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# The Dynamics of E-Banking in the South-South Region of Nigeria

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**Abstract:** Using South-South region as the focal point, the study sets out to evaluate the driver and inhibitors of E-banking adoption in Nigeria using both the modified Dinz approach Friedman (Fr) and Chi-square Analytical Techniques. The study examined seventeen of the 25 licensed commercial banks in Nigeria by gathering data via their websites and questionnaire. The study reveals that the adoption level of E-banking is low at both the functionality and interactivity levels. The study also shows that there are factors that drive the of E-banking as an innovation, these factors include ease of use, privacy, accessibility and lower costs while on the other hand, inadequate public power supply, security on transaction, telecommunication/infrastructure as well as lack of knowledge of use reduces the level of E-banking adoption in Nigeria. On the whole, the study submits that banks should install and advance their websites on E-banking provide apply and ensure the existence of adequate security measures that will enhance customer's convenience, independence and confidence while the government through its agencies should collaborate with banks in the enlightenment/training of individuals on E-banking as well as provide the necessary legal and regulatory of framework of E-banking in the country.

**Key words:** E-banking, functionality, interactivity, drivers, inhibitors, Bayelsa state

## INTRODUCTION

Nigeria as a country have made appropriate polices to keep pace with the Information Communication Technology 9ICT of which the Nigeria banking sectors is not an exception consumers' insatiable appetite for efficient service has added to compel banks to adopt E-banking at a much faster rate but as rightly noted by Atkinson and Mckay (2007), Nigeria likes most developing countries is an ICT poor country as the adoption of E-banking products and service generally low. Despite, Nigeria's government efforts at promoting the ICT adoption culture in all facets of the country. Nigeria like most developing countries maturity and is far from objectivity meeting the targeted vision of making the country an E-banking compliance country in Africa and as a key player by the year, 2020 (Awe, 2007).

Chimeke *et al.* (2006) in their study on the evaluation of the functionality of websites of the twelve large on-line banks after the banking sector reforms of 2005 shows that out the maximum rating score of each of the four functional areas of internet banking information had scored 80.5 what customer relationship 36, transaction 19 and security 35 which represents 47, 27, 21.11, 11.15 and 20.53%, repetitively.

These results reveal that the bulk of E-banking services provided by Nigerian banks are informational. Even at that only 47.21% of these services are provide at very low levels of 21.11, 11.15 and 20.53%, respectively. This clearly reveals that the adoption level of E-banking in Nigeria is quite low. On banks interactive levels, they observed that out of the maximum rating score rating of 170.5 for each of the three activity levels, basic had 95, intermediate 59 and advanced level 16.5 which represent 55.72, 34.60 and 9.68%, respectively.

This means that E-banking services provided by Nigerian banks are mostly at the basic levels. This further signifies and proves the low adoption level of E-banking service by banks in the economy.

Ezeoha (2005) posit that of then licensed 89 banks in 2002, 17 render internet banking, 24 offers Automated Teller Machine (ATM) services, 13 offers other forms E-banking while 35 were not involved in E-banking activities.

This again signifies the low level of adoption of E-banking in Nigeria. However, empirical evidence of E-banking adoption levels in Nigeria is focused on the entire economy. Little effort is made to disaggregate performance across the geopolitical zone to determine if there are location specific differences or regional factors that could affect E-banking adoption. This explain why the study concern itself with the identification of the key E-banking adoption promoters in the South-South zone of the country that is made up of six states (Akwa Ibom, Bayelsa, Cross river, Delta, Edo and rivers). The specific objectives of thus study to:

- Find out the adoption level of E-banking by banks in the South-South zone of Nigeria
- Evaluate functionality of E-banking service delivery in the zone
- Asses the key drivers of E-banking in the South-South political zone
- Examine the key adoption inhibitors of E-banking in the South-South zone

The research recommendations hypothesis are stated in null form:

- The adoption of E-banking in the South-South zone is not significant at the low and basic and low levelled types it
- The types of E-banking functionality of banks in the South zone are not significant at the basic and low levelled types
- Ease of use, privacy, accessibility and lower cost of E-banking products and service significant drive E-banking adoption level in Nigeria
- Inadequate security, lack of knowledge of use, inadequate telecommunication facility and infrastructure as well as inadequate public power supply does not significant inhibit E-banking adoption level in Nigeria

**Literature review:** Internet banking is designed to increase convenience for consumers as well as to reduce the cost of banking service. Therefore, ICT leads us to the dramatic lowering of transaction costs and the creation of new types of banking opportunities that eliminates the barriers of time and distance. Awe (2007) affirms this when observed that a sound national infrastructure for E-banking will ensure the orderly growth of Nigeria's financial sector and to ensure speedy development of the country's financial sector while Dauda *et al.* (2007) and Vij (2004) in their separate study, asserts that E-banking utilizes ICT to allow bank's customers and other stakeholders to interact and transact with the bank seamlessly via a variety of channels such as ATMs, physical branches and internet wireless devices. ICT gives banks the ability to respond rapidly to market trends and changes in the business environment.

