

THE IMPACT OF MANAGEMENT PRACTICES ON VALUE OF INFORMATION TECHNOLOGY INVESTMENTS IN NIGERIAN BANKS

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ABSTRACT

The broad objective of this study was to evaluate the impact of management practices on value of information technology (IT) investments in banking operations in the South West Nigeria. In order to analyze the effect of the maintenance of existing systems versus the development of new IT systems, the study used data collected over a five year period (2001-2005) on technology expenditures of ten selected banks. The technology expenditures were categorized into; i. Maintenance and ii. Development. A simple correlation between maintenance and development ratio and firm performance was measured from the Cobb-Douglas production function using the net income as output. The results showed that for every management improvement on maintenance of IT system, positive net income increased by 0.030 and was significant ($p < 0.001$). The conclusion drawn from the study was that, development of new IT systems had a significant effect on net income and banks net income will improve if their respective managements improve on development of new IT systems.

Key words: Information Technology, Banking, Management practices

INTRODUCTION

The studies at firm level explicitly show that the value of IT investment is substantially influenced by the structure and business practices of the firms making the investment. Wilson (1991) reported that the management quality of a firm and its commitment to IT enhance the contribution of IT investment to its performance. Bresnahan et al. (2002), however, found that business process re-engineering enhances the payoffs in firms that also made greater IT investment. However, Brynjolfsson and Hilt (1996) showed that firms with a cluster of management practices, including decentralized decision-making (organization capital) along with high levels of IT investments, outperform other firms, while firms with traditional centralized organization and high IT investment actually perform worse than similar organization that invest less in IT. However, the higher earnings of decentralized firms that invest in IT, is not sufficient to shift from a centralized structure to a decentralized one.

Previous studies have shown that complementing factors such as managerial practices also influence the payoff from IT investment (Brynjolfsson 1993b; Dewan and Kraemer 2000). Though no previous studies have been made to evaluate the effect of strategic decision with respect to IT (i.e. how much the bank is spending on maintaining existing systems versus development of new IT system) in Nigerian banks. Since it is not only IT investment that affects productivity and profitability in banking industry, it is imperative that

a study should be conducted to evaluate the impacts of managerial practices on the value of IT investments on performance of banks in Nigeria.

RESEARCH METHODOLOGY

The data were generated from both primary and secondary sources. The primary source consists of questionnaires and reports of interviews while the secondary source comprises annual reports of ten selected banks in South West Nigeria. The questionnaire was of two sections; the first section dealt with information on personal data of respondents while the second section determined the proportion of IT capital expenditure on the development and maintenance of new IT system and existing IT system, respectively. The questionnaires were administered to the Heads of Departments dealing with IT devices and computer engineers. The questionnaires administered to the Heads of Departments were to elicit information on the available information technology related devices and on the distribution of IT capital spending.

Secondary data were obtained from the financial statement of the banks and the Nigeria Deposit Insurance Company (NDIC) reports. Since banks are usually not able to report extensive historical expenditure data, the data were restricted to IT expenditure data of the five years of study (2001-2005). The ten banks chosen for the study were: Guaranty Trust Bank PLC (GTB), Trans-International Bank PLC (TIB), Intercontinental Bank PLC (INTB), Union Bank Nigeria PLC (UNION),

WEMA Bank PLC (WEMA), Diamond Bank PLC (DIAMOND), Fidelity Bank PLC (FIDELITY), Standard Trust Bank PLC (STB), Co-operative Bank, PLC (COOP) and Oceanic Bank PLC (OCEANIC).

ANALYTICAL TECHNIQUES

The study examined the extent to which managerial practices affect the value of payoffs from IT investments. In order to analyze the effect of the maintenance of the existing systems versus the development of new IT systems, the study made use of data collected on each bank's technology expenditures. The data were further broken down into two categories: i. maintenance and ii. development (i.e. amount spent by banks on maintaining existing systems versus development of new IT-systems). The data gathered through questionnaires and interviews were sorted, edited and coded. Both descriptive and inferential statistics were used in analyzing the data. A simple correlation between the maintenance and development ratio and the performance of the firm was measured from the Cobb-Douglas production function using net income as output. The independent variables were maintenance and development of new IT system while the net income was made to be the dependent variable.

