy (X_4) = CP20 + CP21 + CP22 + CP23 + CP24

Responsiveness(X_5) = CP29 + CP30 + CP31 + CP32 + CP33

Cost(X_6)= CP34 + CP35 + CP36 + CP37

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

Referral (Y_1) = CS1 + CS2 + CS3

The descriptive statistics considered are the mean, standard deviation, skewness and kurtosis of the study variables comprising independent variables: Reliability, (X_1),Assurance(X_2),Tangibles(X_3), Empathy (X_4),Responsiveness(X_5) and Cost(X_6)) and the dependent variable comprising Referral (Y_1).The descriptive statistical analysis is presented in Table 4.3.

Table 4.3 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
Referrals	3.83	0.928	-0.883	0.706

Source: Analysis of Field Survey Data (2020)

Discussion of Results and Findings of descriptive statistics of study variables

The result in Table 4.3 shows that the mean score of Reliability (X_1) is3.86 (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 (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 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 of0.067(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 of0.953(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). Referral (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).

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

Correlation Analysis

The correlation matrix shown in Table 4.4 shows the Pearson Correlation Coefficients between the pairs of these variables: Reliability, Assurance, Tangibles, Empathy, Responsiveness, Cost and Referral. 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).

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

Table 4.4: Correlation Matrix of ATM Users Study Variables (n = 503) with associated p-values in bracket

Variables	Reliability	Assurance	Tangibles	Empathy	Responsiveness	Cost	Referrals
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)
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
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)

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

The result of the correlation in Table 4.4 shows that the degree of correlation between Referrals and Reliability is 0.392, with a p-value of 0.000. This shows a significant correlation between Referrals and Reliability as its p-value is less than 0.05.The degree of correlation between Referrals and Assurance is 0.438 with a p-value of 0.000. These figures show that there is a significant correlation between Referrals and Assurance as p-value is less than 0.05.The degree of correlation

between Referrals and Tangibles is 0.385 with a p-value of 0.000, indicating a significant correlation between Referrals and Tangibles as its p-value is less than 0.05.The degree of correlation between Referrals and Empathy is 0.354 with a p-value of 0.000.This indicates a significant correlation between Referrals and Empathy as its p-value is less than 0.05.The degree of correlation between Referrals and Responsiveness is 0.361 with a p-value of 0.000, showing a significant correlation between Referrasl and Responsiveness as its p-value is less than 0.05. The degree of correlation between Referrals and Cost is 0.451 with a p-value of 0.000, which indicates a significant correlation between Referrals and Cost as its p-value is less than 0.05. Each of them is significant at 0.05level.

The correlation among the independent variables helps us to ascertain the multi-collinearity among the independent variables. The results of Table 4.4 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.

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 4.5.

Table 4.5: Result of Multiple Regression Analysis of Y_1 on X_1, X_2, X_3, X_4, X_5 and X_6.

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 (2020).

Using the abbreviation: Ref = Referral, Rel = Reliability, Ass = Assurance, Tan = Tangibles, Emp = Empathy, Res = Responsibility, Cos = Cost, the fitted multiple regression model from the data is:

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

The coefficients in the fitted model (Equation 4.1) given in Table 4.5indicate the marginal effect of each of the independent variables on Referrals, when all the other independent variables are held constant, that is, an increase in Referrals when one independent variable is increased by one unit, while holding the other independent variables constant. The coefficient of Constant, $b_0 = 1.233$ 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 Referrals, b_1,is equal to 0.166, which means that the Referral of customers to 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 3.149and 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 5% level of significance. The marginal effect of Assurance on Referrals, b_2,is equal to 0.171. This means that the Referral of customers to the use of ATM is increased by 0.171 (17.1%) when the Assurance of the ATM is improved by one unit. It has a standard error of 0.071 with test statistic value of 2.406and 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 5% level of significance. The marginal effect of Tangibles on Referral, b_3, is equal to 0.034. This means that the Referral of customers to 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 0.517and p-value of 0.606 which implies that the marginal effect of Tangibles on the Referral of customers to the use of ATM is not significant at 5% level of significance since p-value is more than 0.05. The marginal effect of Empathy on Referrals, b_4, is equal to -0.003. This means that the Referral of customers to 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 -0.062and p-value of 0.950 which implies that the marginal effect of Empathy on the Referral of customers to the use of ATM is not significant at 5%. The marginal effect of Responsiveness on Referrals, b_5, is equal to 0.086. This means that the Referral of customers to 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 2.017and 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 5% level of significance. The marginal effect of Cost on Referrals, b_6,is equal to 0.250. This means that the Referral of customers to 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 5.154and 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 5% level of significance.

Multiple Correlation Coefficient, R, and Multiple Coefficient of Determinants, R^2, of Referral, Y_1 on X_1, X_2, X_3, X_4, $X_5$and X_6

To assess the combined effect of X_1, X_2, X_3, X_4, X_5 and X_6 on Referrals, Y_1, to determine the goodness of fit of the regression model, we obtained the multiple correlation coefficient, R, and the multiple coefficient of determination, R^2, shown in table 4.6. The result shows that the multiple correlation coefficient, R, is equal to 0.541 and this signifies that there is a moderately strong positive relationship between Referral of customers to ATM and the six independent variables. The multiple coefficient of determination, R^2, is equal to 0.293. This 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 difference 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%). This implies that 28.4% of the variation in Referral of customers to the use of ATM is explained by Reliability, Assurance, Tangibles, Empathy, Responsiveness, and Cost.