Online banking allows customers to get current account balances at any time at the click of a button and check the status of their current saving and money market accounts gives the ability to pay bills electronically the same day allows customers to download accounts transaction online and makes it easy too import the transaction directly into PC programs at home or office; the transfer of money between accounts provides flexibility as customers can access their finances from any part of the world and this helps to develop a new relationship with customers, regulatory authorities, suppliers and baking partners with digital age tools (Stakebeck, 2005).

However for E-banking to strive, there is need for security because the core areas of security include confidentially, integrity, availability and privacy. This can be provided through the use of a user identity and password which must be installed and be effective to prevent not only the breach of privacy but other security concerns like the alteration of data information technology fraud phishing, etc. and it is the most vital inhibitor of E-banking which gives policy makers concern since, customers must be protected against fraud (Singh, 2007; Miller, 2006; Quovadis, 2007). To ensure secured E-banking, sound information on the transmission of confidential data should be presented in security and encryption on the web. Encryption is a multilayered security architecture comprising firewalls, filtering routers and digital certification which ensures that customers account information is protected from unauthorized access and that privacy of data flowing between the browser and the infinity system is protected. Firewalls and filtering routers ensure that only the legitimate internet users are allowed to access the system is from the digital certification procedures provide the assurance that the data you receive us from the Infinity System. Mishra (2007) observed that since, E-banking services are totally dependent of its powerful and functional programs, they should be operated in an environment where recovery procedures are not lacking and telecommunication services not epileptic, non-tolerance of fault where IT set up is robustly available and well estimated. He further states that telecommunication backup facility networking, internet services, software, hardware and power supply should not be compromised as they must be available round the clock. Singh and Malhotra (2004) observed that banks providing E-banking product and service offer a variety of identical and standard package of banking services and transactional capabilities. They therefore, identify 3-level of E-banking adoption which are basic, simple transactional and fully transactional.

The basic level uses the websites to disseminate information on different products and services offered to customers and members of the public the simple transactional uses the bank's website to allow customers to submit their instructions, applications for different service, queries on their account balances, etc., but do not permit and fund based transaction on their account while fully transactional use bank's website that allows

customer to operate on their accounts for transfer of funds payments different bills, subscribing to other products of the bank and to transact, purchase and sale of securities, etc., they further classified services providing into basic and premium. The former is the heart of internet banking service of balance enquiry, found transfer and bill payment while the latter is meant for brokerage, cash transactions, e-shopping, standing instructions, investments, etc.

Dinz (1998) while evaluating banks' website in the US, classified the functionality of website into three categories, namely information delivery, transaction channels and customer relationship and each of these categories of activities was further divided into three different levels on interactivity basic, intermediary and advance. Therefore, the adoption of E-banking service to a large extend depend on the value added service, they can offer. He surveyed banks in the US and reported that most of them offer basic and intermediate service at the transactional and informational levels. Awamleh *et al.* (2003) surveyed jordaniuan banks and found limited evidence of web usage at that intermediate level while the basic level use was dominant. Guru and Shanmugam (2003) in their study found that overall bank website evaluation ratings are clearly related to the functional and interactivity levels and Chimeke *et al.* (2006) in this study, the level of adoption of E-banking in Nigeria concluded that internet banking is being offered at the basic level of interactivity in Nigeria with most of the banks mainly informational sites and providing littles internet transactional services.

**Drivers and inhibitors of E-banking:** It is widely believed that E-banking brings changes into the banking industry and is having the major effects on banking relationships as its provision is increasingly becoming a need to have than a nice to have service (Awamleh and Fernandes, 2005; Singh, 2007). Therefore, the adoption drivers promote the utilization of E-banking products and services. This was affirmed by Chimeke *et al.* (2006) when they opined that the driver of E-banking products and services among customers leads to easy access to the services, low cost and privacy while Dauda *et al.* (2007) observed that the incentives to adopt E-banking is determined by relative advantage, internet experience, banking need, trial-ability, subjective norm, self efficacy, facilitating condition and government support.

