Effect of Information Systems on the Efficiency and Profitability of Banks in Nigeria

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Abstract
In recent years, there has been a sharp surge in the global quest for the utilization of information systems in the management of businesses. The banking industry seems to be in the forefront of this quest, especially in developing countries where e-banking has fast become a handy criterion for assessing the productivity and viability of the banks. Efficiency and profitability are among the variables for assessing the productivity of banks. This study seeks to examine the effects of information systems on the efficiency and profitability of Nigeria banks in Abuja FCT .Descriptive statistics and Pearson's Product Moment Correlation Coefficient were employed in the analysis of 104 questionnaires distributed to workers in 10 Nigerian banks. The results of the study show that information systems have tremendous effects on the efficiency of banks, which in turn has positive effects on customer satisfaction, leading to higher profitability.

Keywords: Profitability, Liquidity, Viability, Computerization, Efficiency, Stability.
JEL Classification:O33, G21, H21

1. INTRODUCTION

Information Systems (IS) use Information Technology (IT) to capture, transmit, store, retrieve, manipulate and report information used in business processes. In most banks, particularly medium and large sized ones, information needs are met through giant information systems. More recently, computer specialist have increasingly recognized that it is increasingly difficult to meet all the information needs of banks (Atitebi, 2001). In addition, information needs are dynamic and fluid. It therefore implies that information systems are not likely to perfectly meet the needs of the banks. However, they are essential for effective performance of banks.

The existence of global information systems, especially the internet, has made the world a global village, which can be accessed from the tabletops of individuals and organizations. Businesses are transacted via the Internet, money is transferred through the Internet, and goods are purchased through the Internet, thus making existence easier and more interesting. The developing countries have striven to be within the horizon of this IT propelled world. Banks and other financial institutions seem to have taken the load (Adeoye, 2001). A number of researchers have attempted to study the effects of the overall performance of these banks especially in the area of customer satisfaction (Awoyelu, 2001). Stiff competition has set in as banks scramble for customer deposits at all costs. This results in banks making frantic efforts to satisfy customers.

The fact of marketing concept is that an organization attempts to determine the needs and wants of its target markets and adapts itself to delivering the desired satisfaction more efficiently and effectively than its competitors (Kotler, 1990). The marketing concept is based on three fundamental beliefs: all companies' planning and operations should be customer oriented; profitable sales volume should be the ultimate goal of the firm; and all marketing activities should be organizationally coordinated. It is in the light of this concept that this study attempts to study how Nigerian banks have been able to utilize information systems to improve their efficiency and increase their profitability.

2. LITERATURE REVIEW

Information system principally involves electronic processing of transactions or data in order to achieve a specific purpose (Gates, 1996). Information system is driven by Information Technology (IT), which consists of hardware, software that perform data processing tasks such as capturing, storing, retrieving, manipulating and reporting data (Alter, 1996). It is recognized in (Laudon and Laudon, 2000) that until recently, information itself was not considered an important asset for a firm. The management process was considered a face-to-face, inter-personal art and not a far-flung, global coordination process. Today, it is widely recognized that understanding information systems is essential for managers because most organizations need information systems to survive and prosper.

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. They play a strategic role in the life of the firm. Laudon and Laudon (2000) recognize that there is a growing interdependence between business strategy, rules and procedures on one hand, and information systems, software, databases and telecommunications on the other hand. Powerful computers, software and networks, including the Internet, have helped organizations to become more flexible, eliminate layers of management, separate work form location, and restructure workflows, giving new powers to both line workers and management. According to Alter (1996), information systems enable new forms of organization, new ways to work and new ways to complete. They can give new meaning to everyday things such as money, books, offices, advertisements and entertainment.

According to Molan (1979), the evolution of IT can be broadly divided into a seven stage model, namely, initiation, integration, contagion, control, integration, data administration, and maturity. This model was extended into three areas where objectives of IT were identified as follows:-

a). to improve business efficiency by automating basic information needs
b). to improve management effectiveness by satisfying information needs
c). to improve competiveness by affecting business strategy

It is recognized that Nigerian financial institutions have embraced the use of information systems as a means of improving management effectiveness and competitiveness (Awoyelu, 2001). In the past, Nigerian banks recorded long queues, to the effect that customers were grossly dissatisfied, and that consequently reduced profitability. Awoyelu (2001) examined the effects of IT on overall customer satisfaction in financial institutions in Nigeria. The report indicates a positive effect. However, not enough research has been done on the effects of information systems on efficiency and profitability, as there are several concomitants that contribute to the efficiency and profitability of the banks.

