



Independent Journal of Management &
Production

E-ISSN: 2236-269X

ijmp@ijmp.jor.br

Instituto Federal de Educação, Ciência e
Tecnologia de São Paulo
Brasil

Ugoani, John N. N.; Ugoani, Anthony
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Independent Journal of Management & Production, vol. 8, núm. 3, julio-septiembre, 2017,
pp. 849-873
Instituto Federal de Educação, Ciência e Tecnologia de São Paulo
Avaré, Brasil

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**INFORMATION AND COMMUNICATION TECHNOLOGIES
MANAGEMENT AND NIGERIAN BANKING SECTOR LIQUIDITY**

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Submission: 04/10/2016

Revision: 13/11/2016

Accept: 25/12/2016

ABSTRACT

The study sought to explore the relationship between ICTs management and NBS liquidity. ICTs management helps the business to effect proper planning, coordinating, controlling and decision-making. Liquidity is important for banks to meet the demands of customers and a means of public confidence. The Internet connectivity in the NBS discouraged incentives for manipulations and other inefficiencies that characterized the paper and pen banking of the pre-reform era. The e-FASS approach and heavy investments and application of quality ICTs management by banks restored national and international confidence in the NBS which in a great measure, helped to lure back capital and liquidity into the system. Previous studies have found positive relationship between ICTs management and business productivity, bank profitability and economic growth. Through theoretical and empirical results this study found a high positive relationship between ICTs management and NBS liquidity.

Keywords: *Financial leadership, First Bank, Information systems literacy, Liquidity management, Management activities*



1. INTRODUCTION

Information and Communication Technologies (ICTs) management has evolved with the advent of affordable information technology. Consequently, information systems have continued to change as technology develops in many different directions.

At the present time, ICTs enable greater use of information throughout an organization, but yet, they generate some unique challenges in planning, organizing, analyzing, as well as protecting both official and personal data. And to minimize the dangers posed by these challenges, organizations often fall back on Management Information System (MIS).

MIS is related to the study of the design, implementation, management, and use of information technology applications in organizations (GOMEZ-MEJIA; BALKIN, 2002). It is a system to convert data from internal and external sources into information and to communicate that information, in an appropriate form, to managers at all levels and all functions, to enable them to make timely and effective decisions for planning, organizing, directing, and controlling the activities for which they are responsible.

The integration of business processes with the web has brought about remarkable improvements in service delivery in many different organizations. In Nigeria, for example, the banks among the service organizations that have been in the forefront of ICTs management and MIS application to enhance their operational efficiency, liquidity and profitability.

ICTs in the banking sector have improved operations management, including productivity, efficiency and customer responsiveness. ICTs have created new markets, new ways of servicing customers, and more effective delivery channels like the automated teller machines (ATMs) Point of Sales (PoS), e-commerce, e-banking, mobile banking, among others in the Nigerian banking sector (NBS). In the NBS, ICTs include equipment, networks, and software.

According to Gomez-Mejia and Balkin (2002) management of ICTs requires the establishment of policies to guide usage so as to avoid misuse by misguided employees' which can lead to hardware and software damage. In the banking

system, employees' use of computers for unethical or illegal purposes often puts the bank at serious risk of loss of huge amounts of money and data.

The Internet which is a network of networks has helped banks in connecting thousands of transactions including risk-management, credit-card management, service delivery channels, among others. ICTs management also helps the banks with new ways to deal with the challenges of globalization.

According to Kenny, et al (2002) ICTs management has the potential for huge business opportunities. Such opportunities include employment, access to credit, and distribution of goods, among other entrepreneurial activities. According to them ICTs management also offers an opportunity to provide investment resources to groups previously denied them, provided that the fundamentals of a sound financial system are put in place.

They posit that South Africa's AutoBank E has developed a fully automated savings system aimed at the poorest depositors. Also customers could open an account with a deposit equivalent to only US\$8 and benefit from a wide range of electronic banking services. And since all transactions are completed through automated teller machines, paperwork and transaction costs are kept to a minimum.

This presents the important case for the fact that ICTs are needed for high deposit mobilization and high level of liquidity which is almost indispensable for successful banking operations. Banks in Nigeria started experiencing distress in the late 1980s through 1990s and upto 2009, when liquidity dried up in NBS.

According to the Nigeria Deposit Insurance Corporation (NDIC, 1996) liquidity profile of licensed banks in Nigeria deteriorated from 0.49 percent in December 1995 to minus 15.92 percent in December 1996. On the average, both the commercial and merchant bank sub-sectors could not meet the 30 percent minimum prudential liquidity ratio for banks in Nigeria. While the commercial bank sub-sector recorded liquidity ratios of minus 22.25 percent and minus 38.42 percent in December, 1995 and December 1996 respectively, the merchant bank sub-sector recorded positive liquidity ratios of 29.02 percent and 12.32 percent for the same periods. However, the total number of banks that could not meet the prudential minimum liquidity ratio set for banks by the regulatory authorities, decreased from 50 in December 1995 to 41 in December 1996.