To Rao *et al.* (2005)'s sees value, customer relationship and value configuration as the factors that can encourage usage of E-banking. To them, value is what an investor gets and what gets created when organisations set out to pursue their mission; customers relationship consist of the beneficiary of value offered while value configuration is the capability and resources that are required for successful E-banking operation. Awamleh and Fernandes (2005) assets that independent, convenient and security are the determinants of customer's satisfaction of E-banking adoption in United Arab Emirate (UAE). They further state that independence captures the concept of customers' interaction with there banks using the internet without the need to directly interface with the bank employees, convenience depicts the ease and practicability of the channel while security measure customers' perceptions channel reliability, safety as well the speed by which transaction are completed.

Lee *et al.* (2001) while studying factors influencing the adoption behaviour of mobile banking in South Korea opined that trust had a stronger influence on the adoption behaviour to customers (that is the customers' trust of the bank, telecom provider and wireless internet). Agboola (2006) in his study of E-banking in Nigeria, observed that low rate of adoption of technology might be due to its perceived cost fear of fraudulent practices and inadequate E-banking facilities, inability of many households to afford terminals and all accessories requires for effective connection, high capital investment required for its operate in banks, low level of economic development, ineffective of telecommunication service providers as well as epileptic power supple.

Al-Sabbagh and Molla (2004) while studying E-banking in Oman stresses that perceived security and trust are the top issues inhibiting E-banking adoption while preference for face-to-face personal banking was found to be one of the outcomes of perceived insecurity and distrust. Onwudinjo (2002) state that the weak regulatory framework for ICT generally and E-banking in particular is a major inhibiting factor in Nigeria. He further said that the absence of a comprehensive regulatory framework has been identified as a major barrier to customers' acceptance of the E-banking service. Nigeria at present has no data protection provision like India and other ICT rich countries because such legal infrastructures are required to ensure that the operators' plays within the rules and privacy of the customers are maintained.

Closely related to inadequate regulation are dearth of skilled manpower to harness the bits and lack of government commitment to making though key investment decisions while Ayo *et al.* (2007) observed that the major threat to E-banking in Nigeria are security of transactions and unavailability of basic infrastructure, complication of services and cost of service, etc., Chung and Paynter (2002) revealed that in New Zealand,

the major inhibiting factors are security, complication of internet banking are limited publicity given to these service by banks while Ezeoha (2005) posit that the inhibitors of E-banking in Nigeria is lack of adequate operational infrastructure such power, cyber criminal activities and telecommunication.

## MATERIALS AND METHODS

**Research area and sampling technique:** The research area is South-South geographical zone of Nigeria, 6 of the 36 states (Akwa Ibom (AK), Bayelsa (BY), Cross River (CRS), Delta (DS), (ED) and Rivers (RV) in Nigeria. The states are mainly rural. Even their state capitals Uyo, Yenagoa, Calabar, Asaba, Benin and Port Harcourt can best be described as a sub-urban town. Despite the availability of some basic amenities in the towns, they are yet to transform to modern cities. The topography essentially that of a typical rain forest zone with creek and rivers. The zone covers the oil rich Niger delta region which serves as the economic nerve centre of Nigeria and until recently on of the global trouble spots. Hence, the readiness of the zone to provide E-banking services need to be ensured. The people of the zone are predominantly fishermen, farmers, woman with a few civil servants.

There are few industries in five of the state except Bayelsa were there is total absence of industries despite its oil rich production status. The sample consist of 17 commercial banks (Bank PHB Plc, Unity Bank plc, First Inland Bank Plc, Wema Bank Plc, Skye Bank Plc, Equatorial Trust Bank Plc, Guaranty Trust Bank Ecobank Plc, Access Bank Plc, Intercontinental Bank Plc, First Bank of Nigeria Plc, Diamond Bank Plc, Union Bank of Nigeria Plc, United Bank of Africa Plc, Oceanic Bank International Plc and Zenith International Bank Plc) which provide E-banking services and products as well as employ E-banking facilities and functionalities as an enhancer of their banking services. These banks were chosen form the 25 banks licensed to operate in the country and their presence IS noticeably visible in the zone mostly in their state capitals while other banks not taken are considered not to be very visibly operational in the zone.

