The Impacts of ICTs on Banks

A Case study of the Nigerian Banking Industry

Matthew K. Luka
Department of Electrical and Information Engineering
Covenant University Ota, Ogun State, Nigeria

Ibikunle A. Frank
Department of Electrical and Information Engineering
Covenant University Ota, Ogun State, Nigeria

***Abstract*— ICT has taken the center stage in almost every aspect of human endeavor. ICT help banks improve the efficiency and effectiveness of services offered to customers, and enhances business processes, managerial decision making, and workgroup collaborations, which strengthens their competitive positions in rapidly changing and emerging economies. This paper considers the impacts and trends of ICTs on the banking industry of the 21st century. Four (4) parameters, namely: productivity, market structure, Innovation and value chain were used for benchmarking. Case studies of the IT platform employed by two Nigerian banks were included to for a more informed inference.**

Keywords- Banking industry; CBN; Customers; Economic growth; ICT; productivity.

I. Introduction

One of the modern yardsticks used for rating a modern business enterprise is its ICT infrastructural layout. This is an indication of the importance of ICT for business establishments. Banks in particular adopt information and communication technology to improve the efficiency and effectiveness of services offered to customers, improve business processes, as well as to enhance managerial decision making and workgroup collaborations. This helps strengthen their competitive positions in rapidly changing/emerging economies. Environmental, organizational, and technological factors are creating a highly competitive business environment in which customers are the focal point [1]. Furthermore, these factors can change quickly, sometimes unpredictably. Thus, the growth of any enterprise is tied to retaining loyal customers, improving productivity, cutting costs, increasing market share, and providing timely organizational response. ICT is a major enabler for dealing with these issues. Because the pace of change and the degree of uncertainty in today's competitive environment are accelerating geometrically. Organizations are operating under increasing pressures to produce more, using fewer resources. in order to succeed (or even merely to survive) in this dynamic world, companies must not only take traditional actions such as lowering costs, but also undertake innovative activities such as changing structure or processes and continuously revising competitive strategies.

ICT affects all processes associated with modern day banking. From the daily routines of preparing payroll and order entry, to strategic activities such as the acquisition of a company, ICT surfaces as a key element. In View of the importance of ICT in the banking industry, a number research works have been carried out. In [2], an evaluation of the response of Nigerian banks to the adoption of ICT was presented. In [3], a technical model that to ascertain the impact of ICT on the Nigerian banking sector as a function of banking reforms was proposed.

Some benchmarks for evaluating the impact of ICT in the banking industry were outlined in [4]. These benchmarks will be used to evaluate the impact of ICT on the Nigerian banking industry.

II. The Nigerian Banking Industry

The Nigerian banking industry is regulated by the Central Bank of Nigeria (CBN). The major players in the industry are the 22 commercial (deposit) banks and 906 Micro-finance institutions. Other financial institutions that complement banking services include 5 discount houses, 5 development finance institutions, 731 bureau de change, 102 Primary Mortgage Institutions, and 82 finance companies [5], [6]. The Nigerian banking Industry has been undergoing major changes, reflecting a number of underlying developments. Advancement in communication and information technology has facilitated growth in internet-banking, ATM Network, Electronic transfer of funds and quick dissemination of information.

Structural reforms in the banking sector have improved the health of the banking sector. The reforms recently introduced include the enactment of the Securitization Act to step up loan recoveries [7], establishment of asset reconstruction companies, initiatives on improving recoveries from Non-performing Assets (NPAs) and change in the basis of income recognition has raised transparency and efficiency in the banking system. Spurt in treasury income and improvement in loan recoveries has helped Nigerian Banks to record better profitability. Reforms have compelled banks to improve the utilization of ICT. The recently introduced punitive 'handling charge' on cash based transaction by the CBN is a pointer to the ever increasing role of ICT in the Nigerian banking industry.

III. Research Methodologies

The aim of this study is to ascertain the level of use of ICT infrastructures and their impacts on customer service; which invariably determines growth of banks. Considering ICT as a growth enabler, the extent of deployment by banks and customers' perception of its relevance are the basis of the research.