The significant differences between the liquidity positions of commercial and merchants banks underscores the importance of ICTs management to bank liquidity because as at that time, only the merchant banks in Nigeria were almost ICTs compliant, while the commercial banks were still romancing with mainly manual or at best mechanized operations, supported in some few cases, with standalone local area networks (LAN).

This position has been reversed by the adoption of different ICTs by many banks since the late 1990s through 2000s. Consequently, this resulted to all the banks in Nigeria meeting the 30 percent minimum liquidity ratio as at 2011. According to Laudon and Laudon (2006) from a business perspective, ICTs management is part of a series of value-adding activities for acquiring, transforming, and distributing information that managers can use to improve decision-making, enhance organizational performance, and, ultimately increase firm profitability.

Bank customers in Nigeria are now more sophisticated with high expectations, and to increase the business value chain, banks are employing alternative delivery channels (ADCs) through ICTs management. This then requires a better understanding of information processing activities and creative management activities, to forestall the criminal activities of hackers and crackers who are giving banks sleepless nights because such financial saboteurs keep vigil at various websites hacking cracking, spoofing and sniffing financial information for criminal activities (HOFFMAN, et al, 2004; KAMEL, 1998; MICHAEL, 2009).

While it is recognized that earlier scholars have worked on the relationship of ICTs and bank liquidity among others, this study sought to emphasize the importance of ICTs management and NBS liquidity. For example, as banks are now relying more on the Internet bank frauds through the Internet are also on the rise (UMOREN, 2000; SALO, 2006).

Therefore, in this global competitive market environment, bank management at all levels needs a deeper understanding of the handling and applicability of ICTs to drive their liquidity and at the same time, be able to safeguard depositors funds' as well as shareholders' equity. This study strongly believes that there is a difference between the deployment of ICTs by banks and the ability of management to maintain and operate such facilities in the most effective and efficient manner.

This point cannot be overstated because of the necessity of liquidity to the banking system and other organizations. For example, according to Ibe (2013) among the “striking goals of corporate organization include to maximize profit, maintain high liquidity in order to guarantee safety, attain the highest level of owners’ networth, coupled with the attainment of their corporate objectives.

Also, the ICTs management trade-off needs fuller appreciation because it is a prerequisite for providing the required and efficient mechanism for the effective mobilization of resources and properly channeling them across productive investments (BASSEY; MOSES, 2015).

1.1. Statement of the Problem

Liquidity is very important for banks to meet expected and unexpected balance sheet fluctuations and to provide adequate funds for growth and stability. Liquidity represents a bank’s ability to efficiently meet depositors’ demands and other liabilities including the accommodation of loan demands.

According to Greuning and Bratanovic (2003) most banking activity depends on a bank’s ability to provide liquidity to its customers. They posit that most financial transactions or commitments have implications for a bank’s liquidity. However, banks are particularly vulnerable to liquidity problems, on an institution-specific level, and from a systemic or market viewpoint.

Therefore, they believe that liquidity management is a key banking function and an integral part of the asset and liability management process. In managing a bank’s balance sheet, it is always important, first of all, to ensure that there is adequate liquidity to cover all obligations.

After the years of banking sector distress, many banks in Nigeria deployed some kinds of ICTs so as to upgrade their service offerings to serve customers better, and by so doing won more new customers that helped in shoring up their liquidity profile.

Such ICTs are customer friendly, combining service delivery through the traditional branch network, with the ease of ADCs to create customer service experience that is strong on choice, with mass customization. The advent of e-banking, e-business or e-commerce is not without its peculiar benefits and challenges.

With the coming of Internet banking, consumer behavior is being transformed rapidly. It is now characterized by individuality, mobility, independence of place and time, and flexibility. This poses significant challenge for providers of financial services who are now turning to the Internet as a strategic service delivery channel.

To this extent, it is dangerous for banks and other financial institutions to underestimate the impact of Internet technology and electronic banking. Despite the benefits of e-banking, Internet banking and all other e-banking facilities now available some serious problems like frauds still exist. There is need for adequate systems security to reduce the activities of hackers who always try to steal information.

At the expense of many banks, the lack of secure ICTs has given rise to multiple frauds. System frauds range from hijacking of sensitive information, customers dishonestly, denying making transactions on their accounts, hackers gaining access to customers card numbers, among others (ABOLO, 2000; UMOREN, 2000).

Because of these challenges posed by ICTs in Nigeria, the Central Bank of Nigeria (CBN) according to Ogbonna (2016) mandates that with the increasing transformation in the day-to-day operations in the NBS, through the Internet, all financial institutions must ensure that their Internet Service Providers (ISPs) implement a firewall to protect their institutions websites where outsourced, and that banks should ensure that installed firewalls are properly configured with procedures for continued monitoring and maintenance arrangements.