The sample also includes staff/management, customers and beneficiaries of the services and products provide by these banks. In determining the sampling technique to use for this study, we take into consideration the fact that the technical nature of the investigation requires the responses of subject with good and related knowledge of the subject matter. To achieve this, stratified random sampling method is used for this study. The stratification is to ensure the diversification of opinions. Respondent in each state were stratified and a sample size of 30% was randomly selected from each bank. It is hoped that the sample size will be statistically significant for inferential purposes. This method gives a more representative sample in this case than simple random sampling because in the later, certain strata may by chance be over or under-represented in the sample. Therefore, stratified random sampling technique guarantees representation of defined groups (Banks) that are of particular interest in the sample size. A sample of 2448 was drawn, 408 per stratum (state).

**Instrumentation and data collection procedure:** To collect the primary data, a carefully structured questionnaire was designed and administered by trained and experienced research assistants. The researchers distributed the questionnaire to as many staff, customers and management as possible and collected the responses form the respondents through research assistants. Are possible indicators of each of the variable involved in the study? Each response was given a degree of scores which ranges form as shown:

| | | |
|---|---|---|
| Strongly Agreed | SA | 4 points |
| Agreed | A | 3 points |
| Disagreed | D | 2 points |
| Strongly Disagreed | SD | 1 points |

For negative response, the reverse was the case of scoring.

**Data analysis:** Data analysis will be undertaken using qualitative techniques. It is expected that a major segment of the information to be collected during the survey will be qualitative and may not be easily quantified. Quantitative techniques will be use to measure ethnographic characteristic of sample. Descriptive statistic (frequencies, percentage, standard deviation, means, proportion, etc.) are employed in most analysis in summarizing trends, changes and comparison across certain characteristic (Ndiyo *et al*., 2005).

In this study, the data collected would be analyzed with relevant statistical tools such as the Chi-square Method will employed to test for the drivers and inhibitors of E-banking in the zone while the Friedman test will be employed to analyze the adoption level and functionality of E-banking. Ndiyo *et al.* (2005) recommended the use of simple percentage and Chi-square in statistical analysis of descriptive studies although, this is not a rigid rule. Essentially, Friedman test

and Chi-square ($\chi^2$) tests was used to analyze the data relating to the hypotheses. The basic formula for Friedman test is stated thus:

- Identify the b blocks (i.e., the numbers of banks and items of questions in the questionnaire)
- The k treatment observations (i.e., the level of interactivity and functionality ranked within each block
- Where there are ties in ranking, it was treated by received the average of the ranks occupied by the tied observation
- The ranked sum were then obtained
- The test statistic was calculated thus:

$$Fr = \frac{12}{bk(k+1)}\sum_{i=1}^{k} T_i^2 - 3b(K+1)$$

Where:

Fr = Friedman
12 and 3 = Constant
b = No. of blocks, the block for the adoption level was the sampled banks (17 blocks)
k = No. of treatment for the levels of interactivity was three representing the basic, intermediate and advance levels while for the functionality level was four representing informational, communicational, transactional and security levels
T = Ranked sum of the treatments
I = No. of summed treatment
a = Degree of freedom (k-1)

- When either the number of k of treatment or the number b of blocks was >5, the sampling distribution of Fr was approximated by a Chi-square distribution with (k-1) degrees of freedom
- The rejection region of the Fr test is $Fr>X_a^2$ (Mendenhall, 1992)
- The study adopted a modified Dinz Model with comprehensive checklist of all functionality and interactive levels

The basic formula for Chi-square ($\chi^2$) test is sated thus:

$$\chi^2 = \frac{\Sigma(O_f - E_f)^2}{E_f}$$

Where:

$\chi^2$ = Chi-square
$\Sigma$ = Summation sign
$O_f$ = Observed frequency
$E_f$ = Expected frequency

Table 1: Composition of questionnaires distribution

| Quantity of questionnaires | AK | BY | CRS | DS | ED | RV | Total | Percentage |
|---|---|---|---|---|---|---|---|---|
| Completed and return | 230 | 290 | 242 | 220 | 200 | 284 | 1466 | 59.90 |
| Not return | 178 | 118 | 166 | 188 | 208 | 124 | 982 | 40.10 |
| Total | 408 | 408 | 408 | 408 | 408 | 408 | 2448 | 100.00 |

AK: Akwa Ibom state; BY: Bayelsa state; CRS: Cross River State; DS: Delta State; ED: Edo state; RV: River state

While the degree of freedom for Chi-square is computed as:

$$df = (R-1)(C-1)$$

Where:

df = Degree of freedom
R = Row total
C = Column total

**Decision rule:** Both the Friedman (Fr) and the expected frequencies obtained. If for instance, the calculated value of (Fr), ($\chi^2$) is greater than the value of Fr, $\chi^2$ shown in the Table 1, there is an association between the variables being measured. Thus, confirming the alternative hypothesis and vice versa. The Fr test also recommend that where the blocks (b) is >5, the sampling distribution be approximated by Chi-square distribution with (k-1) degree of freedom. In this research therefore, the 5% (0.05) level of signifies is employed.

