

**HUMAN RESOURCE ACCOUNTING AND BANKS
PROFITABILITY: EVIDENCE FROM DEPOSIT MONEY BANKS
LISTED ON THE NIGERIAN EXCHANGE GROUP**

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Abstract: This paper investigates the connection between human resource accounting (HRA) and profitability of listed deposit money banks (DMBs) in Nigeria for period, 2010-2020. While controlling for size effect, this aims to determine the effect of salaries and wages, directors' remuneration, and retirement benefits and costs, on banks' profitability (proxy by Return on Asset (ROA)). Secondary data sourced from published annual financial statements of nine purposefully selected DMBs quoted on the Nigerian Exchange Group, were analyzed using Panel Autoregressive Distributed Lag (P-ARDL) model and panel Granger causality technique. This study reveals that retirement benefits and costs, and directors' emolument exert positive and significant effect on ROA while salary and wages has positive but non-significant effect on ROA. Furthermore, there is a unidirectional causality flow from ROA to salaries and wages and banks size. It is therefore concluded that investment in human resources have positive and significant effect on the profitability of banks in Nigeria and banks profitability dictates their wage-paying ability and size. It is recommended that banks should investment more in their HR particularly by providing a much more guaranteed retirement benefits to their employees and also handsomely rewarding their currently serving directors and employees.

Keywords Human Resource Accounting, HRA, Profitability, Listed Deposit Money Banks, DMBs, Nigerian Exchange Group.

Introduction

Human resources (HR) (people and their knowledge) are part of the company's key assets and therefore they should be well-managed by an organization for the good of the employees and other stakeholders (Shaumya. & Arulrajah, 2018). Thus, proper accounting for this key element of organisation (HR) is expected to positively impact organisation performance, particularly in the banking sector. This is because the performance of business organisation is a function of the resources of the organisation most especially the quality of human resources, in terms of employees' calibre, skills, efficiency, creativity, ability (Bhovi, 2016). Human resource accounting (HRA) entails the process of accounting for all costs, expenditures, benefits, and other issues pertaining human asset/resource working in an organization by ensuring that they are properly identified, recorded, presented, interpreted and communicated to interested persons and entities to permit informed decision making and prudent problem solving. In HRA, there are accounting procedures on expenditures related to human assets in the organization unlike the

traditional accounting which treats human resource costs as mere expenses that tends to decrease the reported profit. Human resources being most important asset of any organisation has not adequately and correctly attended to in the traditional (conventional) accounting system where all the investments in human resources are written off as expenses in the year it is incurred (Afolalu & Ezeala, 2022). According to the authors, this treatment has resulted in an informational gap between the management and investors and other stakeholders that need such information for decision making and analysis of performance. The performance of any organization relates to the degree to which such organization attains its set goals. Performance which could either be financial or non-financial, is a focus of all stakeholders of the organization. For instance, in the banking industry, stakeholders like shareholders, bank employees, bank customers, regulatory authorities and government agencies and others are always interested in how the banks performance financially. Thus, the management of banks have to deploy all available and legally perceivable strategies in improving the financial performance of the banks they manage. Banks like any other organisations, are a socio-technical set-up which are composed of human and non-human resources (material, money, machines) pooled together to achieve a common goal, of which profit maximization is key. To achieve this goal the investment in and accounting for the most importance asset of the organization (human resources) must not be taken with levity. Although, the influence of human resources management (HRM) practices differs from country to country and from sector to sector but the best use of the practices is likened to organisation's lifeblood, capable of impacting organisation's performance positively (Suvashthiha & Kengatharan, 2021). Although, most past studies have provided evidence in support HRA's positive influence on organisation's performance (profitability) (Bessong et al (2012), Edom et al (2015), Adebawojo et al (2015), Amahalu et al (2016)) but there are still few studies which proved that some human resource variables have negative impact (such staff development by Chukwuka (2018)) on banks performance. Some other studies indicate bank performance not to be significantly affected by human resource variables such as salaries and wages (Olaoye and Afolalu (2020)), and director's remuneration (Inua and Oziegbe (2018), Olaoye and Afolalu (2020)). This suggests that there is still some level divergence in findings on the subject matter of HRA and banks' performance (profitability). Another lacuna discovered in previous empirics is the fact none of these studies particularly reported evidence of both long-run and short-run relationship between banks profitability and HRA. Also, Panel Ordinary Least Squares (OLS) regression technique predominated the method of data analysis in the previous empirics (Bessong et al (2012), Enofe et al. (2013), Edom et al (2015), Adebawojo et al (2015), Zarei, et al. (2015), Amahalu et al (2016), Chukwuka (2018), Olaoye and Afolalu (2020), Onyeukwu et al (2021), Afolalu and Ezeala (2022)). This technique limited the previous studies to providing only long-run evidence on the relationship of HRA with banks performance.