The problems of protection of information and other valuables make it necessary for banks to deploy necessary MIS. According to Laudon and Laudon (2006) using information systems effectively requires an understanding of the organization, management, and information technology systems. They posit that an information system creates value for the firm as an organizational and management solution to challenges posed by the environment.

Theoretical and empirical studies like those of Abiola (2003) Laudon and Laudon (2006) have shown that there is a visible positive correlation between ICTs management and productivity, organizational performance and profitability, thereby creating the gap for investigation on the relationship between ICTs management and

liquidity. Prior to NBS recapitalization and consolidation between 2004 and 2009, the NBS was largely characterized by paper and pen (PP) operations by the manual use of “ledgers” and “journals”.

This brick and mortar approach provided the necessary incentives for falsification of accounts, forgeries, frauds and gross mismanagement of depositors’ funds that led to widespread distress in the NBS. According to Okorie and Uwaleke (2010) prior to 2004, the NBS comprised 89 banks, many of which were characterized by low or eroded capital base; poor corporate governance; insolvency as evidenced by negative capital significantly eroded by losses; over dependence on public sector funds and income from foreign exchange trading; neglect of small and medium scale savers, lack of capacity to support the real sector of the economy, due mainly to gross illiquidity in the NBS.

They posit that the key elements of the NBS reform among others; included: increase in the minimum capitalization for banks from N2.0billion to N25billion and withdrawal of public sector funds from banks, mergers and acquisitions, zero tolerance for non-compliance with regulatory framework; and full automation of the process of rendering reports through the electronic Financial Analysis and Surveillance System (e-FASS) among others.

A critical innovative point in the NBS reform that has raised the methods of improving NBS liquidity is the full automation of the system. ICTs management provided the gateway for the NBS to reap the benefits of globalization through new foreign business partnerships that were accompanied with huge capital inflows. As was expected, the major outcomes of the NBS reform included the emergence of 25 well capitalized banks, and the liquidity brought by this process brought down interest rates.

Accordingly, banks had the capacity to deal with large volume and value transactions, and also had good access to credit or liquidity from foreign banks and partners. The NBS reform enhanced and deepened the operations of the capital market and at the same time raised public confidence in the entire financial system (FS).

At the wake of full automation in the NBS, sound ICTs management, as well as reengineered regulatory mechanisms huge liquidity leakages through PP frauds,

forgeries, account manipulation in the NBS were reduced to the bearest minimum, thereby raising the confidence of foreign partners and donors to inject funds into the system for new business ventures that invariably cushioned the effects of illiquidity.

Laudon and Laudon (2006) state that investment in ICTs is the largest component of capital investment in the US and many industrialized societies, accounting for about 50 percent of invested capital. They believe that firms that invested wisely in ICTs experience continued growth in productivity and efficiency. In the quest for liquidity, productivity, growth, efficiency and profitability banks since the reform period have made huge investments in ICTs.

According Longe (2001) First Bank of Nigeria Plc embarked on huge ICTs project to provide on-line real time services, enhance consumer banking, SMEs financing, corporate banking, commercial banking, agricultural finance, among other e-banking and e-commerce activities of the bank.

According to him, the ICTs project tagged “Century 11: New Frontier” was not just to re-invent the bank, but also to reshape the banking industry because the bank has the obligation as the oldest and the most prosperous bank”. Today the bank operates a ICTs architecture that is customer focused, and among the three banks with the highest liquidity position in the NBS.

Other bank in Nigeria like the First City Monument Bank Plc (FCMB) that has invested heavily in ICTs management is proud of high customer patronage. According to Nelson and Orioha (2015) FCMB is among the banks in Nigeria that is highly ICTs complaint with e-banking services, serving money transfers, PoS, SMEs finance, private e-banking, among others. These modalities, typically linked to the Internet, and monitored through efficient MIS have helped in great measure in building liquidity in the NBS.

It is believed that ICTs management is important in transforming the banking sub-sector to actually touch the lives of people. According to Jibrin (2015) most of the commercial banks in the country, some over 100 years of existence; have some form of challenges. And there are some powerful forces that are transforming this sub-sector. With the Bank Verification Number (BVN) that was done, it brought home the fact that the country is still under-banked.

He states further: "We have decided that technology would be the biggest platform that will drive our business. We will focus largely on the retail market. We will be deepening the use of mobile phones as a means of access to banking services. We are also a licensed Mobile Money Bank.

So, in the real sense, we do not need a brick and mortar bank to provide banking services. You can open your account on your phone and transact your business. He believes that in a country with a population of about 180 million, an annual population growth rate of about three percent, certainly, it is clear that the country is heavily under-banked.

The Internet and web development provide efficiency and unprecedented flexibility gains to organizations involved in deploying it. The Internet-based information technologies structure helps in sharing information through the telecommunication network and used by both customers and members of the organization" (SALO, 2006; BAKER, 2000; ALDRICH, 1972; HALLOWS, 1997).