A random sampling technique was used to issue questionnaires to customers in the selected banks. Four commercial banks were selected on the basis of sufficient branch networks. A total of 400 questionnaires were given out to customers at the bank premises. About 280 of the questionnaires were returned to the researchers, a response rate of 70%. The four banks visited are: Guaranty Trust Bank plc, First Bank of Nigeria plc, Zenith Bank international and United Bank for Africa (UBA). The response were measured with a 5 pointer likert - type rating, where strongly agree (SA) = 5; Agree (A) = 4; Neutral (N) = 3; Disagree = 2; Strongly Disagree = 1. See appendix 1 for more details on the questionnaire. Two case studies are included to validate the findings.

IV. Data Analysis And Interpretation

The major dimensions of the banking industry for which the impact of ICT has a critical consequence include: productivity, innovation dynamics, market structure, and value chain characteristics.

A. Impacts of ICT on Productivity

ICT has productivity increasing effects on labor productivity and total factor productivity of companies. ICT-induced productivity effects vary significantly between sectors and among countries. The banking industry is one of the sectors that enjoy the largest productivity growth effect of ICT.

Table 1 show the effect of ICT on the productivity of the banks as perceived by customers. About 85.4% of the respondents agree that ICT is helping the cahiers to be more productive. The use of computers and peripherals simplifies the task of getting customers' data and counting money to effect transaction. This enables a single cashier to serve thousands of customers in a day which would have cost the bank enormous staff strength and large building. However, about 80% of those interviewed agree that the bank needs to improve its services. This is indication of the fact that ICT investment does not lead to productivity growth at firm-level by itself. It depends on how the technology is actually used in business processes, i.e. on a company's ability to innovate its work processes and business routines with support of ICT. Thus, banks need to multiplex ICT investments with complementary investment in working practices, human capital, and firm restructuring to optimize its impact on productivity.

TABLE 1. EFFECT OF ICT ON PRODUCTIVITY

Question	SA	A	N	D	SD
Computers are helping the tellers in their work	40.0	45.4	5.5	9.1	0
The bank needs to improve its services	51.0	29.0	11.0	8.0	1.0

B. Impact of ICT on Innovation

A technological change such as the massive diffusion of ICT represents an interesting case for an analysis with respect to firms' innovation strategies. For example, it is said that industry leaders often reject important inventions and fail to bring them to the market [8, 9]. Entrepreneurial companies are more likely to exploit these opportunities. Entrants frequently introduce products or production processes based on a new technology, which can challenge incumbents or even drive them out of the market [10]. This was the scenario that played out in the Nigerian banking industry with the emergence of new generation banks that introduced innovative products and services. Innovation in this context aims to reduce the cost of banking while making the process of transaction easier and more convenient.

About 67.5% of the respondents disagree that the amount the bank charges on transaction is okay. This indicates that banks need to come up with innovative products that will reduce the cost of banking operations; which can be passed down to the customer in the form of reduced charges. About 65% of the respondents enjoy information update about the bank through SMS and email alerts. This enhances customer royalty and confidence. 78% of those interviewed agree that they prefer to use the ATM than coming into the banking hall. This is due to extensive publication that has encouraged the use of ATM. Thus banks can encourage the use of other ICT media such as the internet and POS which enhances cashless banking.

TABLE 2 IMPACT OF ICT ON INNOVATION

Question	SA	A	N	D	SD
The amount the bank charges on transactions is okay.	10.0	12.5	10.0	40.0	27.5
I enjoy information update about the bank through SMS and email alerts	30.0	35.0	10.0	12.0	13.0
I prefer to use the ATM than coming into the banking hall.	48.0	30.0	9.0	7.0	6.0

C. Impact on Market Structure

Innovations enabled by ICT changes the cost structure of companies. Hence, innovations have a significant impact on the market structure in which companies operate. Radical changes in technology traditionally lead to emergence of new products or change the production processes of existing products. In either case, companies face a large degree of uncertainty regarding future demand or cost of service delivery [5]. Furthermore, during times of technological change, mergers reflect the process of assets reallocation toward more efficient firms [11]. The mergers that were recently evidenced in the Nigeria banking industry were actually a result of the consolidation exercise of 2004 and the technological change that dawned on the industry.