## RESULTS AND DISCUSSION

**Distribution and return of questionnaires:** The questionnaire distribution of respondents is as shown in Table 1. A total of 2448 questionnaires were distributed in the study are (the 6 states in the South-South region). 1466 questionnaires representing 59.89% were completed and returned while 982 questionnaires representing 40.1% were not returned.

The poor response of the respondents could be explained by the busy nature of their jobs that leaves them with little time for other activities. Therefore, the subsequent analysis will be based on the 1466 questionnaire that were completed and returned.

**Gender composition of sample:** The composition of respondent by gender reflects sex distribution between male and female respondents. Table 2 shows gender composition of the respondents in section A. Respondents in the male category represent 898 or 61.3% while respondents who are female constitute 568 or 38.7% of the sample since, it is my intention to analyze the data of this study based on the six states in the zone, the implication of the marginal difference between the six

states in term of their responses to any question of importance is highlighted throughout the analysis. There was no intension to compare the responses to each question of importance that relates to this study with the gender of my respondents.

Even though, Table 2 shows a marginal difference between the two sexes male and female, it has no implication on the result of the study. More so, attempt was made to draw equal number of respondents from both sexes.

**Age composition of sample:** The pattern of responses indicates that 60 respondents or 4.1% was below the 20 years age bracket. Meanwhile, 165 respondents or 11.3% are within the 21-30 age range. The results also show that 335 respondents or fall within the 31-40 age bracket representing 22.8% of the sample. The remaining 906 or 61.5% are within the >40 age bracket. I assumed that most of the experienced bankers and customers would be found among this age bracket.

It is also important to note that I did not intend to relate one's age with any question of importance in the research instrument. Thus, no attempt was made to draw equal number of respondent from each category age was divided (Table 3).

**Marital status of respondents:** The marital status of the respondents was also shown in Table 4. From the Table 4, 587 (40%) of the sample are still single, 870 (59.4%) are married while 9 (0.65) of the respondents were neither married nor single but rather classified as either widows or reverend sisters.

This distribution though fairly spread across the zone, also shows that Akwa Ibom state seems to have the highest number of unmarried bankers and customers while Bayelsa state has the highest number of married.

Table 2: Gender composition

| Age | AK | BY | CRS | DS | ED | RV | Total | Percentage |
|---|---|---|---|---|---|---|---|---|
| Male | 130 | 245 | 118 | 145 | 108 | 152 | 898 | 61.3 |
| Female | 100 | 45 | 124 | 75 | 92 | 132 | 568 | 38.7 |
| Total | 230 | 290 | 242 | 220 | 200 | 284 | 1466 | 100.0 |

Table 3: Composition of respondents by age

| Age (years) | AK | BY | CRS | DS | ED | RV | Total | Percentage |
|---|---|---|---|---|---|---|---|---|
| <20 | 10 | 24 | 3 | 2 | 6 | 15 | 60 | 4.1 |
| 21-30 | 29 | 34 | 24 | 26 | 23 | 29 | 165 | 11.3 |
| 31-40 | 40 | 76 | 40 | 72 | 62 | 45 | 335 | 22.8 |
| >40 | 151 | 156 | 175 | 120 | 109 | 195 | 906 | 61.8 |
| Total | 230 | 290 | 242 | 220 | 200 | 284 | 1466 | 100.0 |

Table 4: Composition of respondents by marital

| Age | AK | BY | CRS | DS | ED | RV | Total | Percentage |
|---|---|---|---|---|---|---|---|---|
| Single | 139 | 50 | 242 | 90 | 99 | 100 | 587 | 40.0 |
| Married | 90 | 238 | 166 | 150 | 120 | 182 | 870 | 59.4 |
| Others | 1 | 2 | | 2 | 1 | 9 | 9 | 0.6 |
| Total | 230 | 290 | 242 | 220 | 200 | 284 | 1466 | 100.0 |

**Composition of respondents by qualification:** The assumption here was that the qualification of respondents will afford me a better chance of measuring their understanding of the questions in the research instrument. Form Table 5, only 78 (5.3%) of the sample are holders of PhD/MSc/MEd degree. About 605 (41.2%) of the sample were first degree holders while 391 (26.7%) of the total respondents were holders of NCE/TC II certificates. Also, 288 (19.7%) of the respondents holds senior school certificate and 104 (7.1%) of the respondents were holders of first school leaving certificates.