Considering observed lacuna, this research attempts to fill in the gap in literature by providing empirical evidence of the short-run linkage as well as long-run nexus between HRA and banks financial performance (profitability) in Nigeria through the methodological instrumentality of panel ARDL and panel pairwise Granger causality techniques. Determination of the effect of human resource accounting on the profitability of banks in Nigeria is the chief objective of this study. The specific objectives of the research are to: assess the effect of salaries and wages on return on assets of listed deposit

money banks in Nigeria; evaluate the effect of retirement benefits and costs on return on assets of listed deposit money banks in Nigeria; and examine effect of directors' remuneration on return on assets of listed deposit money banks in Nigeria.

Literature Review

Conceptual Review

Human Resource Accounting

Human Resource Accounting (HRA) as defined by American Accounting Association (1973) is a process of identifying and measuring human resources data and communication of this information to interested parties. This line of definition was also adopted by Mohiuddin and Banu (2017) and Kusumastuti (2021). The term HRA is also conceptualized as accounting for people as an organizational resource through the process of identification and measurement of cost of recruitment, selection, hiring, training and development of human assets by the organization (Chukwu, 2018). HRA involves accounting for the company's management and employees as human capital that provides future benefits (Danaei, 2014). Furthermore, Bhovi (2016) defines HRA as the process of identifying, measuring data of recruitment, selection, training and developing of human resources and communicating this information to the management for the decision making and proper and optimum utilization of human resources. In other words, human resource accounting, also known as human asset accounting, involves identifying, measuring, capturing, tracking and analyzing the potential of the human resources of a company and communicating the resultant information to the stakeholders of the company (Sharma, 2012). According to the author, human resource accounting reflects the potential of the human resources of an organization in monetary terms, in its financial statements.

Human resource costs are of different varieties, among which are salary and wages, directors' remuneration/emolument, pension cost, gratuity costs (retirement benefits and costs), staff training and development costs, recruitment costs, selection costs, etc. Accordingly, based on the tenets of human resource accounting, these costs and others are not to be expensed but should be capitalized and properly captured as an investment in human asset in the financial statement. Das (2018) describes HRA as a very important aspect of accounting in that: it improves the reliability of the financial picture of an organisation; it provides information that helps in solving industrial disputes; reflects that HR costs for productive purposes; it supplies information that stimulates the confidence of the shareholders and creditors in the company; and also helps in the correct treatment of investment in human resources as an asset capable of improving the earning capacity and growth of an organisation (Das,2018). Usually, human resources policy of banks in Nigeria is included in the Notes to the Accounts section of their financial statements. These policies include issues pertaining employment of disabled persons, health, safety and welfare at work, pension fund scheme, employee involvement and training, breakdown of directors' remuneration, salaries and wages for employees, etc. This implies that capitalization of HR costs and investments on the asset side of the statement of financial position of banks has not been appreciated by banks in Nigeria.

Profitability

Profitability can be described as the ability to make profit from all the business activities of an organization, which is indicative of the efficiency of the management in making profit by using all the resources available in the market (Edom et al, 2015; Ckuwu, 2018). Profitability has been described as the capacity to make profits sustainable over a period of time (Dunmade, 2020). Profitability is an indicator of financial performance of an organisation and is usually measured using metrics like Net Profit Margin (NPM), Return on Assets (ROA), Return on Equity (ROE), and Return on Capital Employed (ROCE), Profit After Tax (PAT), Profit Before Tax (PBT) etc. ROA as a measure of financial performance is more encompassing in perspectives than other indicators. ROA relates firms' profit to the totality of the assets used in the generation of the profit and it is an indication of the efficiency of management in the utilization of firms' total assets to generate commensurate profits (net income or returns). Thus, the higher the ROA of a bank, the better for the bank.

