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Modeling the Customers Perception towards Point of Sale (POS) Machines in Kogi State, Nigeria

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Abstract

Cashless and e-payment policies need a total transformation for a sustainable improvement in POS service in Nigeria. The study was analyzed to model the customers' perception towards POS machines. The results from regression analysis revealed that variables such as Internet, Completeness, Consistency, Observable and Accuracy have significant impact on customers' perception towards POS machines while Location, Pricing and Security showed non-significant impact. Results from correlation recorded positive high correlations among most variables. The variables with positive high correlations are; Internet (0.781), Completeness (0.969), Consistency (0.984), Observable (0.957) and Accuracy (0.864) while positive moderate correlations are seen in Location (0.521) and Pricing (0.504) but poor correlation was recorded in Security (0.464). The chi-square test results revealed that there is significant association between dependent and independent variables. Efforts to improve on non-significant variables from regression analysis above are recommended in order to win the hearts of customers' perception towards POS machines in the state.

Keywords: Customers; Regression; POS machines; Variables

1. Introduction

The history of the need to make transactions easier can be traced back to the days of trade by barter where goods were exchange for goods Mohammed and Adamu, (2014). This is because the tedious nature of the trade by barter system makes it to form various means of exchange. These, later became money and they made economic transactions less problematic and faster. In the early 2010, the Nigerian financial sector witnessed a growing chorus of voices calling for a shift from cash-based economy to cash-less economy. The move soon becomes a top of priority for government, NGOs and companies to focus on expanding the financial situation of the nation. The recent statistics, according to Ochei, (2013), showed that nearly 2.5 billion people do not have access to formal financial services. Without basic payments and saving accounts, money is often kept in cash at home under the mattress and then moved around from person to person and this had drastically increased the risk of theft or loss. Cashless economy is an economic system in which transactions are not done predominantly in exchange for actual cash, it is however an economic setting in which goods and services are bought and paid through electronic media. The Information Technology plays an important role in bringing about sustainability of the policy. Kosoko, (2003), stated that the future of all businesses, particularly those in the service industry lies on Information Technology. Most economies of Sub-Africa countries are cash based. This is often associated with high cost of cash management in those countries. For example, in Nigeria, over 90% of funds circulate outside the banking sector (Ojo, 2004; Ovia, 2005 and Adeoti, 2013). According to Central Bank of Nigeria (CBN, 2011), the cost of cash management in 2009 was #114.6 billion and later grew up to #135 billion and #166 billion in 2010 and 2011 respectively. Ajayi and Ojo (2006), cited in Yaqub, Bello, Adenuga and Ogundeji (2013) explained that cash is the main mode of payment in Nigeria and large percentage of the population is unbanked. This is because the

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money that is not in control of banks cannot be subjected to regulatory check and operational procedures (Adeoti, 2013).

A reasonable person will not need to go to the bank and join long queue before getting the cash he or she needed since POS is located everywhere in Nigerian villages and towns today. All they need to do is to fish out the POS shop around them, slot in the authentic smart card inside the POS machine, put in the pin code of the card and go home with cash (Chandrasekar1 K.S. and Essayas Taye,2017). Nowadays, most people in Nigeria have adopted the use of POS machines. The POS machines have been so helpful for travelers and people in the rural areas who need urgent money. Before POS machines were introduced in Nigeria, travelers are more exposed to armed robbers on the road. The advantages of POS machines to Nigeria economy therefore can never be over emphasized because people are no longer wasting their precious time queuing in banks for a long period of time if they can afford to pay the POS interest charges. The POS machines have made life easy for people like: traders, travelers, businessmen and women, transporters and so on without going to the banking halls for cash withdrawals. Furthermore, it is an important innovation that has drastically reduces the number of customers in the banking hall. It is generally accepted today that POS machines in Nigeria have significantly contributed positively to the growth of the nation's economy and this will be magnificent if the POS machines are widely spread in all villages and towns in Nigeria.

The POS system began in 1879, with the invention of the cash register. Since then, it has gone through many technological advances till date. POS (Point of Sale) system makes it possible for businesses to complete and track store transaction. Yet, the POS systems of today are much different from those of years ago. In fact, they continue to evolve, and incorporating new technologies and features, and simplifying the checkout process for cashiers and consumers while simultaneously making business more efficient. The Points of Sale (POS) terminals were introduced in Nigeria in 2012 to achieve financial inclusion and promote the CBN's cashless policy. Its popularity rose during the 2020, COVID-19 lockdowns that prevented people from going to the banks. With POS machines, customers are able to withdraw money, make transfers and make deposits without visiting their banks. POS is an alternative payment platform; the geometric growth and acceptability of the platform was significant. For instance, in its first year of introduction, transactions stood in Nigeria at #46.86 billion. The aim and objectives of this research work therefore is to model the reaction of customers' perception towards POS machines in Kogi State, Nigeria and to find out how helpful the POS machines have contributed to state economy and individuals and finally, to examine factors affecting customers perception towards POS machines in Nigeria.