3. MATERIALS AND METHODS

The data for this study were collected through the administration of structured questionnaires to a sample of bank workers in Abuja metropolis. Abuja was chosen for the purpose of this study because studies have shown that since Abuja is the Federal Capital Territory, industries (including banks) headquarters are located in Abuja (Ojo, 2013). It therefore, implies that Abuja could serve as a good representative of the industrial characteristics of Nigeria.

One hundred and thirty copies of the questionnaire were administered randomly to staff of 10 banks stratified into the following classifications: old generation banks (3), second-generation banks (3) and new generation banks (4). One hundred and four (104) copies of the questionnaire were duly completed and returned, which formed the basis of the analysis. The experimental variables examined in this study are efficiency and profitability that result from the application of information systems in banking operations. The questions were structured along a six point Likert scale, the responseswere coded and mapped onto numeric values; for example, considering the level of computerisation, the following mappings exist: none-2 points, fair-3 points, high-4 points, very high-5 points.

Correlation analysis was carried out on the coded data to determine the relationship between IS level and profitability on the one hand, and between IS level and efficiency on the other hand. Bivariate correlation procedure using Statistical Package for Social Sciences (SPSS) was employed in computing the Pearson's correlation coefficients. The correlation coefficient expresses the strength of the relationship on a scale, ranging from -1 to +1. A positive value close to +1 indicates a strong positive relationship in which an increase in one variable implies an increase in the value of the second variable, while a strong negative relationship (close to -1) indicates that an increase in one variable leads to a decrease in the other. The extent of correlation is considered at 0.01 level of significance. Descriptive statistics were also produced to show the levels of IS, profit and efficiency.

4. DATA ANALYSIS AND DISCUSSION OF RESULTS

The coded responses of the respondents on effects of information systems on profitability and efficiency is shown on Appendix A, while the descriptive statistics, Pearson's correlation coefficient between IS level and profit level/ efficiency level are presented in Tables **1.1, 1.2, 2.1 and 2.2.**

Table 1.1
Descriptive statistics (IS and Profit Levels)

	Mean	*Std. Deviation*	*N*
IS Level	3.34	1.30	104
Profit level	3.82	.89	104

Researcher survey 2014

Table 1.2 **Correlation's (IS and Profit Levels)**			
		IS Level	Profit Level
IS Level	Pearson Correlation Sig. (2-tailed) N	1.000 - 104	.601** .000 104
Profit level	Pearson Correlation Sig. (2 tailed) N	601*** .000 104	1.000 - 104

Researcher survey 2014

**Correlation is significant at the 0.01 level (2-tailed).

Table 1.2 **Descriptive Statistics (IS and Efficiency Levels)**			
	Mean	***Std. Deviation***	***N***
IS Level	3.34	1.30	104
Efficiency Level	3.78	.87	104

Researcher survey2014

Table 2.2 **Correlation's (IS and Efficiency Levels)**			
		IS Level	**Profit Level**
IS Level	Pearson Correlation Sig. (2-tailed) N	1.000 - 104	.592** .000 104
Efficiency level	Pearson Correlation Sig. (2 tailed) N	.592*** .000 104	1.000 - 104

Researchers' survey 2014

***Correlation is significant at the 0.01 level (2-tailed).

From **Tables 1.1 and 2.1,** there is evidence that IS, profit and efficiency levels are high. However, with a mean response of 3.34 and a standard deviation of 1.30, it can be said that the IS level is not as high as profit and efficiency levels (3.82 and 3.78 respectively). This could be attributed to the fact that the introduction of information systems in the banking industry is relatively a new phenomenon. This is coupled with the fact that IS only constitutes a percentage of variables that could affect efficiency and profitability.

