Information and Communication Technology and Customer Satisfaction in the Nigerian Banking Industry

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Abstract—Information and communication technology (ICT) in the Nigerian banking industry is generally believed and seen to have dramatic influence on the level of customer satisfaction in recent times. As a prerequisite for banking efficiency, and indeed customer satisfaction, one wonders whether the current state of ICT in the industry offers the desired level of satisfaction. It is against this backdrop that the study adopts an empirical approach in determining the relationship that exists between the current state of ICT and customer satisfaction in the industry. Four hundred (400) banks’ customers were served with questionnaire, out of which only 391 were used. Regression analysis was used in testing the hypotheses. It was discovered that the present state of ICT had significant influence on customer satisfaction. The following recommendations were therefore made: banks should continually explore the possibility of raising the standard of ICT based systems and services, intensify efforts in meeting up with global operational systems and demonstrate a high sense of reliability, responsiveness and credibility in the application of ICT in their operations.

Index Terms—information and communication technology, customer satisfaction, Nigerian banking industry

I. INTRODUCTION

Information and Communication Technology (ICT) has become a very important aspect of today’s banking and financial services delivery in Nigeria in particular and the world at large. The competitive nature of banking business has necessitated the emphasis now placed on ICT. In the developed societies, ICT is generally believed to have dramatic influence and is seen as continually determining the competitive nature of virtually all business [1], [2]. Conversely, in the developing countries [3] asserted that ICT has brought a technological revolution whose use and production have been somewhat limited but holds a great promise in accelerating socio-economic development in the countries.

In Nigerian, the application of ICT to banking operations has become a subject of concern to all banks operating in the country and indeed, a prerequisite for global competition and satisfaction [4], [5].

As a basic prerequisite in the development of banking business, customer satisfaction holds the potential for increasing an organization’s customer base, increase the use of more volatile customer mix and increase the firm’s reputation [6]. With the recent consolidation exercise in Nigerian banking sector left customers with a wide range of choice for products and services that customers satisfaction cannot be taken for granted.

Studies by [2], [7], [8], have shown significant and positive correlation between ICT and customer satisfaction. Although, the Nigerian banking industry is relatively slow in the adoption and utilization of ICT. It is sad to note that, some staff of Nigerian banks are not ICT literate and are yet to keep abreast of latest developments in ICT. In this wise, Nigerian banking industry is lagging behind its counterparts in Europe, Asia, and America in the adoption and application of ICT to its operations. But it should be noted that ICT has become the major tool that enables a bank presents a more professional product offer and keep pace with innovative market place.

It is also reasoned that, if Nigerian banks move towards a high-level of adopting ICT in their entire operations, it will impact positively on customers’ satisfaction that translate to high retention rate and higher profitability.

It is in view of the aforementioned fact that, this study seeks among other things to examine the impact of ICT on customer satisfaction in Nigerian banking industry.

II. LITERATURE REVIEW

Studies over the years have identified the benefits of applying Information and Communication Technology (ICT) to customer’s satisfaction in banking activities [9]-[14]. Given the role technology plays in the modernization of the banking sector, there is no doubt that the future of Nigerian banking industry lies heavily on its quick and fast adoption of ICT. Experiences from other countries revealed greater attention on the application of ICT to the activities of commercial banks and other financial institutions to facilitate their
operations and bring about greater business advantages [15]-[17].

The development of the magnetic strip card allowed much more information to be held and increases the range of services which could be offered. Credit card for example introduced in 1982, used the same technology, and the use of Electronic Funds Transfer Point of Sale (EFTPOS) has become wide spread since Midland, National West Minister and Royal Bank of Scotland introduced the Switch network in 1988 [13]. [7] observed that all banking service such as electronic payments, loans deposits or securities have become heavily dependant on information and communication technology (ICT), and this has greatly enhanced banks’ performance in developed societies.

Nigeria however, being a cash-based economy with over 83% of funds residing outside the banking sector as against the developed societies such as USA with only 4% and UK 9%, has a remarkable influence on the growth of the banking industry [18]-[20]. Thus, the role of ICT in banking industry is a force that makes changes happen and is a response to change. Although, various studies examined the role of ICT in the development of banking business in Nigeria such as [9], [11]-[13] with different approaches, this study therefore employs different constructs in looking at the current ICT level and customer satisfaction in the industry.