1.1. Electronic Card

This is a physical plastic that uniquely identifies the holder or user in transacting business on the internet, Automated Teller Machine (ATM) and Point of Sales (POS) terminals Carow and Staten, (2000) in Ochei, (2013). This includes debit and credit cards; the debit cards are linked to local bank accounts and often provide immediate confirmation payment while credit cards can be used for assessing local and international networks.

1.2. Point of Sale (POS)

POS is the location where a transaction occurs. A terminal POS is generally referred to the hardware and software used for check out of the equivalent of an electronic cash register. It manages the selling process by a salesperson accessible interface. The system allows checking of customers' balances, creating, deducting money from customers' accounts and printing of receipts.

1.3. Definition of Variables

1.3.1. Dependent Variable

- **Customers Perception Towards POS Machines:** This is the degree to which customers notice the use of POS machines in their locations.

1.3.2. Independent Variables

- **Internet:** This is the way whereby POS machines are closely connected to customers' commercial banks.
- **Location:** This is a way on how POS terminals are nearer or closed to customers for usage.
- **Completeness:** A situation whereby the operation process of POS machines is completed without interruption.
- **Consistency:** This is a situation whereby customers enjoy the quality and standard of POS operation and machines.
- **Pricing:** This implies the amount of money the POS agents charge their customers after the operation is completed.

- **Observable:** This is the process of watching the POS agents and customers carefully for a period of time.
- **Accuracy:** A process whereby the operation of POS machines is exact and correct for customers and agents benefits.
- **Security:** This is the process whereby customers’ transactions on POS machines are protected without fraud or danger.

2. Research methodology

The data used in this study was obtained via some set of designed questionnaires for 900 respondents within Kogi State metropolis. That is, 300 respondents from each of the three senatorial districts of Kogi Central, Kogi West and Kogi East. A total of 632 respondents was correctly filled, submitted and considered for the analysis. The data collected was through field survey which was analyzed by using Chi-Square, correlation and multiple regression analysis from SPSS 20 software.

2.1. Chi-Square Statistic test

It is used to analysis the association between dependent and independent variables.

2.1.1. Hypothesis Testing

- H0: There is no significant association between Customers Perception towards POS machines and independent variables.

Vs

- H1: There is significant association between Customers Perception towards POS machines and independent variables.

2.1.2. This test Statistic is given as

$$X^2 = \sum_{i=1}^n r_i^2 = \frac{(o_i - e_j)^2}{e_j}$$

Where $r_i = \frac{(o_i - e_i)}{\sqrt{e_i}}$ are the Pearson Chi-Square residual. The o_i and e_i are the observed and expected frequencies respectively for $i = 1, 2, \dots, n$ and j is the number of distinct covariate pattern. We reject H0 if $p - value$ is less than 5% level of significance, otherwise Accept H0.

2.2. Regression Analysis

A regression analysis is used to determine the relationship between dependent and independent variables. It is one of the widely used statistical tools because it provides a simple method for establishing a functional relationship among variables. The relationship is expressed in form of equation connecting the response and explanatory variables together. Therefore, the equation of multiple regression is given as

$$Y = \beta_0 \pm \beta_1 X_1 \pm \beta_2 X_2 \pm \dots \pm \beta_n X_n \pm \epsilon$$

Where $\beta_0, \beta_1, \dots, \beta_n$ are parameter of the equation which are determined from the data collected.

1. $Y = \text{Dependent Variable}$

$Y = \text{Customers Perception Towards POS Machines (CPTP)}$

2. $X_i = \text{Independent Variables where } i = 1, 2, \dots, 8$

$X_1 = \text{Internet}$

$X_2 = \text{Location}$

$X_3 = \text{Completeness}$

$X_4 = \text{Consistency}$

- $X_5 = Pricing$
- $X_6 = Observable$
- $X_7 = Accuracy$
- $X_8 = Security$
- 3. $\beta_i = Parameters$
- $\beta_0 = constant$

$\beta_1, \beta_2, \dots, \beta_8$ =are regression coefficients of independent variables

4. $\epsilon = error\ term$

2.3. Correlation Analysis

The correlation measures the degree of relationship between dependent and independent variables. It is denoted as r . The r^2 which is known as coefficient of determination can be expressed as the variation that exists between dependent and independent variables. Therefore, the correlation (r) is given as

$$r = \frac{\sum(X - \bar{X}) \sum(Y - \bar{Y})}{\sqrt{\sum(X - \bar{X})^2 \sum(Y - \bar{Y})^2}}$$