Theoretical Review

Resource-Based View

Barney (1991)'s Resource-Based View (RBV) advocates that organisational resources provide for the easy attainment of organisational goals and objectives. Thus, for an organisation to be regarded as successful, it must continually gain competitive advantages over others in the same industry. The theory focuses on four ingredients, namely, value, rarity, imitability and organisation (VRIO) as pointers to the ability of the organisation to gain competitive advantage through proper utilization of their employees.

In line with the RBV, this competitive advantage is attained by organisation by proper utilization of its resources, particularly its human resources to ensure they are embodiment of value, rare, imitable and well-organized. Typically, three types of resources possessed by organizations are physical resources (like plant, technology and equipment, geographical location); human resources (employees' experience and knowledge); and organizational resources (like structure; management systems; social relations) (Edom et al., 2015). These resources are to be used by the organisation to gain competitive advantage. Therefore, employees that will be fountains of competitive advantage, must create value; must be rare; not easily imitated and the organisation-set should be an enabling environment for the display of employees' skills and ability (Adebawojo et al., 2015). According to RBV, competitive advantage is gained by organisation through the implementation of value-creating strategies that competitors cannot, easily copy and sustain (Barney, 1991)

Human Capital Theory

"Human capital consists of the knowledge, skills and abilities of the people employed in an organisation" (Armstrong, 2009, p.66). Human capital can also be described as an investment in education, skills acquisition, training and development and other programmes capable of improving the productive capacity of individual, firms and nation and the concept can simply be referred to as the set of competences, skills, knowledge and abilities of the workforce that contribute to organizational competitive advantage (Babarinde, 2018). Schultz (1961)'s human capital theory popularized by Becker (1964) states that investment in human resources in the form of education, training and

development of employees have positive impact on the capacity of the employees which increases their competence and also help them to contribute more meaningfully to the organisation's earnings, growth and development. Schultz (1961) posits that, all human abilities are either in-born or acquired, and it is when these attributes are invested in by way of development, training and education, that human capital can be birthed. The three of components of human capital are intellectual capital (stocks and flows of knowledge in the organisation), social capital (knowledge derived from social relationship within the organisation), and organisational capital (institutionalized knowledge stored by the organisation) (Armstrong, 2009). Human capital theory considers employees as assets and therefore any costs and expenditures incurred on them should be directed at their productivity and treated as investment. In other words, the theory considers education and training as lifter of the employees' productivity and this is achieved by imparting useful knowledge and skills in them, thus raising their future income (Adebawojo et al., 2015). This study derives its theoretical strength from human capital theory which is of the view that HR costs and expenditures should be regarded as investment capable of increasing the productive capacity of the employees and by extension the correct and proper accounting treatment of these as human asset in the books of accounts is also in line with the doctrine of human resource accounting. Thus, as emphasized by human capital theory, "the added value that people can contribute to an organisation' brings about the treatment of "people as assets and stresses that investment by organisations in people will generate worthwhile returns" (Armstrong, 2009, p.68). This line of thought is also shared by human resource accounting, hence, the choice of human capital theory as the theoretical bedrock of this current study.