**Composition of respondents by internet users:** Table 6 shows that on the whole 60.7% of the respondents were internet users while 39.3% were not. Based on this, one would expect that the respondents have good knowledge of the subject matter and therefore would be able to give accurate and useful information on it.

**Composition of banker adoption of E-banking service of E-banking:** The respondents on banker adoption of E-banking represent 59.1% while 40.9% of the respondents were not. This shows that most of the respondents (bankers and customers) in the zone have adoption E-banking products and services and therefore have good knowledge of the subject matter (Table 7).

**Composition of benefits form E-banking services and productions of banker:** The respondents on benefit of E-banking of the bank and customers reveals that 63.8% believed E-banking is beneficial to the society as it make transaction easy and at one's convenience while 36.2% of the respondent disagree. This suggests that most of the respondent (bankers customers) in the zone believed that the adoption of E-banking products and service is beneficial to both the customers and the banks (Table 8).

Table 5: Composition of respondents by qualification

| Qualification | AK | BY | CRS | DS | ED | RV | Total | Percentage |
|---|---|---|---|---|---|---|---|---|
| PhD/MSc/MED | 139 | 50 | 242 | 90 | 99 | 100 | 587 | 40.0 |
| BSc/BScEd/BA | 90 | 238 | 166 | 150 | 120 | 182 | 870 | 59.4 |
| NCE/TC II | 1 | 2 | | 2 | 1 | 9 | 9 | 0.6 |
| SSCE | | | | | | | | |
| FSLC | | | | | | | | |
| Total | 230 | 290 | 242 | 220 | 200 | 284 | 1466 | 100.0 |

Table 6: Distribution of respondent by internet users

| Internet users | AK | BY | CRS | DS | ED | RV | Total | Percentage |
|---|---|---|---|---|---|---|---|---|
| Yes | 140 | 163 | 131 | 154 | 138 | 164 | 890 | 60.7 |
| No | 90 | 127 | 111 | 66 | 62 | 120 | 576 | 39.3 |
| Total | 230 | 290 | 242 | 220 | 200 | 284 | 1466 | 100.0 |

Table 7: Composition of bankers adoption of E-banking service

| Adoption | AK | BY | CRS | DS | ED | RV | Total | Percentage |
|---|---|---|---|---|---|---|---|---|
| Yes | 130 | 245 | 121 | 100 | 110 | 160 | 866 | 59.1 |
| No | 100 | 45 | 121 | 120 | 90 | 124 | 600 | 40.3 |
| Total | 230 | 290 | 242 | 220 | 200 | 284 | 1466 | 100.0 |

**Research hypotheses**

**$H_0$:** Adoption of E-banking in the South-South zone is not significant at the low and basic interactivity level but above it:

$$Fr = \frac{12}{bk(k+1)}\sum_{i=1}^{k} T_i^2 - 3b(K+1)$$

$$\Rightarrow Fr\ \frac{12}{17\times 3(3+1)}(49^2+36^2+17^2)-3\times 17(3+1)$$

$$Fr = \frac{12}{51(4)}(2401+31296+289)-51(4)$$

$$\Rightarrow \frac{12}{204}(3986)-(204)\Rightarrow\frac{12}{204}(3782)\Rightarrow\frac{45384}{204}=222.47$$

The block is 17 and $\chi^2_{(2,\ 0.05)}$ = 5.99. The test was conducted at 5% significance level and the degree of freedom is 2. The Fr calculated value is 222.47 since, 222.47>5.99, the null hypothesis that the adoption of E-banking in the South-South zone is not significant at the low and basic interactivity level but above, it is rejected imply that the adoption level of E-banking in the South-South ozone is significant at the low and basic interactivity level.