Where, the value of r range between $-1 \leq r \leq +1$

3. Results and discussion

Table 1 Chi-Square analysis between Customers Perception on POS machines and independent variables

Factors	Pearson	Df	Sig	Comment
CPTP & Internet	21.070	1	< 0.001	Internet determines the customers perception towards POS machines at 2.5% level of significance.
CPTP & Location	6.651	1	0.014	Location determines the customers perception towards POS machines at 2.5% level of significance.
CPTP & Completeness	54.971	1	< 0.001	Completeness determines the customers perception towards POS machines at 2.5% level of significance.
CPTP & Consistency	31.824	1	< 0.001	Consistency determines customers perception towards POS machines at 2.5% level of significance.
CPTP & Pricing	97.524	1	0.010	Pricing determines the customers perception towards POS machines at 2.5% level of significance.
CPTP & Observable	29.127	1	0.020	Observable determines the customers perception towards POS machines at 2.5% level of significance.
CPTP & Accuracy	7.348	1	<0.001	Accuracy determines the customers perception towards POS machines at 2.5% level of significance.
CPTP & Security	18.214	1	0.004	Security determines the Customers Perception towards POS machines at 2.5% level of significance.

Source: SPSS, 20

The Table 1 above shows that the Customers Perception Towards POS machines (CPTP) had a significant association with the following variables as; Internet, Location, Completeness, Consistency, Observable, Accuracy, Security and Pricing at P-values< 2.5%. From the results above, HO is rejected in favor of alternative hypothesis (H1) which states that there is significant association between dependent and independent variables. This implies that all the eight independent variables used under this study are significantly associated with customer perception towards POS machines.

Table 2 Correlation Analysis

		CPTP	IT	LN	CM	CS	PR	OB	AC	SU
CPTP	Pearson Correlation	1								
Internet	Pearson Correlation Sig(2-tailed)	0.781 0.000	1							
Location	Pearson Correlation Sig(2-tailed)	0.521 0.000	0.849 0.000	1						
Completeness	Pearson Correlation Sig(2-tailed)	0.969 0.000	0.757 0.000	0.892 0.000	1					
Consistency	Pearson Correlation Sig(2-tailed)	0.984 0.000	0.769 0.000	0.906 0.000	0.984 0.000	1				
Pricing	Pearson Correlation Sig(2-tailed)	0.504 0.000	0.394 0.000	0.464 0.000	0.520 0.000	0.512 0.000	1			
Observable	Pearson Correlation Sig(2-tailed)	0.957 0.000	0.817 0.000	0.962 0.000	0.927 0.000	0.942 0.000	0.482 0.000	1		
Accuracy	Pearson Correlation Sig(2-tailed)	0.864 0.000	0.755 0.000	0.889 0.000	0.877 0.000	0.861 0.000	0.522 0.000	0.911 0.000	1	
Security	Pearson Correlation Sig (2-tailed)	0.464 0.000	0.294 0.000	0.474 0.000	0.422 0.000	0.448 0.000	525 0.000	532 0.000	509 0.000	1

Source: SPSS, 20

From Table 2 above, the results show the correlations between dependent and independent variables under the study. It was revealed that the dependent variable (Customers Perception towards POS Machines) was found to be positively significantly correlated with independent variables used in this study. Those variables include; Internet, Location, Completeness, Consistency, Pricing, Observable, Accuracy and Security with their p-values less than 5% level of significant. This implies that there was a strong significant relationship between dependent variable and each of the independent variables in the study. The strong correlation values from the variables are recorded as follows: Internet (*0.781*), Completeness (*0.969*), Consistency (*0.984*), Observable (*0.957*) and Accuracy (*0.864*) while moderate correlations were found in Location (*0.521*) and Pricing (*0.504*) but poor correlation was revealed in Security (*0.464*). The variables with high positive correlations have shown a very strong significant relationship between dependent and independent variables. It means that a unit increase or decrease in independent variables will lead to an increase or decrease in the Customers Perception towards POS machines.

Table 3 Model Summary

Model	R	R- Square	Adjusted R- Square	Std. Error of the Estimate
1	0.989	0.977	0.977	0.076

Source: SPSS,20

Table 3 is a useful model to describe the strong relationship between dependent and independent variables(R), goodness of fit (R^2) and to find out whether additional independent variables are contributing to the model (Adjusted R^2). From Table 3 above, the results show that 97.7% variation in the Customers Perception towards POS machine is being explained by Internet, Location, Completeness, Consistency, Pricing, Observable, Accuracy and Security. This means that the association between dependent and independent variables are very strong and the data used for this study are better fit for the model.

Table 4 ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig
Regression	154.361	7	22.052	3841.554	0.000
Residual	3.582	624	0.006		
Total	157.943	631			

Source: SPSS, 20

Results from Table 4 above show the value of F-test (3841.554, P-value < 0.001) which implies that the model is a good fit for the data. According to the p-value, the model has a strong significant impact between the dependent and independent variables. Therefore, the significant impact of Internet, Location, Completeness, Consistency, Pricing, Observable, Accuracy and Security reflect the behavior of Customers Perception towards POS machines in Kogi State.