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 results are shown in Table 4.7.

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 4.7 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 Hypotheses Test Results Interpretation

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

Hypothesis Test with Correlation Analysis

Correlation analysis results presented in Table 4.5 were used to test hypotheses of this study, and the regression analysis results of Tables 4.6 and 4.7 were used to explain the tests below:

Table 4.6: Result of R and R^2 of Referral, Y_1 on X_1, X_2, X_3, X_4, X_5 and X_6

R	R Square	Adjusted R Square
0.541	0.293	0.284

Table 4.7 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 (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 (2020).

Hypothesis 1

$H_0 1$: There is no significant relationship 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 this shows that there is a significant relationship between Referrals 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. The result of this test confirms the decision of rejecting null hypothesis 1 and it also implies that the effect of Reliability on Referrals is significant at 5% significance level.

Hypothesis 2

Ho2:   Assurance does not have a significant relationship with 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 this shows that there is a significant relationship 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. The result of this test confirms the decision of rejecting null hypothesis 2 and this also implies that the effect of Assurance on Referrals is significant at 5% significance level.

Hypothesis 3

Ho3:   Tangibles do not significantly relate with 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. The implication of this result is that tangibles significantly relate with Referral. The marginal effect of Tangibles on Referrals 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 Referrals, the effect of Tangibles on Referrals is not significant at 5% significance level.

Hypothesis 4

Ho4:   The relationship between empathy and referrals is not significant.

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 that the relationship between Empathy and Referral is significant. The marginal effect of Empathy on Referrals is - 0.002 with a p-value of 0.950 which is greater than 0.05, indicating that the effect of Empathy on Referrals is not significant at 5% significance level.

Hypothesis 5

Ho5:   There is no significant relationship 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 this shows that there is a significant relationship 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, confirming the decision of rejecting null hypothesis 5. This also implies that the effect of Responsiveness on Referrals is significant at 5% significance level.

Hypothesis 6

Ho6:   Cost does not relate significantly with 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 this shows that cost significantly relates with Referrals. The marginal effect of Cost on Referrals 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 Referrals is significant at 5% significance level.

5.0   SUMMARY OF MAJOR FINDINGS

The main findings of this study are summarized below:

I.   The correlation coefficients between each pair of the six independent variables (Reliability, Assurance, Tangibles, Empathy, Responsiveness, and Cost) yielded low positive correlation. This indicates that there is no serious problem of multicollinearity among the independent variables of the study. In other words, all the six independent variables of this study individually contributes significantly to the dependent variable– Referrals, and can be used in its prediction.

II.   There is a significant correlation between each of the six independent variables (Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost) and Referrals (an independent variable).

III.   The marginal effects of Reliability, Assurance, Responsiveness, and Cost on Referrals are significant, while the marginal effects of Tangibles and Empathy n Referrals are not significant.

IV.   The estimated regression model for referrals is given as:

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

V.   The multiple correlation between the independent variables (Reliability, Assurance, Tangibles, Empathy, Responsiveness and Cost) and the dependent variable (referrals) is significant.

6   CONCLUSION

This study came up with a predictive regression model that shows that Cost contributes most to Referral of customers to the use of ATM, followed by Assurance, Reliability, Responsiveness and Tangibles. Surprisingly, Empathy made the least contribution as its contribution is in the negative. With respect to the relationship between each of the independent variables and Referrals, the study revealsa moderately strong positive relationship between Referral of customers to ATM and the six independent variables of the study. It further shows that Reliability, Assurance, Responsiveness and Cost have significant effects on Referrals. However, Tangibles and Empathy do not have any significant effect on Referrals.

7   RECOMMENDATIONS

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

1. Banks in Nigeria should use the model developed from this research work to enhance the efficiency and performance of their ATM service quality delivery.
2. As Cost yielded the greatest contribution to the prediction of Referrals; banks should adopt the following strategies to optimize the cost of ATM to the users:
   a) eliminating unnecessary charges attached to the use of ATMs since transaction charges are debited to customers' accounts at the end of every month;
   b) sticking to CBN policy with respect to charges on transactions on ATM platform.
3. Since assurance was identified as the second 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. They should assure their customers of the safety of their funds. Every measure that guarantees high level of protection should be put in place. Apart from physical security measures, banks should adopt double or triple authentication systems that include the use of bio-data like the use of retina, thumbprint to ensure that fraudsters do not have access to customers' accounts.
4. Banks should make their ATM services reliable since the effect of reliability on the predictive model was found to be significant. Customers want to make use of functional ATMs that offer reliable services; hence banks should deliver their promises accurately and consistently.
5. Banks should give individualized care and attention to every ATM user, not minding the contribution of empathy to referral of customers, given that the percentage of customers who cannot use ATMs on their own is relatively high. Challenges encountered by ATM users should be handled courteously and with dispatch to ensure that customers are satisfied, knowing that referrals can be made only by satisfied customers.
6. Since this work revealed a moderately strong positive relationship between referral of customers to ATM and the six study independent variables, every dimension of the RATERC model (reliability, assurance, tangibles, empathy, responsiveness, and cost) should be projected and properly blended to boost customer referrals.

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