Technological change forces firms to adopt new modes of production and, consequently, to reorganize its assets. If a company fails to reorganize internally, it will probably disappear from the industry and its assets will be reorganized externally. New technology spreads faster if such asset reallocation works smoothly [12]. The diffusion of ICT is technological change that has greatly revolutionized the banking sector.

Table 3 below indicates that 75% of the respondents agree that the banks have improved the quality of service rendered. This is necessary for the bank to retain its customer as well as attract potential ones. 79% of the customers agreed that they enjoy prompt and efficient service for which 87% of the respondents are willing to recommend the bank to others.

TABLE 3 IMPACT OF ICT ON MARKET STRUCTURE

Question	SA	A	N	D	SD
The quality of service has improved in this bank	50	25	10	14	1
I enjoy fast, efficient and prompt service	49	30	11	10	0
I can recommend this bank to someone	55	32	8	5	0

D. Impact on Sector Value Chain

Empirical findings suggest that some of the main effects of ICT diffusion are organizational changes and the redefining of organizational boundaries [12]. Thus, it is relevant to assess if the diffusion of ICT in the banking industry had any impact on the restructuring process. The impact on value chain reflects in re-shaping firm boundaries and changing the constellations of value chains are enormous.

From table 4, only 47% of the respondents agree that value added services/special accounts encourage them to patronize the bank. This customer perception needs to be improved upon by more extensive publications on these value added service so as to complement the impact of ICT. The number of branches a bank has is another value chain that enhances the impact and level of deployment of ICT.

TABLE 4 IMPACT OF ICT ON BANKING SECTOR VALUE CHAIN

Question	SA	A	N	D	SD
Special services/account types encourage me to patronize this bank	27	20	5	28	20
The number of branches this bank has motivated me to chose it	30	35	5	13	17

V. CASE STUDIES

To further study the impact of ICT on growth of the Nigerian banking industry, a case study of two large banks and their choice of an ICT platform will examined [13, 14].

A. First Bank of Nigeria (FBN)

First Bank of Nigeria Plc (FBN) was established in 1894 and has distinguished itself as a leading banking institution and a major contributor to the economic advancement and development of Nigeria. With 339 branches, the Bank maintains the largest branch network in the banking industry in Nigeria.

At the turn of the bank's century, FBN found itself in a unique position as, despite its size and reputation, there were challenges to maintain the leadership position in a market that was as dynamic as it was competitive. It was at this point that the bank launched its business transformation initiative called 'Century II'. Century II clearly identified IT as an enabler for the bank going forward. The Key Business Drivers for an ICT platform were:

- Need to Integrate Banking Operations:

The bank's 300+ branches were operating mainly as silos; information was hard to compile and disseminate, which affected decision-making.

- Urgency to Meet Regulatory Requirements:

FBN needed to adhere to the regulatory requirements imposed by the Central Bank of Nigeria as well as the common business practices followed by Nigerian banks. Since no two banks work in exactly the same way, the bank-specific requirements were also important. The central bank's increasingly proactive role in regulating the industry to bring it up to speed with international trends meant that the bank had to remain agile in order to survive and come out a winner.

Need for Innovation and Faster Time to Market With sophistication of customer requirements and increased competition, the bank's critical requirement was to not only to meet the existing demands of the customer but also to stay agile and meet the changing requirements going forward.

One of the pillars of Finacle's value proposition to FBN was its new generation solution architecture, designed to help the bank build an agile business through innovative offerings to the market and a significantly superior speed of response to customer, competitive and regulatory requirements. The other was Finacle's proven track record of 100% successful implementations across the globe, which offered the bank the attractive proposition of minimized risk. FBN piloted on Finacle in six months and since then has rolled out the solution to over 170 branches, on time and within budget. The benefits of the solution include:

- Time-to-market Advantage:

FBN's unique requirements were catered to using Finacle's Extensibility toolkit, the infrastructure that enabled the bank to customize its specific requirements without touching the source code. This provided significant time-to-market advantage to the bank and enabled them to design and launch new product offerings quickly.