1.2. Objective of the study

The study was designed to explore the relationship between ICTs management and NBS liquidity.

1.3. Scope of the study

The study was delimited to the 24 deposit money banks in Nigeria (DMBs).

1.4. Significance of the study

The study will help students, academics, researchers, bankers, consultants and the public to have a deeper understanding of the relationship between ICTs management and NBS liquidity.

1.5. Limitations of the Study

The study was constrained by lack of current literature in the areas of investigation and research funds. These limitations did not however, dilute the academic potency of the study.

1.6. Research Questions

- a) Is there any evidence of relationship between ICTs management and NBS liquidity?

- b) Is there any evidence that ICTs management helps in high bank liquidity in Nigeria?

1.7. Restatement Research Questions

- a) There evidence of positive relationship between ICTs management and NBS liquidity.
- b) There is evidence that ICTs management helps in high bank liquidity in Nigeria.

2. LITERATURE REVIEW

Banks in Nigeria began to patronize ICTs in the beginning of the century in an attempt to join the rest of the world as competition rules the global financial market. For example, Mutallab (2001) while addressing the shareholders of First Bank of Nigeria Plc states: "After a careful examination of the emerging Nigerian economy in the context of the increasing globalization, the board and management of our bank have concluded that the required response is not restructuring or repositioning but a comprehensive strategic redirection.

We have, therefore, embarked on a new strategy that builds on our past while projecting sharply into the future. The new initiative century II The New Frontier, the implementation of which has begun with the approval and backing of the Board will enable us to optimize our strengths including a large customer base, experience and extensive branch network to tap current and emerging opportunities in and outside financial services.

It also promises to engender the significant leap required by our bank to truly provide the modern Nigerian economy the financial leadership it requires". Since that time, more banks in Nigeria have been deploying and updating ICTs infrastructure as a competitive tool. The need to provide quality banking services to customers has been the main driver of significant ICTs investments in the NBS in the last sixteen years.

Other drivers have been globalization, increasing liberalization and keener competition in Nigeria's Financial System (NFS) and phenomenal growth of the Internet which offers immense opportunities for business and banking. The Internet has greatly altered the shape of business and banking globally and the development

of e-capabilities is positively impacting on the way banking business is conducted generally.

As early as 2000 according to Longe (2001) the management of First Bank of Nigeria Plc commenced the process of selecting a new banking application to improve service delivery including ADCs, and to operate on a one-branch basis by networking branches to provide “on-line real time” services.

Consequently, according to Ajekigbe (2002) the bank acquired the Finacle banking application software developed by Infosys Technologies of India to meet new operational challenges. The new software operates from a centralized database and all the branches on the network have access to the centre, thereby transforming the Big Bank into “One Branch Bank”.

According to Abiola (2003) information systems are very important in today’s business because they affect how managers decide, how senior managers plan, and in many cases, what products are produced and how they are produced. Information systems enable new forms of organization, new ways to work and new ways to compete. The Internet has helped organizations to become more flexible, eliminate layers of management, separate work from location, and restructure workflows, giving new powers to both line workers and management (NELSON, 2015; NWAERONDU; GODWIN, 1987).

2.1. Business and Management Perspectives of ICTs

E-banking is gaining recognition in Nigeria as banks want to meet the challenges of competition in the global financial market (GFM). ICTs have created new business windows, novel ways of serving customers at the points of their needs. Consequent upon this are new regulations and challenges that task the ability of management.

Sound ICTs management is critical for a bank to engage on projects like branchless banking that helps to build competitive advantage, where traditional banking can no longer guarantee a deepening of the customer base. The ICTs and Internet facilities have the perspectives of two models of Internet banking system which may be developed simultaneously.

One is either an already existing bank with branch networks connected on-line real time or a new banking site with no formal physical branch offices. This can be

made possible through BPR. While global banking has gone beyond the four walls of branch banking, Nigeria is still experimenting on how to consolidate on ICTs management and liquidity generation.

ICTs management enhances the applicability of the three categories of on-line banking which increases the ability to circulate information among customers, allow customers to view their account balances and at the third level allow customers to perform transactions on their accounts including paying their utility bills and funds transfer, without hindrance. Through this process, bank liquidity is often enhanced.

According to Abubakar, et al (2015) “electronic banking is gaining patronage where information from the central server is made accessible to the account holder using a PIN or PASSWORD. Account statements, account transfer facilities bulk payment facilities, loan facilities international bank transfer are made available to customers”. They posit that the value of electronic payments rose by 25.6 percent to N1,416 billion in 2013 over the level of 2012.

According to them, there is a close association between electronic banking with bank liquidity. According to Dawodu and Osondu (2013) the application of ICTs management and implementation strategies to the banking system has become of fundamental importance to all banks and a prerequisite for local and global competitiveness.

They posit that ICTs directly affect the various management functions of planning organizing, directing controlling and the nature of services offered in the banking industry. It is believed that ICTs management has emerged as a catalyst in the various industries of the world to aid the process and procedure required to ensure the realization of organizational goals.