Empirical Review

Different studies have been carried out on human resource accounting and its linkage with organisational performance both in Nigerian context and in the international environment. These past studies are reviewed in this sub-section. In Nigerian context, in a study of human resource valuation and the performance of banks by Bessong et al (2012), the authors applied OLS to the panel data series and proved that human resource valuation have positive and significant influence on the performance of the banks in Nigeria. Likewise, from the OLS regression analysis of the relationship between firms' financial performance and human resources accounting disclosures of quoted Nigerian companies between 2007 and 2011, Enofe et al. (2013) established the existence of a positive relationship between the two variables. Ijeoma and Aronu (2013) employed Kruskal Wallis test to determine the effect of human resource accounting on financial statement of Nigerian bank using Zenith Bank Plc as a case study. The authors submitted that accounting for human resource has the potential of improving the financial position of the bank. Also, Ikpefan et al (2015) carried out a survey of human capital accounting and performance of microfinance banks in Ogun State, Nigeria using content analysis and OLS regression technique. The study confirmed that human capital accounting has a significant effect on MFBs performance. In the same vein, Edom et al (2015) evaluated the impact of human resources accounting on the profitability of Access Bank of Nigeria Plc, from 2003 to 2012. The study concluded that there was a significant positive relationship between training cost, development cost and the profit of the bank. Adebawojo et al (2015) examined the effect of human asset accounting on the performance of selected deposit money banks in Nigeria. From the result

of the OLS regression, the study concluded that human asset accounting has positive and significant effect on the banks' performance.

Still in Nigerian environment, Amahalu et al (2016) applied correlation and OLS techniques to the investigation of the effect of human resource accounting on financial performance of deposit money banks between 2010 and 2015. The study concluded that human resource accounting has a positive a significant effect on financial performance of banks in Nigeria. Asika et al (2017) also determined the effect of the adoption of HRA on the profitability of commercial banks in Nigeria, between 2010 and 2014 using paired sample t-test. The study reveals that increase in staff salary, and staff retirement benefits have positive effect on organizational profitability. In another study, Inua and Oziegbe (2018) assessed the effect of human resource accounting on the performance of quoted banks in Nigeria based on random effects model. The study concluded that, except director remuneration that was not significantly impactful; staff cost, staff strength, and firm size have positive significant impact on the return on assets of the selected banks. In 2018, Chukwuka also evaluated HRA's impact on the profitability of First Bank of Nigeria and United Bank for Africa Plc. Results of the OLS applied in the study reveal that staff salary and staff training have positive effect on bank profitability while staff development exerts negative effect on the profitability of the two banks.

In another Nigerian study, the effect of intellectual capital dimension (human, relational and structural capital) on the financial performance of deposit money banks in Nigeria between 2009 and 2018 was carried by Oyedeko and Zubairu (2019). Using static panel approach, study concluded that human capital has negative and non-significant effect on the performance of the selected banks. Olaoye and Afolalu (2020) also studied the effect of human capital accounting on earning per share (EPS) of deposit money banks in Nigeria between 2006 and 2017. The study's results from the random effects model indicate that pension cost, and training and development cost have significant and positive relationship with EPS unlike salaries and wages have insignificant positive relationship and director's remuneration which has insignificant negative relationship with EPS.

In another study, Onyeukwu et al (2021) assessed the nexus of human resource accounting with financial performance of the two quoted micro-finance banks in Nigeria between 2011 and 2019. From OLS regression, the study shows that personnel cost has significant effect on both net profit margin and return on equity with only return on assets having insignificant relationship. In a recent study, Afolalu and Ezeala (2022), where human resource accounting was examined in terms of its effect on shareholders' wealth of DMBs in Nigeria. From the random effect model, the study reveals that return on equity of the selected banks was not significantly affected by directors' remuneration, salaries and wages, pension cost and training costs.

From Nigerian studies reviewed above, it is clear that panel OLS regression technique is the predominant method of data analysis applied by most of the previous empirics (Bessong et al (2012), Enofe et al. (2013), Edom et al (2015), Adebawojo et al (2015), Zarei, et al. (2015), Amahalu et al (2016), Chukwuka (2018), Olaoye and Afolalu (2020), Onyeukwu et al (2021), Afolalu and Ezeala (2022)). The limitation of the method applied them (OLS) lies in the fact it lacks the capacity to account for the dynamic relationship between variables of interest. Moreover, while the results of extant Nigerian empirics are skewed towards supporting the positive effect of HRA on organisations' (banks') performance; there are still few studies that show that some human resource variables have negative

impact (staff development by Chukwuka (2018)), as well as have no significant effect (salaries and wages, and director's remuneration by Olaoye and Afolalu (2020)) on banks' performance (profitability).