A. ICT and Banking Development

The primary purpose of the banking system is to create and manage financial resources and to intermediate between surplus and deficit economic units [21], [22]. In the process of carrying out this role, the banking industry provides secondary services which include mobilizing financial resources for investment purposes, assisting in resource allocation, promoting the payments system and facilitating international trade [23], [24].

In the final analysis according to [21], the performance of the sector is measured not only by the number and variety of products/services provided but also more importantly by the speed, efficiency and safety with which these products/services are provided. The only way of achieving this is through well built infrastructural facilities in the system.

Findings by [12], [21], [25]-[27], showed that, the increasing volume, complexity, competitiveness, customers’ sophistication and globalization of financial services have induced a number of technological developments in the Nigeria banking industry, which include:

- Introduction of computers to cope with the phenomenal increase in the volume of transactions, product development, credit risk management and business process re-engineering;
- The use of automated banknote processing systems by the CBN;
- The introduction of the magnetic ink character recognition (MICR), which is an automated system for sorting cheques and other payment instruments;
- The setting up of the Nigerian interbank settlement system;
- The application of SWIFT;
- The use of ATMs, smart cards, electronic cash and mobile banking; and
- Automation of the clearing system amongst others.

Even though the adoption rate of ICT in banking remains relatively low in terms of both international standards and local needs [28]. At the home front, only a few individuals have embraced technology-based products such as ATMs and other forms of electronic banking such as smart cards and debit cards. [29] Also laid credence to this when he stated that:

The Commonwealth still harbors a large number of countries where the rate of technology diffusion is low alongside global leaders in this area. The developed countries still account for 80% of the world’s ICT users. He therefore implored the poor members of common wealth (Nigeria inclusive) to increase the proportion of their national expenditures devoted to ICT infrastructural development.

Findings of these studies also noted that, these inadequacies are traceable to a number of factors.

- The economy’s downturn since the early 1980’s and its subsequent sluggish growth has not provided an adequate base for sustaining technological advancement in any sector, including the banking sector.
- There has been both low information technology skills and lack of the technological base needed for fostering the growth of indigenous banking technology. Consequently, the banking sector, like other sectors is almost entirely dependent on imported technology.
- Supporting infrastructure such as electricity and telecommunication, which are needed for effective use of mobile banking; and
- There has been both low information technology skills and lack of the technological base needed for fostering the growth of indigenous banking technology. Consequently, the banking sector, like other sectors is almost entirely dependent on imported technology.
- Supporting infrastructure such as electricity and telecommunication, which are needed for effective use of mobile banking; and

It is therefore proposed that:

H1: There is no positive relationship between the level of ICT and banking development.

B. Electronic Banking Services

Electronic banking in an offshoot of ICT, and it provides the classic and current means of banking. In other words, it is ICT that brought about electronic banking services that are conducted on the platform of mobile devices and wireless networks; also provision of banking and financial services with the help of mobile telecommunication devices [30]. According to [31] and [14] it has brought changes into the banking industry and is having major effects on banking relationships. He further observed that, almost all the 25 banks that survived the consolidation exercise of 2005 in Nigeria have adopted electronic banking in one form or another, although the adoption level was mostly at low at basic interactivity and functionality level.

Evidences from works of [32], [33] Zhu and Chen (2003) revealed that electronic banking system is expected to serve the purpose of decongesting banking hall, reducing waiting time, making customers more liquid and above all, ensuring a cashless society. The
advent of electronic banking in Nigeria also brought in some products to make bank transaction easy and efficient, these products include amongst others Efficient Quick Service (EQS), electronic Payment System (e-PS), Telephone Banking (TeB), Electronic Purse Service (EPS), Smart Cards (SC), Automated Teller Machine (ATM), and Wireless Transfer (WT) [5], [30]. [30], however opined that, to ensure effective customer satisfaction; Nigerian banks must be willing to adopt latest technologies occasioned by advancement in ICT.