According to Laudon and Laudon (2006) managers and business firms invest in information technology and systems because they provide real economic value to the business. The decision to build or maintain an information system assumes that the returns on this investment will be superior to other investments in buildings, machines, or other assets.

They posit that in some cases, firms invest in ICTs because such investments are necessary to stay in business. For example, banks may be forced to invest in ATMs to offer better services to customers. From the business and management

perspectives, it is clear that ICTs are important for creating value for the company. ICTs enable the business to increase its revenue or decrease its cost by providing information that helps managers make better decisions or that improves the execution of business processes.

Laudon and Laudon (2006) emphasize that the value of an information system to a business, as well as the decision to invest in any new information system is, in large part, determined by the extent to which the system will lead to better management decisions, more efficient business processes, and higher firm profitability. Accordingly, business and management perspectives of ICTs require attention to the organizational and managerial nature of ICTs and an understanding of the three dimensions of information systems – organization, management, and technology crucial for ICTs management and business prosperity.

2.2. Dimensions of ICTs Management

According to Laudon and Laudon (2006) information systems must be properly organized to create the needed value for the business. This could be achieved through organization, management and technology.

- i. **Organization:** Organizations are composed of different levels; their structures reveal a clear-cut division of labour. Experts are employed and trained for different functions. The major business functions performed by business organizations consist of sales and marketing, manufacturing and production, finance and accounting, and human resource management. All organizations co-ordinate work through a structured hierarchy and through its business processes. The hierarchy arranges people in a pyramid structure of rising authority and responsibility. Each organization has a unique culture, or fundamental set of assumptions, values, and ways of doing things, that has been accepted by most of its members.
- ii. **Management:** Generally, management's job is to make sense out of the many situations faced by organizations, make decisions, and formulate action plans to solve organizational problems. Laudon and Laudon (2006) posit that managers perceive business challenges in the environment; they set the organizational strategy for responding to those challenges; and they allocate the human and financial resources to co-ordinate the work and achieve success. Always and

almost, managers exercise responsible leadership. Managerial roles and decision-making vary at different levels of an organization. Typically, senior managers make long term strategic decisions; middle managers carry out the decisions of senior management, while the lower or operational managers are responsible for carrying out instructions and monitoring the day-to-day activities of the business. However, each level of management has different ICTs needs and information system requirements for effective operations on the job.

- iii. **Technology:** According to Laudon and Laudon (2006) IT is one of many tools managers use to cope with change. By this implication, IT is only an aid to management in the discharge of managerial functions. ICTs consisting of both physical devices and software link the various pieces of hardware and transfer data from one physical location to another. They suggest that the world's largest and most widely used network is the Internet. The Internet is an international network of networks that are both commercially and publicly owned. The Internet connects hundreds of thousands of different networks from more than 200 countries around the world. Today, more than 900 million people working in science, education, government, and business including banking, use the Internet to exchange information or business transactions with other organizations around the world. Through this way ICTs management has revolutionized the NBS and provided it with the necessary competitive advantage.

2.3. Business and Management Perspectives of ICTs and Liquidity

Laudon and Laudon (2006) emphasize that ICTs rely on both technology and knowledge of the business to enable the company and its suppliers to respond instantly to change in the market place or other events. ICTs management provides the ability to monitor and react to data as events unfold, and intimately linked with systems of its suppliers and related companies.

By this ICTs approach, managers can see into these systems and, when the need arises, make any adjustments in efforts to keep providing goods and services aligned with customer needs and expectations. The transformation of business the Internet has made management and related data to flow seamlessly among different parts of an organization, streamline the flow of work, and create e-links, with customers, suppliers and other organizations.

For example, First Bank has direct e-link with its blue-clip customers like Shell Petroleum Development Company (SPDC) United African Company Nigeria Plc (UACN Plc) and other high net-worth individuals (HNI). For the SPDC, the bank extended its fully automated branch network, ATMs, Point of Sales (PoS) terminals and to deepen savings among the unbanked and underbanked, operate the Micro Credit Scheme for Agricultural Development (MISCAD) promoted by SPDC, and also, the National Group Farmers Program of the Society for Shelter, Education, Food and Agricultural Development (ASSEFAD) (LONGE, 2001).

As ICTs management forms the basis for business in the twenty-first century, against the motion of tall buildings, filing cabinets, etc, in the twentieth century, the use of ICTs and the management ability to implement corporate strategies hold the torch for increasing market share, becoming the high-quality or low-cost service provider, developing new products, increasing employment, productivity and organizational liquidity and profitability.

According to Ibe (2013) liquidity is the life blood of a banking set up. He states that adequate liquidity serves as vehicle for profitable operations, especially to sustain confidence of depositors in meeting the short term obligations, Bassey and Moses (2015) contend that bank management should always pay attention to the conflicting goals of liquidity and profitability.