Evidence from international studies are also documented below. An example is Prosvirkina (2014) which examined human resources effectiveness and its effects on Russian banking industry using Pearson correlation. The study found evidence of a statistically significant, positive and moderate correlation between return on investment in human capital, and performance (return on assets, return on equity and productivity) of banks in Russia. In Iran, Zarei et al. (2015) examined the effect of intellectual capital on financial performance of Iranian banks listed in Tehran Stock Exchange between 2004 and 2013. From the OLS regression analysis, the study establishes that structural capital and human capital efficiency have positive and significant effects on banks financial performance.

In an empirical study in India, where Shukuhian and Ashraf (2017) evaluated HRA practices in Indian companies and analyzed the relation between the value of human resources and financial performance of nine selected public enterprises for the period 2006 to 2015. From the multiple regression and analysis of variance (ANOVA), the study reveals that net profit has the most significant impact on human resources value and then followed by return on asset. Similarly, Vaddadi et al (2018) studied the relationship between human resource accounting and performance of selected banks located in Andhra Pradesh, India. From correlation analysis, the study indicates that shelter cost, and training and development cost were strongly correlated with firm's performance, but health and safety cost was moderately correlated with firm's performance. Shaumya and Arulrajah (2018) investigated the impact of electronic human resource management (e-HRM) on environmental performance of selected commercial banks in Sri Lanka via survey approach. Findings from univariate, bivariate and multivariate analyses, reveal that e-HRM practices have positive and significant impact on bank's environmental performance. Furthermore, the study proves that communication as an aspect of e-HRM practices have positive and significant impact on bank's environmental performance unlike recruitment and selection, employee data and pay management, performance management, training and development, knowledge management and operational which did not have significant influence on the selected bank's environmental performance. In a comparative study of Nigeria and Ghana carried out by Akintoye et al (2018), the authors investigated how inclusion of human asset can enhance the value of selected companies in the two Sub-Saharan African states for the period 2012 to 2015. The study argues that inclusion of human assets reveals the actual position of the firm.

In Indonesian context, Kusumastuti (2021) examined the impact of the performance of banks on its disclosures of human resources accounting between 2017 and 2019. From panel OLS, the study indicates that the size of the business, leverage, capital adequacy ratio and liquidity ratio have positive and significant impact on the disclosure of human resources accounting. However, company age and profitability were shown not to have significant impact on the disclosure of human resource accounting.

From the review of international studies above, it can be deduced that unlike Nigerian empirics reviewed in which panel OLS regression method dominates the estimation method, in international studies reviewed, the methods of data analysis employed are shared among ANOVA, OLS and correlation techniques. It is also clear that most foreign studies (available for reviewed) did not focus on HRA's impact on banks profitability

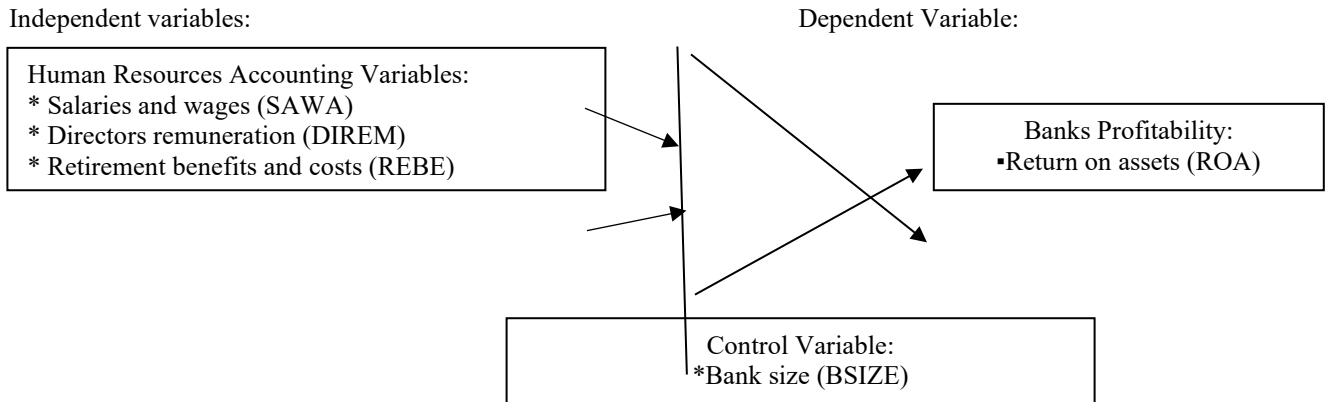
unlike in Nigeria where there are some empirical studies that particularly dealt with the subject matter.