- 24/7 Operability:

Regular version upgrades over the years have provided increased and more sophisticated functionality to the bank as the relationship has progressed. The new generation flexible architecture of Finacle has ensured 24/7 operability, with close to 100% uptime, a feature of immense importance in a country not known for failsafe network connectivity.

- Scalability:

Finacle's technological superiority and functional richness were important factors but its proven ability to scale up to FBN's explosive growth plans was the clincher. Finacle successfully met FBN's expectations of the solution being able to "scale up and be the vehicle of growth to meet the emerging global challenges in the financial arena."

- Streamlined Operations:

The new generation architecture of Finacle - fully web-enabled, with powerful and unique capabilities such as Straight Through Processing (STP), workflow, scalability and true 24/7 banking across multiple delivery channels has enabled the Bank to streamline its operations.

B. United Bank for Africa (UBA)

United Bank for Africa PLC (UBA) is the product of a merger of two of Nigeria's top five banks, UBA and Standard Trust Bank Plc (STB). Today, consolidated UBA is largest financial services institution in sub- Saharan Africa (excluding South Africa) with a balance sheet size in excess of 400 billion naira (approx. US$ 3 bn), and over two million active customer accounts. With over 400 retail distribution outlets across Nigeria, UBA also has a presence in New York, Grand Cayman Island and aspires to expand within Sub-Saharan Africa.

UBA is the first successful merger transaction in the history of the Nigerian banking sector and was born out of a desire to lead the sector to a new era of global relevance by championing the creation of the Nigerian consumer finance market and leading a private/public sector partnership aimed at accelerating the economic development of Nigeria.

The Nigeria banking industry is going through so tremendous flux. The Central Bank's mandate of a minimum N25 billion capitalization by December 2005 resulted in the Nigerian market witnessing consolidation activity on a large scale. Though the UBA-STB merger was consummated during the ongoing consolidation era, it was a strategic move by the bank to become a large regional player, with an increased reach and synergies in terms of larger customer base and complementary product portfolio.

In its determination to continue to leverage on a robust IT infrastructure designed to achieve excellent service delivery to its teeming clientele, UBA opted for Finacle universal banking solution, comprising core banking, corporate e-banking, alerts, CRM and treasury solutions from Infosys in October 2005. The relationship between Finacle and UBA dates back to 5 years ago when STB changed from its existing Globus system to Finacle. Finacle core banking solution helped power STB's rapid growth at the turn of the millennium and its emergence as one of Nigeria's leading new generation banks. In addition STB is credited to have spearheaded the deployment of ATM's and internet banking in the Nigeria market riding on Finacle.

To power ahead in the dynamic post-consolidation banking landscape of Nigeria, UBA requires a technology partnership that transcended a typical customer-vendor relationship. From the STB experience, what emerged was the impeccable delivery track record of the Infosys implementation team. Recall that the bank (STB) completed a 65-branch roll out in quick time, less than 6 months, and a far cry from the 18-24 month implementation cycles prevalent in the country then. UBA also needs to capitalize on an integrated channel strategy that incorporated e-banking and CRM, among others.

VI. Discussions On Findings And Conclusion

The results of the research indicate that investment on ICT system and infrastructures has become a key element in productivity and growth in the banking industry. Increased investment in ICT-Capital has accelerated growth in industry. Also, ICT facilitates the absorption of high and medium skilled labor. This has a positive effect on the labor output of the banking industry. The case studies indicate that ICT also enables banks offer a broad variety of services to customers, coordinate branch activities, meet up with changes in government regulations and policies as well as adjust to market demands and competition.

However, only 25.4 million of Nigerians, representing 30% of the adult population have bank accounts. This leaves about 70 % of the adult populations unbanked. Thus to justify investment on ICT, banks need to draw out explicit ways to reach the unbanked. One way of achieving this objective is to increase the geographical outreach of the financial system through the use of non-bank agents; a method that will involve investment in innovative ICT products and services.