They posit that profitability and liquidity as performance indicators are very important to the major stakeholders. Also, the shareholders are interested in the profitability of banks because it determines their returns on investment. Depositors are concerned with the liquidity position of their banks because it determines the ability to respond to their cash withdrawal and money transfer requirements at any given time.

They insist that in the Nigerian case, any DMB that wants to succeed needs to put in place sound management of its profitability based on its liquidity level as both are critical variables for growth and sustainability. A foundational significance of business and management perspectives of ICTs and the relationship with liquidity, productivity and profitability is the understanding of the basic differences between information systems literacy and computer literacy in Nigeria.

To a large extent, there is a misunderstanding of the two related concepts even by top management in Nigeria. According to Laudon and Laudon (2006) it is important to understand the different dimension. They posit that information system literacy includes a behavioral as well as a technical approach to studying information systems, while computer literacy, in contract, focuses primarily on knowledge of information technology.

From these perspectives, it is clear that ICTs management is distinct, and necessary for efficient, productive, profitable and very liquid bank management. The Nigerian banking crisis of the 1990s was exacerbated by inefficient liquidity management by banks (BASSEY; MOSES, 2015).

The investment in ICTs by banks and the inflow of capital can be explained because all economic units need better sources of liquidity for its operations. Thus, the attraction of foreign capital consequent upon Internet connectivity, and the availability of bank credit are important sources of liquidity in the NBS (AGBADA, 2010).

In 2012 Nigeria embraced the mobile money (MM) facility and now ranks among the big three of South Africa and Kenya. This facility changed consumer behavior and built robust confidence with regard to national and international funds mobilization.

According to Uduma (2012) "the nation is transiting from cash payment to electronic payment system, and the overriding vision of mobile money is to achieve a nationally utilized and internationally recognized payments system". Because of the relevance of the Internet in national economic growth, in 2012, the Ministry of Communications sought to upgrade the broadband in Nigeria by 50 percent, as the speed available in the country was the lowest in Africa.

According to Johnson (2012) "All over the world, universal access to broadband is becoming significant indicator of development and competitiveness, amongst nations. Therefore, any country seeking growth, jobs and wealth creation must work toward increasing access to broadband". She posits that with strategies in place, ICTs would contribute at least 1.5 percent to the GDP by 2015.

Arising from major financial crisis, and with a mindset of Internet connectivity, the NBS is regaining global confidence and funds are being lured back into the

system to replenish liquidity that was dried up during the crisis, when about \$4billion was used by the CBN to bail out nine illiquid banks (IBRAHIM, 2012).

To emphasize the critical nature of ICTs management to business, the Nigerian Communication Commission (NCC) and Digital SENSE Africa, hosted a forum on Internet Governance for Development (IG4D), (Ailuoria, 2012). According to Olaleye (2013) ICT sector has attracted investment of over N387billion into Nigeria since 1999. Such money passed through the NBS, and no doubt had positive impact on its liquidity.

3. METHODOLOGY

3.1. Research Design

The exploratory research design was used for the study. The nature of exploratory research requires the use of a flexible research process. It is evolutionary and historical in nature and it rarely involves the employment of large samples or use of structured questionnaire (ASIKA, 2004).

3.2. Sources of Data

Primary and secondary data were collected from the Annual Reports and Accounts of Banks, NDIC, CBN Reports, journals, newspapers, books, and other publications.

3.3. Population and Sample

The population and sample of the study comprised all the 24 DMBs as at December 2013.

3.4. Methods of Data Analysis

Data were analyzed through descriptive statistical methods and the results presented in tables.

4. PRESENTATION OF RESULTS

Table 1 showed the list of DMBs as at 2013.

Table 1: List of Nigerian Banks

S/N	Name of Bank
1	Access Bank Nigeria Plc
2	Mainstreet Bank Plc
3	Keystone Bank Plc
4	Citibank Nigeria Ltd

5	Diamond Bank Plc
6	Ecobank Plc
7	Fidelity Bank Plc
8	First Bank of Nigeria Plc
9	First City Monument Bank Plc
10	Guarantee Trust Bank Plc
11	Skye Bank Plc
12	Enterprise Bank Plc
13	Stanbic IBTC Bank Plc
14	Standard Chartered Bank Ltd
15	Sterling Bank Plc
16	Union Bank Plc
17	United Bank For Africa Plc
18	Unity Bank Plc
19	Wema Bank Plc
20	Zenith Bank Plc
21	Jaiz Bank Plc
22	FSDH Merchant Bank Nigeria Ltd
23	Heritage Banking Company Ltd.
24	Rand Merchant Bank Ltd

Source: NDIC Annual Report 2013

Table 2 showed that the liquidity profile of licensed banks in Nigeria deteriorated from 0.49 percent in December, 1995 to minus 15.92 percent in December, 1996.

