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Digital Banking Services and Performance: Evidence from Nigerian Commercial Banks

Mujeeb Adegoke
Department of Accounting and Finance, Kwara State University, Malete
mujeeb.adegoke@kwasu.edu.ng , Funsho.mujeeb@gmail.com
Phone number: (+234) 08164275855

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Abstract

Inadequate adoption of digital banking services has remained an important factor that affects the performance of banking industry. This has caused several challenges in the Nigerian banking industry as well created conflicts and mixed result in lieu with performance. Similarly, most of the previous literatures concentrated on the variable like ATM, POS and mobile banking in measuring digital banking service whereas there are other variables which were not capture by previous studies and these as well can be used to measure digital banking service. These variables include mobile pay, Nigerian interbank settlement system plc instant payment, and value of transaction through national electronic fund transfer. Non- inclusion of these variables make earliest result not to robust and difficult in understanding the trend of the subject matter. To proffer solution to this problem, this study aimed to assess the effect of subject matter, hence, this formed the basis for carrying out this study. Thus, this work centered on the effect of digital banking service on the performance of commercial banks in Nigeria between 2009 to 2017. There are two variables for this study, namely; independent variable and dependent variable. Independent variables is the digital banking service and was measured with ATM, POS, web pay, Mobile pay, NIP, NEFT while dependent variable is performance. This variable was measured with growth and growth was proxy using log of total asset of commercial bank. Expo facto research design was employed and generalized linear models was used as a method of data analysis. Result reviled that digital banking service such as ATM, POS, Web pay, mobile pay, and NEFT are positively linked with performance while digital banking service in form of NIP is negatively linked with performance. Thus, digital banking service has level of influence on performance of commercial bank in Nigeria. Thus, banks are advised to take care, manage and adopt more of this subject matter so as to boost performance and avoid low in profitability, growth and size.

***Keywords**: Digital banking service, Non-financial performance*

INTRODUCTION

Deposit taking banks especially the commercial banks have developed the entire economy across the world. Commercial banks have played a prominent role in ensuring sound financial and economic system. These banks also ensure that there is flow of fund and efficient utilization of such fund within an economy system (Alamro, 2025).Financial technology in form of digital banking service was seen as a tool for boosting performance, and financial system. Thus, adoption of this has helped the commercial banks to cover a wider area and offer door to door service. This has improved in performance and as well reduce in operation cost.

Performance is an indicator to measure Company's overall objective. Since the organization need to achieve its objective of profit and wealth maximization, the appropriate standard for that is by using performance to measure it. Financial and Non-financial performance are two main division of performance. While financial performance measures performance in monetary term. Non-financial performance provides non-monetary measurement. This has remained and stands as bedrock for the performance thus without non-financial performance such as growth, size, customer satisfaction, and supplier that helped and ensured the existence of profitability, It will be hard to achieve financial performance and performance as a whole (Adeniji, 2021).

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Digital banking service have been opined to affect the performance but the nature of its influence is confusing and created challenges as some studies postulated significant result (Mbama , 2018; Wadesango & Magaya ,2020; Jung & Shegai ,2023) while some postulated insignificant(Olatinwo, Uwaleke & Ibrahim, 2022). Similarly, inadequate adoption of financial technology inform of digital banking services has remained an issue and challenges in the banking industry. Thus, it results in to conflict and mixed result in lieu with performance. Also, most of the previous literatures concentrated on variables such as ATM , POS and mobile banking whereas there are other variables leftover by previous studies such as value of transaction Nigerian interbank settlement system plc instant payment , and value of transaction through national electronic fund transfer. These as well can be used to measure digital banking service. Absence of these variables make previous studies' results and findings not to robust and difficult in understanding the trend of the subject matter.