Waiting for service is a fact of life; however excessive waiting can impair significant satisfaction thereby breeding a growing frustration associated with untimely delivery of services [34]. [31], however observed that with the current low rate of e-banking adoption, it is doubtful if Nigeria shall meet its set target of becoming a key player in ICT and e-banking by the year 2020. Be that as it may, customer satisfaction with banking services is affected by the perceived product/service quality and other related delivery process [35].

It is therefore proposed that:

**H2:** The higher the level of electronic banking services, the higher the level of customer satisfaction.

**C. Effective Application of ICT & Customers’ Behavioural Intentions**

To effectively compete in today’s competitive marketplace, banks must focus on understanding the needs, attitudes, satisfactions and behavioural patterns of the market [36]. It should be noted that banks’ customers of today evaluate a number of criteria in selecting a bank [37], social and technological change has had a dramatic impact on the activities of an organization banks inclusive. Developments such as internalization and unification of markets and the application of new technologies in ICT systems to banking, have forced bank to adopt strategic marketing practices. This has included offering extended services through the ATM, diversification of products, entry into new markets and above all, emphasizing electronic banking. This greater range of services and products, along with improvements in communications efficiency, could have a significant impact on customer satisfaction and consequent behavioural intentions. As changes in financial fields become common, and banking business becomes universal, it is only through effective application of ICT that will differentiate banking services from other non-banking products [38]. It then means that an effective application of ICT in banking will enable a bank presents product/services that create customer value that transcends to an intention to maintain a positive relationship than earlier periods.

It is proposed that:

**H3:** An effective application of ICT impact on consumers’ behavioural intention.

**III. METHODS**

Data was obtained through a questionnaire survey sent to a sample of 400 customers of some selected banks (namely First Bank of Nigeria (FBN), United Bank for Africa (UBA), Access Bank, Diamond Bank, Guaranty Trust Bank (GTB) and Ecobank) in Lagos, Port-Harcourt, Onitsha, Kano, Yola and Abuja (the federal capital city). The target respondents were chosen randomly as they entered the banks, or waited in the bank for their banking transactions. The sample size (n = 400) was calculated using the Taro Yamane formula (1967). i.e. n = \( \frac{N}{1 + N(e)^2} \).

Of the 400 survey questionnaire administered, 394 were returned, but only 391 were properly filled for final response rate of 97.8%.

**TABLE I. DEMOGRAPHICS OF RESPONDENTS**

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Frequency</th>
<th>Valid percent</th>
<th>Cumulative percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A: Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>240</td>
<td>61.4</td>
<td>61.4</td>
</tr>
<tr>
<td>Female</td>
<td>151</td>
<td>38.6</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>391</td>
<td></td>
<td>100</td>
</tr>
<tr>
<td><strong>Panel B: Age Group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under 18 yrs</td>
<td>15</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>19-25 yrs</td>
<td>79</td>
<td>20.2</td>
<td>24.0</td>
</tr>
<tr>
<td>26-30 yrs</td>
<td>86</td>
<td>22.0</td>
<td>46.0</td>
</tr>
<tr>
<td>31-35 yrs</td>
<td>78</td>
<td>19.9</td>
<td>66.0</td>
</tr>
<tr>
<td>Over 35 yrs</td>
<td>133</td>
<td>34.0</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>391</td>
<td></td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Panel C: Educational level</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FSLC</td>
<td>9</td>
<td>2.3</td>
<td>2.3</td>
</tr>
<tr>
<td>WASC/GCE</td>
<td>60</td>
<td>15.3</td>
<td>17.6</td>
</tr>
<tr>
<td>NCE/OND</td>
<td>101</td>
<td>25.8</td>
<td>43.5</td>
</tr>
<tr>
<td>Degree/HND</td>
<td>144</td>
<td>36.8</td>
<td>80.3</td>
</tr>
<tr>
<td>Master Degree</td>
<td>61</td>
<td>15.6</td>
<td>95.9</td>
</tr>
<tr>
<td>Doctorate Degree</td>
<td>10</td>
<td>2.6</td>
<td>98.5</td>
</tr>
<tr>
<td>Others</td>
<td>6</td>
<td>1.5</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>391</td>
<td></td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Panel D: Length of Stay</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-5 yrs</td>
<td>219</td>
<td>56.0</td>
<td>56.0</td>
</tr>
<tr>
<td>6-10 yrs</td>
<td>103</td>
<td>26.3</td>
<td>82.4</td>
</tr>
<tr>
<td>11-15 yrs</td>
<td>42</td>
<td>10.7</td>
<td>93.1</td>
</tr>
<tr>
<td>16-20 yrs</td>
<td>11</td>
<td>2.8</td>
<td>95.9</td>
</tr>
<tr>
<td>Over 20 yrs</td>
<td>16</td>
<td>4.1</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>391</td>
<td></td>
<td>100.0</td>
</tr>
</tbody>
</table>