Table 5 Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig
	β	Std Error	Beta		
(Constant)	0.245	0.012		0.000	0.008
Internet	0.572	0.012	0.000	0.000	0.032
Location	-0.161	0.025	-0.012	-20.472	0.037
Completeness	0.617	0.037	0.062	1.613	0.049
Consistency	0.675	0.041	0.675	16.528	0.000
Pricing	-0.069	0.009	-0.069	-4.221	0.015
Observable	0.314	0.030	0.313	10.321	0.000
Accuracy	0.218	0.009	0.006	0.869	0.000
Security	-0.077	0.012	-0.081	-5.619	0.020

Source: SPSS, 20

The unstandardized regression coefficients of β in a regression model indicate the strength of the impact between each of the independent variable and dependent variable, when all other independent variables are held constant. From the results obtained in Table 5, Internet, Completeness, Consistency, Observable and Accuracy are positively statistically significant to Customers Perception towards POS machines while Location, Pricing and Security are negatively statistically significant to Customers Perception towards POS machines. This implies that Location, Pricing and Security will contribute less to the survival of POS machines in Kogi State except adequate measure is taken among the three variables in favor of POS agents and Customers.

3.1. The model on Customers Perception towards POS machines

$$Y = .245 + .572(\text{Internet}) - .161(\text{Location}) + .617(\text{Completeness}) + .675(\text{Consistency}) - .069(\text{Pricing}) + .314(\text{Observable}) + .218(\text{Accuracy}) - .077(\text{Security})$$

3.1.1. Internet

For every increase in Internet, there is 57.2% times more likely to improve the Customers Perception towards POS machine. Adjusting for all the other predictors are remained constant ($\beta = 0.572$, $P = 0.032$).

3.1.2. Location

For every increase in Location, there is 83.9% times less likely to reduce the Customers Perception towards POS machine. Adjusting for all the other predictors are remained constant ($\beta = -0.161$, $P = 0.037$).

3.1.3. Completeness

For every increase in Completeness, there is 61.7% times more likely to improve the Customers Perception towards POS machine. Adjusting for all the other predictors are remained constant ($\beta = 0.617$, $P = 0.049$).

3.1.4. Consistency

For every increase in Consistency, there is 67.5% times more likely to improve the Customers Perception towards POS machine. Adjusting for all the other predictors are remained constant ($\beta = 0.675$, $P < 0.001$).

3.1.5. Pricing

For every increase in Pricing, there is 93.1% times less likely to reduce the Customers Perception towards POS machine. Adjusting for all the other predictors are remained constant ($\beta = -0.069$, $P = 0.015$).

3.1.6. Observable

For every increase in Observable, there is 31.4% times more likely to improve the Customers Perception towards POS machine. Adjusting for all the other predictors are remained constant ($\beta = 0.314$, $P < 0.001$).

3.1.7. Accuracy

For every increase in Accuracy, there is 21.8% times more likely to improve the Customers Perception towards POS machine. Adjusting for all the other predictors are remained constant ($\beta = 0.218$, $P < 0.001$).

3.1.8. Security

For every increase in Security, there is 92.3% times less likely to reduce the Customers Perception towards POS machine. Adjusting for all the other predictors are remained constant ($\beta = -0.077$, $P = 0.020$).

4. Conclusion

The financial sector in Nigeria needs total transformation before any sustainable improvement in the POS service could be achieved. The study on chi-square test shows that there is significant association between dependent and independent variables. This has established the influence of independent variables on Customers Perception towards POS machines (dependent variable). The results from correlation have shown that there are strong positive correlations among the listed variables as; Internet, Completeness, Consistency, Observable and Accuracy on Customers Perception towards POS machines. On the side of regression model, the study revealed that variables like Location, Pricing and Security have non- significant impacts on Customers Perception towards POS machines because they recorded negative coefficients. On this note, the CBN, commercial banks and other financial sectors have a great role to play between POS service and customers by placing a very strong security on any transaction between them so that the customers' accounts would not be defrauded. Also, the charges accruable to each transaction should be minimum and affordable so that it can give an individual positive Perception towards POS machines. Finally, the commercial banks can motivate the customers by deploying more POS machines to different locations across the state, especially in the villages where more POS machines are needed. Lastly, CBN should readily make cash available to the POS operators as this will invariably decongest the long queue in the banking halls

Compliance with ethical standards

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Disclosure of conflict of interest

We declare that there was no conflict among the authors during and after the research work. There was a cordial relationship and serious cooperation among the authors that resulted in the huge success recorded in this research work.

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