This study attempts to apply panel autoregressive distributed lag model to account for both short-run and long-run connection between human resource accounting and banks profitability using Nigerian data sets. This is unlike previous studies that employed only OLS technique which limit itself to accounting for only long-run relationship. In addition, this studies tries to also determine the direction of causality between HRA and banks profitability using panel Granger causality technique, a technique rarely applied by extant studies on the subject. Finally, while there are few evidence that some human resources variables have negative impact on banks performance (staff development by Chukwuka (2018)) and others like Olaoye and Afolalu (2020) proved that salaries and wages, and director’s remuneration exert no significant effect on banks performance (profitability); there are numerous studies that established a positive significant connection between HRA and banks performance. With this divergent results, one cannot say categorically that all human resource accounting variables are empirically significant in improving the financial performance of banks. Therefore, it is also empirically expedient to contribute to the subject matter of HRA nexus with banks profitability so as to clarify the divergent findings reported by some past empirics.

Conceptual Framework

The conceptual framework in the form of schematic/diagrammatic description of the linkage between human resource accounting variables and profitability of listed deposit money banks in Nigeria is shown in Fig. 1.

Figure 1: Conceptual Framework of the Nexus between Human Resource Accounting and Profitability of Listed Deposit Money Banks in Nigeria



Source: Researchers’ Conceptualization.

In the conceptual model of this study depicted in Fig. 1, three human resource accounting variables (Salaries and wages (SAWA), directors’ remuneration (DIREM), and retirement benefits and costs (REBE)) are conceptually related to affect return on assets as the indicator of banks profitability. This study also controls for size effect in the model.

Methodology

Data and Research Design

This current study in line with similar studies (such as Chukwuka (2018), Onyeukwu et al (2021), Kusumastuti (2021), Afolalu and Ezeala (2022)) is based on ex-post facto research design. The design allows the assessment of causal relationship among variables of interest after the events have occurred (using historical data). Accordingly, secondary data on annual basis obtained from the published financial statements of the selected listed deposit money banks in Nigeria were employed in the investigation.

The variables of study are described in Table1.

Table1. Description of Variables

Variable	Notation	Description/ Supporting Literatures
Return on asset	ROA	This is the quotient of profit after tax to total assets, used as a as a measure of profitability (Prosvirkina (2014), Zarei et al., 2015), Amahalu et al (2016), Akintoye et al (2018)).
Directors remuneration	DIREM	The remuneration paid to the directors of the bank (excluding pension and certain allowances) which include fees and sitting allowances, executive compensation, directors' other expenses, used as a measure of HRA (Olaoye and Afolalu (2020), Afolalu and Ezeala (2022)).
Salaries and wages	SAWA	Compensation for the currently serving employees of the organisation (excluding executive directors), used as a measure of HRA (Ikpefan et al (2015), Asika et al (2017), Chukwuka (2018), Olaoye and Afolalu (2020), Afolalu and Ezeala (2022))
Retirement benefit and cost	REBE	Compensation for the employees of the organisation who have resigned or retired (excluding executive directors) (Asika et al (2017), Olaoye and Afolalu (2020), Afolalu and Ezeala (2022)).
Bsize	BSIZE	Natural logarithm of total asset used as a control variable (Inua and Oziegbe (2018), Oyedeko and Zubairu (2019)).