Table 2: Liquidity position of insured banks as at 1996

Banks	Number of Banks		Average liquidity ratio		Ratio of loans and advances to total deposits		Number of banks with average liquidity ratio of less than 30%	
	1995	1996	1995	1996	1995	1996	1995	1996
Merchant	51	31	29.02	12.32	64.7	80.08	18	15
Commercial	64	64	(22.25)	(38.42)	57.6	57.6	32	26
Industry	115	115	0.49	(15.92)	58.4	60.0	50	41

Source: Nigeria Deposit Insurance Corporation (1996)

With full compliance with the CBN automation requirements, the liquidity position in the NBS was strong in 2011 as the available liquidity ratio rose from 51.77 percent in 2010 to 65.69 percent in 2011, against minus 15.92 percent in 1996.

Table 3: Liquidity ratio of insured banks as at 2010

Items	Years	
	2010	2011
Average liquidity ratio	51.77	65.69
Loans and advances to deposit ratio	59.23	55.95
No of banks with less than the 30% minimum liquidity ratio	1	Nil

Source: NDIC Annual Report (2011)

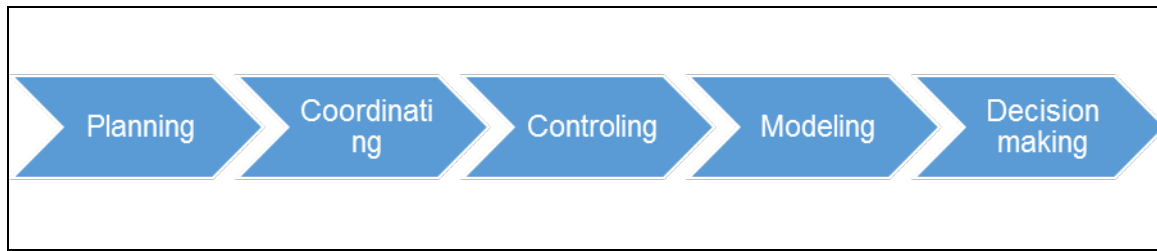


Figure 1: Management Activities Model
 Source: Laudon and Laudon (2006)



Figure 2: Dimensions of Information System
 Source: Laudon and Laudon (2006)

4.1. Discussion

Wireless connectivity to the Internet and the development of a robust ICTs architecture brought greater improvements in all ramifications of the NBS, particularly in the core areas of productivity, profitability and liquidity growth. Prior to the 2004 – 2009 NBS recapitalization and consolidation programme, most of the 89 banks had little or no access to Internet connection.

This created high incentives for falsification of accounts and records, overload of nonperforming loans, advances and discounts (LAD), frauds and forgeries, diversion of depositors' funds, among other unethical banking behaviours that contributed to illiquidity in the NBS, and ultimately the financial crisis of the 1990s.

Against the background of distress in the NBS, major banks like the First Bank of Nigeria Plc and others like the First City Monument Bank Plc. started to invest heavily in ICTs development as a possible means of enhancing their liquidity positions, productivity and profitability.

These banks hooked on to Finacle software to link their entire operations with the Internet and they are today among the banks with high liquidity in the NBS. In addition to raising the capital formation of banks from N2bn to N25bn so as to bring in liquidity into NBS, another giant feat that helped to shore up global confidence in the entire FS was the mandate by the CBN for all banks to compulsorily automate their processes.

This began with the automation of the process for rendition of returns and reports by banks and other financial institutions through the e-FASS. This single measure to a very high extent reduced the rate at which reports and returns through manual measures were being falsified through the CBN and other major regulatory authorities like the Nigeria Deposit Insurance Corporate, and the Securities and Exchange Commission (SEC).

The e-FASS compliance and effective ICTs management by banks helped in encouraging and raising the confidence of the banking public both nationally and internationally, that ensured the inflow of deposits and capital from foreign partners and donors that made the banks to measure up to the prescribed minimum liquidity requirements of 30 percent. Prior to the NBS reforms in 1996, the liquidity position of the NBS was minus 15.92 percent, and most of the banks could not meet the 30 percent minimum prudential requirement set by the CBN.

This serious illiquidity status preceded the NBS distress that ultimately led to mass bank failures which consumed about \$4bn in an unprecedented bailout exercise by the CBN in 2009. The CBN also guaranteed foreign loans to Nigerian banks as well as provided guarantee for interbank placement between 2009 and 2010, as measures to restore the needed liquidity to the NBS.

Years after these processes the average liquidity ratio in the NBS rose from 51.77 percent in 2010 to 65.69 percent, in 2011, with all the banks meeting the 30 percent prudential minimum liquidity ratio. In actual figures, shareholders' funds supported by strong liquidity position in the NBS, rose from N312.36billion in 2010 to N1,934.93bn in 2011.

All economic units need liquidity for its operations, including banks, therefore, the attraction of foreign capital, and the available of bank credit made easier by the Internet connectivity represent an important source of bank liquidity for financing



production, and providing services. Even though other factors like macroeconomic policies and CBN monetary policies can affect bank liquidity either positively or negatively, the ICTs management perspective more especially engendered the spirit of globalization; partnerships and diversification of equity structures.