The constructs in the study were captured by a number of items in the questionnaire with each of the item measured on a five point Likert scales, where 1 = “strongly disagree”, 3 = “neither disagree nor agree”, and
5 = “strongly agree”. A Bivariate frequency distribution of the respondents according to age, gender, educational level and the banks’ the customers operate with is presented. This provides a summary of the respondents. The hypotheses formulated were then tested using Regression Analysis (RA).

The length of time (LoS) customers have been with their banks is also an important parameter that can be applied in determining customers’ satisfaction with an organization or the industry in general. Panel D of Table I shows that over 82% (82.4%) of the respondents reported loss at less than 11 years. The figures are generally high, perhaps reflecting new entrant rate or high number of first time accounts. This is a reflection owing to the recent introduction and adoption of ICT systems in Nigerian banking industry occasioned most especially by the capitalization and consolidation of the industry in recent times. This appears to demonstrate the relative overall contentment will banking services as opposed to some decades ago.

IV. RESULTS AND DISCUSSION

A profile of the respondents showed that the sampled respondents comprised of 23.5% from FBN, UBA accounted for 24.0% and Access Bank stood at 25.7%. While Ecobank accounted for 19.4%, Diamond Bank accounted for 3.6% and GTB accounted for 3.8% of the total sampled respondents. The difference in the response is as a result of the customers’ base of the respective banks to the industry baseline.

TABLE II. ATTEMPTS TO DETERMINE THE RELATIONSHIP BETWEEN ICT AND BANKING DEVELOPMENT

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>t-cal</th>
<th>t-tab</th>
<th>Alpha</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of ICT Banking</td>
<td>391</td>
<td>0.320</td>
<td>0.245</td>
<td>0.05</td>
<td>0.000</td>
</tr>
<tr>
<td>development</td>
<td>391</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*P>0.05

The Table II shows the relationship between the level of ICT and banking development of in Nigeria. The result obtained from the analysis shows that the value of r-calculated (0.320) is greater than t-tabulated (0.245) at 0.05 level of significance.

The null hypothesis is therefore rejected. That is to say, there is a significant relationship between the level of ICT and banking development in the country.

The result of the finding is in line with the views of [7] who observed that banking service such as electronic payments, loans deposits or securities have become heavily dependable on ICT and this has greatly enhanced banks’ performance and development in developed societies. In a similar vein, [12], [21], [26], and [27] observed that the increasing volume, complexity, competitiveness, customers’ sophistication and globalization of financial services have induced a number of technological developments in the Nigerian banking industry.

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>B</th>
<th>Std error</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Satisfaction</td>
<td>391</td>
<td>.186</td>
<td>.013</td>
<td>.145</td>
</tr>
<tr>
<td>Level of electronic Banking services</td>
<td>391</td>
<td>25.342</td>
<td>.000</td>
<td></td>
</tr>
</tbody>
</table>

The result on the Table III shows that the b-value for customers’ satisfaction is 0.186, which clearly indicates that higher levels of electronic banking services enhance higher customer satisfaction by 0.186, with a t-statistic value of 25.342 at a significance value of 0.000 as analyzed using SPSS. The result indicates that the higher the level of electronic banking services, the higher the levels of customer satisfaction in the industry. The null hypothesis is therefore rejected.

The finding therefore support evidences from works of [32], [33], [39] who agreed that electronic banking system is expected to serve the purpose of decongesting banking hall, reducing waiting time, making customers more liquid and above all, ensuring a cashless society.