To proffer solution to this problem, this study aimed to assess the effect of subject matter, hence, this formed the basis for carrying out this study. Thus, this work centered on the effect of digital banking service on the performance of commercial banks in Nigeria between 2009 to 2017 .Based on this main objective, the research question include; to what extent do digital banking service influence performance of commercial bank? Thus hypotheses formulated include:

H0: Digital banking service has no significant influence on performance of commercial banks in Nigeria

LITERATURE REVIEW

Conceptual Review

Digital Banking Service (DBS)

Digital banking service is the process of rendering banking service through electronic and computer system. Banking services are the service or product or what the commercial banks are doing to keep their customer satisfied (Mbama, *et al*., 2018). The Nigerian commercial banks have seized this medium to flourish their operation and increase in their performance in term of size and growth .Digital banking service adopted by these banks include Automated Teller Machine (ATM), Point Of Sale (POS), Web pay (value of internet banking transaction) , mobile pay , value of transaction Nigerian Interbank Settlement system plc instant payment (NIP) , value of transaction through National Electronic Fund Transfer (NEFT), m-cash , and Nigerian interbank settlement system Automated Payment service (NAPs) .

Bank's Performance

According to Olowe (2017) which defined bank's Performance as the ability of the company to achieve its objectives of profit and wealth maximization. This variable can be viewed from two perspectives; financial and non-financial performance. Financial performance measures performance in monetary value .Its indicators include ROA, ROE ROCE while Non- financial performance provides information to the performance in non –monetary term. Non-financial performance is usually go with these proxies such as size of the business, growth and age. They simply tell about what the organization do in non-monetary way (Adeniji, 2021).

Theoretical framework

Transaction Cost innovation theory

This theory was opined by Hick and Niehans in 1983 with the idea that digital banking is part of financial technology and was aimed to reduce operational cost of commercial bank organization. This will lead to increase in efficiency, effectiveness, and better performance. This theory argued that the primary motive of banking institution especially commercial bank is to make profit. Since profit is targeted, one of the way to achieve that is by reducing the cost. Due to the fact that, high operational cost tend to increase expense which will be deducted from profit in the income statement (Katutu, 2019; Babarinde, Gidigbi, Ndaghu, & Abdulmajeed, 2020).

This theory is relevancy to this work as it suggested that commercial banks can only achieve their objective of profit maximization through cost reduction and more adoption of digital banking. Thus there exist a positive linkages between digital banking and performance.

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Empirical Review

Digital banking service could be used as an instrument in promoting performance and growth of the banks. Previous studies on this subject matter differed in respect to their findings. Some studies agreed that there exist a significant influence while other denied such instance and put forward insignificant influence. For instance, Mbama (2018) examined the impact of digital banking, customer service and financial performance in United Kingdom (UK). Mixed method of research design was used. Explanatory variable are digital banking and customer service while explained variable is financial performance. This study used structural equation model and chi-square, regression to analyze its hypotheses. Thus, it was concluded that digital banking has positive effect on the financial performance.

Also, Chindudzi, Maradze and Nyoni (2020) worked out the effect of digital banking on the level of performance of commercial bank in Zimbabwe. The study covered between 2003 to 2017.Expo facto research design was employed and adopted. Explanatory variable used in this study is digital banking service while explained variable used is performance. Digital banking service was measured with online banking transaction, online customer deposit, internet fee, commission and internet banking expenditure while explained variable is performance and proxy with return on asset. Panel random regression is the tool and method of data analysis used and result showed that digital banking service has a positive effect on performance.

Wadesango and Magaya (2020) determined the effect of digital banking service on the performance of commercial bank in Zimbabwe. The Quantitative research methodology was adopted and explanatory variable was digital banking service while performance was explained variable. Digital banking service was measured with online customer deposit, ICT – expense fee and commission. Performance was measured with return on asset. Thus, the study concluded that digital banking service has positive effect on the performance.

Otieno (2020) examined the impact of digital banking technology on the level of performance of commercial bank in Kenya. The study adopted survey research design and questionnaire was used as research instrument in the collection of data. Result reviled that digital banking has positive effect on level of performance

In addition, Masolo and Wanjohi (2021) examined the effect of digital credit on the level of performance in commercial bank in Kenya. Expo facto method of research design was employed and multiple regression was used. Digital credit was the explanatory variable and measured with mobile network operator, website based loan while performance was the explained variable and measured with loan book growth, liquidity risk profile. Result showed that digital credit has positive effect on the commercial bank in Kenya.