The Pearson's correlation coefficient for IS level and profit level is 0.601, while that of IS level and efficiency is 0.592. These values show that the correlations are significant at 0.01 level (2 tailed). However, the results show that IS level has a higher correlation with profit level than with efficiency. This can be attributed to the general belief in Nigeria that the banks pursue the profit motive at all cost including the use of IS. However, the pursuance of efficiency is not matched with the same vigour as profitability.

Evidence shows that 95% of banks visited were either fully computerized, running multi-user, networked system or partially computerized with stand-alone systems. This is a strong indication that the level of application of IS in recent times has increased tremendously. Banks realize the importance of IS in the effective and efficient performance of their duties to shareholders and customers. The main focus of the banks include:-

a). Selection of an appropriate information system.
b). Provisions of IS training for employees.
c). Protection against security breaches and system breakdowns.

All the respondents from the computerized banks agree that IS implementation has made their bank very competitive, while 63.7% indicated that IS has assisted their banks in strategic planning and implementation. This buttresses the fact that though most banks employ the use of IS in customer services, there is the need to focus on management and executive Information Systems that assist in long-term strategy formulation and implementation.

Customer satisfaction is vital to the profitability of banks, and customer satisfaction is affected by the efficiency of the banks in delivering effective quality banking services. 72.1% of respondents indicated that IS implementation has improved their customer satisfaction by over 60%, while the remaining 27.9% indicated that customer satisfaction is improved by less than 60%. This shows a good evidence of improved customer service, leading to increased profitability due to IS implementation.

Table 3.1
Information system components

S/N	Components	Percentage Responses
1.	Mainframe/minicomputers	26.1%
2.	Microcomputers	73.9%
3.	Electronic/Internet banking	35.7%
4.	Regional Switching Centers (SWIFT)	41.4%
5.	Automatic Teller Machines (ATMs)	46.8%
6.	On-line real time banking	35.1%
7.	Smart Cards/Value Cards	79.2%
8.	Electronic Funds Transfer	58.7%
9.	Telephone banking	27.2%
10	Others	5.6%

Researcher survey 2014

Presented in **Table 3.1** are the percentage responses concerning the information system component employed by the surveyed banks. Evidence shows that a number of banks have embraced the electronic purse scheme (smart card) – 79.2% with most of them employing the use of personal computer networks (73.9%) in the delivery of their services. The use of microcomputers and distributed systems is due to the fact that it is easier to acquire and maintain microcomputers than mainframes and minicomputers.

5. CONCLUSIONS AND RECOMMENDATIONS

Information systems have greatly facilitated the process of boosting and regulating banking activities so that actual performance conforms to a large extent, with expected standards. The adoption of IS in the banking services delivery has been a major revolution in the banking industry in Nigeria. In the last one decade, majority of banks in Nigeria have either partially or fully computerized their operations. Hence, there is strong evidence from the study that the introduction of IS has greatly improved the efficiency of these banks, leading to greater customer satisfaction and consequently, increased profitability.

It is recommended that the banks pay more attention to the use of IS in strategy formulation and implementation through the adoption of high-level Decision Support Systems (DSS) and Executive Support selection and staff training, as these two factors affect the overall leverage of the banks through IS. Finally, it is recommended that regulatory agencies should pay good attention to the subject of e-banking while institutions that offer banking courses should pay adequate attention to the concept of e-banking in their curricula.

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Appendix A:

Coded Responses on Effects of Information System on Profitability and Efficiency		
IS Level	**Profit Level**	**Efficiency**
4	3	4
5	4	4
3	4	3
5	4	4
4	5	4
3	4	4
5	4	5
2	4	4
4	2	2
3	3	3
3	4	4
4	4	4
4	5	5
4	3	3
5	5	4
3	3	3
3	4	3
3	4	4
5	3	3
5	5	4
2	3	3
1	2	3
0	2	3
3	4	4
5	5	5
4	5	5
3	4	4
2	3	3
3	4	3
3	5	5
2	4	3
5	5	5
2	3	3
1	2	2
1	3	3
3	4	4
3	4	3
3	3	3
4	4	5

5	5	5
1	4	4
3	3	4
3	4	4
4	5	5
4	5	5
4	4	4
1	2	2
1	4	4
2	3	3
5	5	5
5	4	5
3	4	4

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