TABLE III. ATTEMPTS TO ASCERTAIN THE LEVEL OF ELECTRONIC BANKING SERVICES AND CUSTOMER SATISFACTION

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>t-cal</th>
<th>t-tab</th>
<th>Alpha</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application of ICT</td>
<td>391</td>
<td>.198</td>
<td>.014</td>
<td>.169</td>
<td>.000</td>
</tr>
<tr>
<td>Consumers’ Behavioural intention</td>
<td>91</td>
<td>30.253</td>
<td>.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The result on the Table IV shows that the b-value for effective application of ICT is 0.198, which clearly shows that, effective application of ICT positively impact on customers’ behavioral intention by 0.198 at a t-statistic value of 30.253 at a significance value of 0.000 as analyzed using SPSS. The result clearly shows that effective application of ICT impacts on consumers’ behavioural intention in the Nigerian banking industry. The null hypothesis is therefore rejected.

This therefore corroborated the findings of [37], which clearly demonstrate that social and technological change has had a dramatic impact on organizations, banking inclusive. Developments in the application of new technologies in ICT systems to banking, have brought in a lot of benefits including offering extended services through ATMs, diversification of products, entry into new markets and above all, emphasizing electronic banking. These greater ranges of services and products, along with improvements in communications efficiency, have a significant impact on customer satisfaction and consequent behavioural intentions.
A. Managerial Implications

This study has indicated that a number of issues are apparent in shaping and reshaping the perceptions of bank customers in Nigeria. The study has shown the significant impact ICT has on customer satisfaction, bank development and above all, behavioural intentions of customers in the industry. It is therefore important for managers of banks to ensure compliance with evolving ICT in the industry and further adopt the initiative of investing in areas of improving or inventing new technologies to ensure efficient delivery of services. As the customer is the essence of organizational being, managers must ensure that they identify the needs of customers and develop appropriate product/services to meet such needs. This is so because this study has shown that there is a strong relationship between the level of ICT and customer satisfaction. That is, if perceived quality of ICT is high and efficient in delivering high quality services, customers are bound to be satisfied, have a positive word-of-mouth about the organization, make more referrals, which may culminate to more profit for the bank.

Evidently, ICT is at the core of customers’ satisfaction in the industry. That is to say, presently, bank customers are satisfied only when the services offered are effective and high.

In all the hypotheses, there was a strong indication between ICT, customer satisfaction, behavioral intentions and bank development in the industry in recent times. The findings in the study show strong support for an effective application of ICT to enhance customer satisfaction. It is therefore important for bank managers to improve on each of the construct examined in the study in order to improve their competitiveness in the industry. It should also be noted that, customer satisfaction has a pervasive effect on the next action a customer takes concerning an organization’s offer. So once he/she is satisfied, a positive posture is therefore created. The results further show that the respondents in this study have a positive and responding impression towards the banking industry’s ability to meet their emerging needs. This is a clear manifestation that the respondents would have a positive relationship with their banks as long as the bank is able to satisfy their changing needs.

Banks can improve more on the current ICT systems in the industry in order to attract and retain more deposits as evidenced in our review that majority of money in circulation lies outside the banking industry. Though the industry is currently growing in terms of coverage and customers’ base, retaining customer as a result of satisfaction is an attractive option that will make the sector stand tall amongst other sectors of the economy.

V. CONCLUSION

With the stiff competition among banks and the enlightenment of customers whose demands for banking services unlimited, it is only banks that deliver the desired satisfaction driven by appropriate ICT that will stand the test of time. It will be realized that the application of ICT tremendously enhanced customer satisfaction and business success, and a prerequisite for local and global competition. For Nigerian banks to be competitive and retain its customers they must capitalize on the enormous capabilities ICT has provided in the financial landscape in meeting the financial needs/aspirations of target markets. Thus, the relationship between a bank and its customers in recent times lies in its ability to manage the customers’ transactions with minimum errors, cost, time, and above all, any discomfort attached thereon. Once a transaction relationship is obviously devoid of these inconveniences, the customer is most likely to be satisfied, make a comeback to the bank, and this goes a long way in adding more deposits to the developmental wheels of the industry.

REFERENCES


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