Contrary, Olatinwo, Uwaleke and Ibrahim(2022) worked on the impact of digital financial service on the financial performance of commercial bank in Nigeria .This study adopted expo facto research and data was sourced from 2012-2022. Explanatory variable is digital financial service and explained variable was financial performance. Digital financial service proxy with point of sale, banking transaction while financial performance is proxy with return on asset. ARDL regression was used and result showed that digital banking has insignificant relationship between performances.

Jung and Shegai (2023) in their study, named as impact of digital marketing innovation on the performance of firm in the republic of Korea. Market capability was used as mediator while firm size played a moderator role. Expo facto research design was employed and explanatory variable was digital marketing innovation while explained variable was firm performance. The method of data analysis used is stochastic frontier analysis and result reviled a positive effect.

Having seen that previous studies failed to provides other variables that can be used in measuring digital banking service, they only focused on ATM, POS and mobile banking to measure it. There are other variables leftover by previous studies such as value of transaction Nigerian interbank settlement system plc instant payment, and value of transaction through national electronic fund transfer recorded in Central Bank of Nigeria (CBN) statistical bulletin. These as well can be used to measure digital banking service. Absence of these variables make previous studies' results and findings not to robust and difficult in understanding the trend of the subject matter. Thus, resulted into inadequate measurement of digital banking service

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METHODOLOGY

Positivist research paradigm was adopted as it helps to test hypothesis and compare sample with population. It is a form of quantitative research design that is used in quantifying variable under study (Aliyu, Bello, Kasim, & Martin, 2014; Park, Konge, & Artino Jr, 2020).In addition, Expo facto research design was adopted where secondary data was extracted from central bank of Nigeria statistical bulletin between 2009 -2017.The year 2017 was the pick and last year found in the annual report published by CBN in its statistical bulletin as at 2024. While year 2009 marked year of evolution and adoption of banks innovation in the Nigeria context. This research design is chosen due to nature of the data that was sourced secondarily. Secondary data was collected, hence the best design that provides clearer opinion (Singh, 2006). Independent variable denotes digital banking service and was proxy with Automated Teller Machine (ATM),Point of Sale(POS), Web pay, mobile pay, value of transaction through NIBSS instant payment (NIP), Value of transaction through National Electronic Fund transfer (NEFT), , NIBSS Automated payment service (NAPs). While performance was dependent variable and it is measured using growth of commercial bank. This growth was proxy with log of total asset of commercial bank. Generalized linear model was used as method of data analysis. This method was chosen due to the fact that it helps in managing scaling problem. Also, data that is not normally distributed can be corrected with this technique. Constant in variance problem is eliminated under this method (McCullagh & Nelder, 1983). This study adopted model of Olatinwo *et al*. (2021) and subsequently modified .this model is chosen base on the fact that it includes both independent and dependent variable of this study. Thus, this model is stated below:

$$\text{Log Total Asset} = \beta_{1t} + \beta_2 ATM_t + \beta_3 POS_t + \beta_4 Webpay_t + \beta_5 \text{Mobile pay}_t + \beta_6 NIP_t + \beta_7 NEFT + e_t \quad (3.1)$$

RESULT AND DISCUSIIONS

Descriptive Statistics

This section discussed about the descriptive statistics as shown in table 1.Dependent variable is performance measured by growth and proxy with log of total asset while independent variable is digital banking service proxy with ATM, POS, Web pay, Mobile pay, NIP and NEFT. The total observations were Nine (9) observations, the average mean of total asset, ATM, POS, web pay, Mobile pay, NIP, NEFT include10.08362, 7.395936, 4.784859, 4.219852, 1.773861, 6.565996, 6.373335, as their standard deviation are0.2549635; 1.297612; 1.789336; 0.643936; 0.9219647; 4.982292; 4 .780163 .Standard deviation of asset, web pay, and mobile pay are low and below one while that of ATM, POS, NIP and NEFT are high and above one. This can be understood as there is low dispersion in their mean or average value of asset, WEBPAY, mobile pay. And high dispersion in ATM, POS, NIP and NEFT. The minimum value include; 9.760284; 5.054588; 2.400619; 3.2208874; 0.1038037,0,0 and maximum value are .0650834; 10.45143; 8.76991;7.25121;5.218191;2.879039; 10.93606;9.61223. The minimum and maximum value are more than 1 except in the case of NEFT, NIP, and mobile pay. These figures have resulted into their different in variation and standard of deviation which could be understood that there exist a mixed dispersion among variable under study.