**$H_1$:** The types of E-banking functionality of banks in the South-South zone are significantly not the basic and low levelled types:

$$Fr = \frac{12}{bk(k+1)}\sum_{i=1}^{k} T_i^2 - 3b(K+1)$$

$$\Rightarrow Fr\ \frac{12}{17\times 4(4+1)}(68^2+31.5^2+19.5^2)-3\times 17(4+1)$$

Table 8: Composition of benefits form E-banks

| Benefits | AK | BY | CRS | DS | ED | RV | Total | Percentage |
|---|---|---|---|---|---|---|---|---|
| Yes | 131 | 200 | 150 | 144 | 110 | 204 | 936 | 63.8 |
| No | 99 | 90 | 92 | 79 | 90 | 80 | 530 | 36.2 |
| Total | 230 | 290 | 242 | 220 | 200 | 284 | 1466 | 100.0 |

$$Fr = \frac{12}{68(5)}(4624+992.25+2601+380.25)-68(5)$$

$$\Rightarrow \frac{12}{340}(8597.5)-(340)\Rightarrow\frac{12}{340}(8257.5)$$

$$\Rightarrow 0.0352941\times 8257.5 = 291.44$$

The block is 17 and $\chi^2_{(3,\ 0.05)}$ = 7.81. The test was conducted at 5% significant level and the degree of freedom is 3. The Fr calculated value is 291.44, the above result reveals that the Fr value of 291.44>7.81 meaning that the null hypothesis is rejected and the alternative acceptance thus, imply that the types of E-banking functionality in the South-South zone is significant at the low and basic levelled types.

**$H_2$:** Ease of use, privacy, accessibility and lower cost of E-banking products and service do not significantly drive E-banking adoption level in South-South region. The dependent variable in this hypothesis is E-banking while the independent variable is drivers. The statistical analysis used in testing the hypothesis was the Chi-square statistical analysis. The results of the analysis in Table 9 showed that the $\chi^2$ value of 49.4 is greater than the critical value of 16.9 at 0.05 level significant with 9 degree of freedom. This means that the $\chi^2$ value is significant. Thus, the null hypothesis was rejected while the alternative was retained. This implies that case of use, privacy, accessibility and lower cost significantly influence E-banking adoption level in Nigeria (Table 9).

**$H_3$:** Inadequate security, telecommunication, infrastructure and public power supply as well as lack of knowledge of use do not significantly inhibit E-banking adoption level in South-South region of Nigeria. The dependent variable in this hypothesis is E-banking while the independent variable is inhibitors. The statistical technique employed in testing the hypothesis was the Chi-square statistical analysis. The results of the analysis as indicated in Table 10 shows that the $\chi^2$ value of 36.4 is higher than the critical value of 16.9 at 0.05 level of significant with 9 degree of freedom. This shows that the result is statistically significant.

Table 9: Respondents drive *question item cross tabulation

| | Question item | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Respondents drivers | Easy | Privacy | Accessibility | Lower cost | Total | Calculated ($\chi^2$) | Critical ($\chi^2$) | df |
| Strongly observed | 131.0 | 82.0 | 111.0 | 121.0 | 445.0 | 49.4 | 16.9 | 9 |
| Agree expected | 93.2 | 101.7 | 116.3 | 133.9 | 445.0 | - | - | - |
| Agree observed | 83.0 | 83.0 | 85.0 | 119.0 | 370.0 | - | - | - |
| Expected | 77.5 | 84.5 | 96.7 | 111.3 | 370.0 | - | - | - |
| Disagree observed | 53.0 | 99.0 | 93.0 | 91.0 | 336.0 | - | - | - |
| Expected | 70.4 | 76.8 | 87.8 | 101.1 | 336.0 | - | - | - |
| Strongly observed | 40.0 | 71.0 | 94.0 | 110.0 | 315.0 | - | - | - |
| Disagree expected | 66.0 | 72.0 | 82.3 | 94.8 | 315.0 | - | - | - |
| Total | 307.0 | 335.0 | 383.0 | 441.0 | 1466.0 | - | - | - |