In sum, the business environment is becoming ever competitive and dynamic, invariably then, banks require solutions that can scale up to their growth plans and provide them the much-needed agility to create a clear differentiation in the market.

Thus, banks need to employ ICT in such a way that meets the desired qualities of flexibility and scalability, providing them with a competitive advantage to stay ahead and provide new and improved products and services to delight their customers.

It must however be noted that ICT investment does not lead to productivity growth at firm-level by itself. It depends on how the technology is actually used in business processes, i.e. on a company's ability to innovate its work processes and business routines with support of ICT. Thus, only if ICT investment is combined with complementary investment in working practices, human capital, and firm restructuring will it have an impact on performance.

The finding of this study indicates that basic ICT infrastructures such as computer and peripherals, local area networks, and ATMs are crucial to the operations of banks. However, the case studies indicate that to meet the ever increasing sophistication of customers, new government policies and stay competive in a fast changing economy, a scalable, flexible and robust ICT solution is essential.

References

[1] Efraim Turban, Dorothy Leidner, Ephraim McLean, James Wetherbe,"Information Technology for Management: Transforming Organizations in the Digital Economy", 3rd edit., John Wiley & Sons, Inc., pp.10-15. ISBN 978-0-471-78712-9.

[2] Akinlolu Agboola,"Information And communication Technology (Ict) In Banking Operations In Nigeria –An Evaluation Of Recent Experiences", African Journal of Public administration and Management Vol XVIII, No. 1 January 2007.

[3] Osabuohien, Evans S.C, " Ict And Nigerian Banks Reforms: Analysis Of Anticipated Impacts In Selected Banks " Global Journal of Business Research, Vol.2, No.2, 2008.

[4] Rambøll Management, "ICT and e-Business impact in the Banking Industry", A Sectoral e-business Watch study Report Version 4.0 September 2008, available at http://ec.europa.eu/enterprise.

[5] Wikepedia Encyclopedia, "List of banks in Nigeria ", retrieved on march 20th, 2012 from http://en.wikipedia.org/wiki/List_of_banks_in_Nigeria

[6] Central bank of Nigeria, "List of Financial institutions" retrieved on March 20th, 2012 from http://www.cenbank.org/Supervision/Inst-DFI.asp

[7] The Senate Federal Republic Of Nigeria, "A Bill For An Act To Establish The Asset Management Corporation Of Nigeria For The Purpose Of efficiently Resolving The Non-Performing Loan Assets Of Banks In Nigeria And For Related Matters", Asset Management Corporation Of Nigeria Bill, 2010. Retrived on March 20th, 2012 from: http://www.proshareng.com/admin/upload/reports/2705.pdf

[8] Arend, R. J, "Emergence of entrepreneurs following exogenous technological change", Strategic Management Journal, Vol. 20, pp. 31-47, 1999

[9] Clayton M.Christensen, "The Innovator's Dilemma: when new technologies cause great firms to fail" Harvard Business School Press Boston, 1997

[10] Peter Yannopoulos," Defensive and Offensive Strategies for Market Success ", international Journal of Business and Social Science Vol. 2 No. 13 [Special Issue - July 2011].

[11] Jovanovic, B. and Rousseau, P. L. "General Purpose Technologies", Handbook of Economic Growth edited by Philippe Aghion & Steven Durlauf Edition 1, Vol. 1, No.1, Elsevier.

[12] Brynjolfsson E., Malone T. W., Gurbaxani V., and Kambil A. "Does Information Technology Lead to Smaller Firms?", Management Science, Vol. 40, No. 12, pp. 1628-1644, 1994.

[13] Infosys Finnacle, "First Bank of Nigeria Scaling Up for Explosive Growth ", case studies, retrieved on March 10th, 2012, from http://www.infosys.com/finacle/customers/case-studies.

[14] Infosys Finnacle, "United Bank for Africa Marching Towards Leadership ", case studies, retrieved on March 10th, 2012, from http://www.infosys.com/finacle/customers/case-studies.