MODEL OF THE STUDY

This study modeled banks as operating according to the Cobb-Douglas Production Function. A model with the following equation was developed for this study:

$Q = f [C, K, S, L]$, this means $Q = \alpha + \beta_1 [C] + \beta_2 [K] + \beta_3 [S] + \beta_4 [L] + e$ where $\alpha =$ constant, $Q =$ output of the firm, $C =$ information technology capital, $K =$ non-information technology capital, $S =$ information system labour expenses and $L =$ non-

information system labour expenses. $\beta_1, \beta_2, \beta_3$ and β_4 are associated output elasticity and e represents the error term. A production function in line with the Cobb-Douglas function was developed thus:

$Q = f(M, D) \dots\dots\dots 4$
 $Q = \alpha + \beta_1(M) + \beta_2 (D) + e \dots\dots\dots 5$

Where $Q =$ output of the firm, $M =$ Maintenance of the existing system (IT), $D =$ Development of a new IT System, β_1 and β_2 are the associated output elasticity and e is the error term. For estimation purposes, the above function is linearised by taking logarithms of equation (5) and adding an error term; this is achieved by using a system of five equations, one for each study year as follows:

$\text{Log}(Q_{01}) = \alpha_1 + \beta_1 \text{Log}(M) + \beta_2 \text{Log}(D) + \alpha_{01} \dots\dots\dots 5a$
 $\text{Log}(Q_{02}) = \alpha_2 + \beta_1 \text{Log}(M) + \beta_2 \text{Log}(D) + \alpha_{02} \dots\dots\dots 5b$
 $\text{Log}(Q_{03}) = \alpha_3 + \beta_1 \text{Log}(M) + \beta_2 \text{Log}(D) + \alpha_{03} \dots\dots\dots 5c$
 $\text{Log}(Q_{04}) = \alpha_4 + \beta_1 \text{Log}(M) + \beta_2 \text{Log}(D) + \alpha_{04} \dots\dots\dots 5d$
 $\text{Log}(Q_{05}) = \alpha_5 + \beta_1 \text{Log}(M) + \beta_2 \text{Log}(D) + \alpha_{05} \dots\dots\dots 5e$

This model was used to establish the relationship between output (productivity) of banks and maintenance of the existing IT system on one hand and development of new IT system on the other hand. The statement of the hypothesis testing is as follow: H_0 : Managerial Practices have no effect on the value or performance on IT investments; H_1 : Managerial Practices have effects on the value or performance on IT Investments

RESULTS

In Table 1, the averages of he selected banks for loans and deposits, net income, returns on assets and returns on equities over the five years of study were ₦482117.80, ₦67006.16, ₦2.64 and ₦26.34 millions, respectively. The Table 2 shows the model summary and the ordinary least square analysis, respectively.

Table 1. Data of records of loans and deposits, net income, returns on assets (ROA) and returns on equities (ROE) (₦ millions) of the selected banks over a 5 year period (2001- 2005)

Banks	Loans and deposits	Net Income	ROA	ROE
GTB	4230421	654812	0.88	18.24
TIB	23006.4	524.00	2.3174	24.040
INTB	54763.4	1752.60	3.4300	29.6920
STB	80550.60	2254.40	2.8060	31.0480
OCEANIC	51129.00	2265.20	4.6220	37.0300
COOP	20534.00	300.00	1.7560	18.1240
UNION	237494.80	5447.60	2.1440	24.6460
FIDELITY	18737.40	584.00	3.0160	28.302
DIAMOND	50441.80	1168.00	2.4340	31.160
WEMA	54099.60	953.800	1.9960	21.1240

Source: Years 2001-2005 Banks Annual Reports