Table 1 descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
LOGTOTALAS~T	9	10.08362	.2549635	9.760284	10.45143
LOGATM	9	7.395936	1.297612	5.054588	8.76991

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LOGPOS	9	4.784859	1.789336	2.400619	7.25121
LOGWebpay	9	4.219852	.6439636	3.220874	5.218191
LOGmobilepay	9	1.773861	.9219647	.1038037	2.879039
LOGNIP	9	6.565996	4.982292	0	10.93606
LOGNEFT	9	6.373335	4.780163	0	9.61223

Table 2 : Inferential statistic

Generalized linear models — No. of obs = 9

Optimization : ML — Residual df = 2

Scale parameter = .0000315

Deviance = .000062941 — (1/df) Deviance = .0000315

Pearson = .000062941 — (1/df) Pearson = .0000315

Variance function: V(u) = 1 [Gaussian]

Link function : g(u) = u [Identity]

AIC = -7.477105

Log likelihood = 40.64697262 — BIC = -4.394386

LOGTOTALASSET	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
LOGATM	.2068505	.029543	7.00	0.000	.1489473	.2647536
LOGPOS	.2978084	.0257762	11.55	0.000	.2472881	.3483288
LOGWebpay	.0199241	.0073427	2.71	0.007	.0055326	.0343155
LOGmobilepay	.0502618	.0117201	4.29	0.000	.0272909	.0732327
LOGNIP	-.3170954	.0483579	-6.56	0.000	-.4118751	-.2223157
LOGNEFT	.2164105	.0331139	6.54	0.000	.1515086	.2813125
_cons	7.658352	.2470689	31.00	0.000	7.174106	8.142599

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The table 2 titled inferential statistics above reviled the regression result of digital banking service and performance of commercial bank in Nigeria. It is seen from this table that all variables used to measure digital banking service are statistical significantly at 10% and have influence on the performance. Performance is measured by using growth of the bank .This was proxy with log of total asset of commercial banks. All the variables are positive related except NIP which is negative. The overall result reviled that any changes made to digital banking service will automatically have positive influence on the level of performance.

Having seen from table 2 which demonstrated inferential part of the statistics, all the independent variables such ATM , POS, Web pay, Mobile pay , NIP are positively linked with performance. These can be interpreted as more adoption and usage of these variables will automatically cause performance to go up. Broadly, if ATM is increase by a unit, then it should be expected that performance will in turn increase by 0.2068505, all thing being equal. Moreover, if banks improve on their adoption of POS by a unit, it will bring a positive change of .2978084 to the performance. In addition, web pay will cause performance to go up by 0.0199241, mobile pay will make performance to move up by 0.0502618 and NEFT will make performance to increase by .2164105 if all these are increased by a unit.

Contrary, NIP is the only independent variable that reviled negative linkage in lieu with performance. This implies that any change made to NIP will make performance to reduce, thereby making banks to loss in their performance. Thus, the more adoption of this construct, the less performance will be and vice versa.

Based on this, it can be said that digital banking service such as ATM, POS, Mobile pay, Web pay and NEFT except NIP plays a positive role in lieu performance. This result is in line with some studies that postulated positive linkage (Mbama, 2018; Wadesango & Magaya, 2020; Olatinwo, *et al*., 2022).Also, this finding in line with theoretical framework of diffusion innovation theory adopted in this work.

CONCLUSION AND RECOMMENDATIONS

Digital banking service such as ATM, POS, Web pay, mobile pay, and NEFT have positive linkage with performance while only NIP has negative linkage with performance of commercial banks in Nigeria. Since ATM, POS, Web pay, Mobile pay and NEFT contribute positively to the performance while NIP provides negative linkage, the bank should pay much attention and invest more of digital banking service such as ATM, POS, NEFT, Mobile pay, and Webpay. While less attention should be given to the NIP since it will reduce performance .Moreover, the government should try and set up guild line that will improve usage of this subject matter. The banks and regulator should work together by creating easy and smooth accessibility for all stakeholder including the customer on the usage of digital banking service. Lastly, the academia should research more in this area thereby helping the corporate and other stakeholders to proffer solution to the problem emanates from this area.

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