This is now reflected by the courage of major banks like Citibank Ltd, Standard Chartered Bank Plc, Stanbic IBTC Plc, and Union Bank of Nigeria Plc, holding substantial foreign equity in excess of 50 percent of total equity capital that in no small measure helped to beef up the liquidity profile of the NBS as at December 2011 (NDIC, 2011).

The beauty of the situation is that good organizational structure, management as well as sound ICTs architecture contributed in the upward swing in the liquidity position in the NBS, after the banking sector reforms. The power of ICTs management in organizational performance had already been identified by Laudon and Laudon (2006) and Abiola (2003) among others. Others like Johnson (2012) believes that ICTs management can contribute at least, 1.5 percent to Nigeria's GDP. These earlier theoretical and empirical studies lend credence to the actions of bank management that made substantial investments in ICTs at the beginning of the century, such as the First Bank Century II: New Frontier Project of the 2000s. The common e-banking operations in Nigeria today include the ATMs, PoS terminals, cash transfers, interbank money transfers, foreign money transfers, like the Western Union Money Transfer, pioneered by the First Bank, among others.

Statistics by the Nigeria Interbank Settlement System state that out of more than 100,000 PoS terminals registered in Nigeria about 62000 were active as at December 2015. It also put the value of transactions on PoS at N53billion in 3.95billion deals. Without any other magic wand, these are critical areas of deposit mobilization and liquidity build up. According to Nelson and Orioha (2015) FCMB Plc is among the banks in Nigeria that is highly ICTs positive.

According to them, the bank has upgraded its IT infrastructure to Finacle 10 core banking solution. The advanced service-oriented application is already optimizing the processes, enhancing system capability, performance scalability and security among other things. With such infrastructure-technology upscale, the bank's electronic banking and card products are now of much benefit to consumers.

They report that the bank's Internet banking services also cover small and medium scale enterprises (SMEs) and other corporate customers, and provide 24/7 access to FCMB accounts. In recognition of the important role of ICTs management in the NBS and the economy as whole, major stakeholders like the NCC, the CBN as well as the IG4D are working round the clock to ensure the protection of the banking public.

This study supports the positions of earlier researchers like Dawodu and Osondu (2013) Abubakar et al (2015) and Oluwasanya (2014) that ICTs management has positive relationship with bank liquidity.

4.2. Recommendations

- i. Top management should focus on good ICTs management and not necessarily on computer literacy to reap the full benefits of Internet connectivity.
- ii. ICTs management is important to economic growth, therefore the federal government need to enforce rules and regulations to guide its applications and not to leave it to the whims and caprices of private operators.
- iii. The CBN should enforce strict compliance of banks and other financial institutions with e-FASS to avoid a relapse to the preconsolidation era that brought doom to the NBS.
- iv. Foreign equity is healthy for the NBS, and efforts need to be geared towards credible partnerships so as to enlarge NBS liquidity position to enable banks create more credit needed for the development of the economy.
- v. Banks should explore the possibility of expanding Internet and e-banking facilities to remote areas of the country to tap the deposits of numerous small savers as cheap funds, to beef up liquidity in the NBS.

4.3. Scope for further studies

Further studies should examine the relationship between ICTs management and tax administration in Nigeria to see if a solution can be found to the constant problems of tax leakage and evasion in the private and public sectors of the economy.

5. CONCLUSION

ICTs management helps organizations in providing better services to their customers and others. Globalization has a strong bearing on the importance of ICTs management as a gateway to international markets, partnerships foreign capital among others. The NBS is a beneficiary of this phenomenon because prior to the NBS reform most banks were involved in manual operations that did not allow them to see the outside world and the potential business and banking opportunities.

The PP banking approach encouraged falsification of reports, frauds among other corrupt activities that led to illiquidity in the NBS which culminated in distress and ultimately mass bank failures in the 1990s through 2009. A major outcome of the NBS reform was the CBN mandate for banks and other financial institutions to adopt the e-FASS reporting system which no doubt blocked liquidity leakages, restored national and international confidence in the NBS that helped to lure liquidity back to the system.

For example, the liquidity ratio in the NBS before the reform was minus 15.92 percent in 1996, with many banks not meeting the 30 percent CBN prudential minimum requirement for banks. But after the reforms and all the banks complying with the e-FASS reporting and the banks embracing superior ICTs management, the liquidity ratio in the NBS was 65.69 percent, with all the banks meeting the CBN minimum 30 percent prudential liquidity requirement as at 2011.

There is a huge theoretical and empirical report to show that ICTs management contributes to enterprise productivity, bank profitability and economic growth. In contribution to knowledge over the importance of ICTs management, this study based on theoretical and empirical results found a positive relationship between ICTs management and NBS liquidity.

The results support the work of Abubakar, et al (2015) among others, that ICTs management has positive correlation with bank liquidity.

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