Table 10: Respondents drive * question item cross tabulation

| Respondents inhibitors | Question items | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Security | Telecommunication | Public power supply | Lack of knowledge | Total | Calculated ($\chi^2$) | Critical ($\chi^2$) | df |
| Strongly observed | 129.0 | 88.0 | 111.0 | 121.0 | 449.0 | 36.4 | 16.9 | 9 |
| Agree expected | 97.4 | 101.4 | 116.3 | 133.9 | 449.0 | - | - | - |
| Agree observed | 83.0 | 83.0 | 85.0 | 124.0 | 375.0 | - | - | - |
| Expected | 81.3 | 84.7 | 96.7 | 111.3 | 375.0 | - | - | - |
| Disagree observed | 59.0 | 95.0 | 95.0 | 93.0 | 334.0 | - | - | - |
| Expected | 72.5 | 75.4 | 87.8 | 101.1 | 334.0 | - | - | - |
| Strongly observed | 47.0 | 65.0 | 85.0 | 111.0 | 308.0 | - | - | - |
| Disagree expected | 66.8 | 69.5 | 78.6 | 93.1 | 308.0 | - | - | - |
| Total | 318.0 | 331.0 | 374.0 | 443.0 | 1466.0 | - | - | - |

Hence, the null hypothesis was rejected while the alternative was accepted. This means that inadequate security, telecommunication facilities/infrastructure, public power supply and lack of knowledge of use significantly inhibit E-banking adoption in Nigeria. The study adoption of Friedman (Fr) test approximated with Chi-square with (k-1) degrees of freedom to analyze the data collected via a 6-point rank table on the levels of interactivity and functionality of each of the seventeen banks while Chi-square Method was used to analyze the factors that drive or inhibit E-banking adoption in the study area both at a 5% significant level and observed that:

- Banks in the region adopts E-banking at the interactive and informational functionality levels
- E-banking is easy to use as well as ensure a better customers' privacy and this drives its adoption by customers of the banks
- E-banking products and service are less costly to operate than the traditional banking system and this factor drives E-banking adoption in the region
- E-banking products and services is easily accessed at anytime, anywhere and with minimum, effort therefore, accessibility which encourage convenience drives customers' to adopt E-banking
- Inadequate power supply, telecommunication facility and infrastructure are a major factor that inhibits the adoption of E-banking facilities, service and products in the South-South region of Nigeria
- Inadequate knowledge of usage and security of E-banking products and services inhibits the adoption of E-banking by customers

## CONCLUSION

The policy to reform the banking sector in 2005 in Nigeria was a good proposal. No adopt the problems to be faced are many but they are insurmountable. A careful planning, availability of fund, dedicated personnel couple with seriousness of purpose will largely account for its success. Therefore as the banking environment become more dynamic and competition among banks becomes intense more bank will resort to re-engineering (E-banking) as a strategy that will ensure efficiency, low costs, accessibility, privacy and ease of usage, security, conveniences as well as to attract more customer to their products and services. Despite these numerous benefits of E-banking, the adoption rate of E-banking in the seventeen banks surveyed in the South-South region of Nigeria was observed to be at the low basic interactivity and functional levels of information and are yet to adopt reasonably at the intermediate and advance levels of customer relations and transactions. Furthermore, the lack of infrastructure, absence of regulatory framework for its operations inhibit E-banking while the persistence epileptic nature of power supply in Nigeria, banks provide electricity through solar energy and generating set for their banking (traditional and E-banking) activities which leads to an increase in the overhead cost of banks.

## RECOMMENDATIONS

The following policy suggestions are made in this course of this research:

- Government should come up with an enabling legal framework and establish very strong regulatory agencies to monitor, access, audit and regulate the activities of providers of E-banking products and services and internet services that would protect the customers against injuries that may arise as a result of its adoption
- Banks in collaboration with government should educate, train and inform the citizens/customers on the availability, effectiveness, workability and benefits of E-banking as this will instill more confidence, trust, security and integrity of the innovation that will guarantee the patronage of theproducts and services

- Banks in the South-South region of Nigeria should provide, apply and bring to existence adequate security measures to guide, protect and enhance customers' confidence, satisfaction, independence and convenience (such measures include the provision of digital signature, certificates as well as 128 bit Secure Socket Layer (SSL) encryption)
- Banks should intensify its efforts in catching up with the global trend of installing and advancing their websites to undertake the provisions and availability of the more intermediate and advanced levels of E-banking by adopting more advanced products and services such as online chat, video conferencing, standing instruction, etc.
- To be attuned to the trend in the global market and provide products and services of world class which E-banking enhances, the Apex Bank (CBN) should make it mandatory for all the banks to provide E-banking products and services not only at the basic or information levels but at the advanced transactional level
- E-banking products and services provision be enlarged and adopted by the micro finance institution which are meant to service small business undertaking because no micro finance banks in the region provide E-banking service or product
- The government should help in the reduction of the cost of interconnectivity and general information and communication access to ensure that cheap, affordable and fast telecommunication services are provided which will boost the accessibility of E-banking services

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