Source: Authors' compilation from literature

Population of the Study

The population of the study is the 15 deposit money banks in Nigeria listed on the Nigerian Exchange Group (NGX) as at December 2020. The banks are: Access Bank Plc, Ecobank Nigeria Plc, Fidelity Bank Plc, First Bank of Nigeria Plc, First City Monument Bank Plc, Guaranty Trust Bank Plc, Jaiz Bank Plc, Polaris Bank Plc, Stanbic-IBTC Bank Plc, Sterling Bank Plc, Union Bank of Nigeria Plc, United Bank for Africa Plc, Unity Bank Plc, Wema Bank Plc, and Zenith Bank Plc (NSE Fact Book, 2020; [www.ttps:ngxgroup.com](https://www.ngxgroup.com)).

Sampling Technique and Sample Size

This study purposefully sampled 9 of the 15 DMBs listed on the Nigerian Exchange Group between 2010 and 2020. The sampling criteria are that the banks should be listed on the NGX for the period 2010-2020; and their annual financial statements are published on Nigerian Exchange Group. Based on the predetermined criteria, the nine banks that constitute the samples for this study are: Access Bank Plc, Sterling Bank Plc, Zenith Bank Plc, United Bank for Africa Plc, Union Bank of Nigeria Plc, Fidelity Bank Plc, Stanbic-IBTC Bank Plc, Wema Bank Plc, and Guaranty Trust Bank Plc.

Model Specification

This study aims to evaluate the effect of HRA on profitability of DMBs in Nigeria. Consequently, banks profitability is expressed as a function of human resource accounting. Banks profitability = $f[\text{Human resource accounting}]$ (1)

The three human resource accounting of study are salaries and wages (SAWA), retirement benefits and costs (REBE), and directors' remuneration (DIREM), while profitability is measured as return on assets (ROA). The control variable of this study is bank size (BSIZE).

Therefore, equation (1) is expanded to accommodate the measures of the variables of study and this presented in equation (2).

$$ROA = f(SAWA, DIREM, REBE, BSIZE) \quad (2)$$

Flowing from equation (2), therefore, the panel ARDL model for the study is specified equation (3):

$$\begin{aligned} ROA_{it} = & \beta_0 + \sum_{i=1}^k \Psi_i \Delta ROA_{it-i} + \sum_{m=0}^o \gamma_m \Delta SAWA_{it-m} + \sum_{j=0}^l \beta_j \Delta DIREM_{it-j} \\ & + \sum_{n=0}^p \alpha_n \Delta REBE_{it-n} + \sum_{q=0}^r \phi_q \Delta BSIZE_{it-q} + \delta_1 ROA_{it-1} \\ & + \delta_2 DIREM_{it-1} + \delta_3 SAWA_{it-1} + \delta_4 REBE_{it-1} + \delta_5 BSIZE_{it-1} \\ & + u_{it} \end{aligned} \quad (3)$$

The variables in the model (3) retain the definition as provided in Table 1 above. Note that $\Psi_i, \beta_j, \gamma_m, \alpha_n$ and ϕ_q are short-run coefficients while $\delta_1 - \delta_5$ constitute the coefficients of the long-run estimation and u is the error term.

Furthermore, to determine the direction of causality between HRA variables and profitability of banks in Nigeria, the panel pairwise Granger causality equations (4) to (8).

$$ROA_{it} = \beta_k SAWA_{it} + \beta_j DIREM_{it} + \beta_l REBE_{it} + \beta_m BSIZE_{it} + u_{it} \quad (4)$$

$$DIREM_{it} = \beta_j ROA_{it} + \beta_k SAWA_{it} + \beta_l REBE_{it} + \beta_m BSIZE_{it} + u_{it} \quad (5)$$

$$SAWA_{it} = \beta_j ROA_{it} + \beta_k DIREM_{it} + \beta_l REBE_{it} + \beta_m BSIZE_{it} + u_{it} \quad (6)$$

$$REBE_{it} = \beta_j ROA_{it} + \beta_k DIREM_{it} + \beta_l SAWA_{it} + \beta_m BSIZE_{it} + u_{it} \quad (7)$$

$$BSIZE_{it} = \beta_j ROA_{it} + \beta_k DIREM_{it} + \beta_l SAWA_{it} + \beta_m REBE_{it} + u_{it} \quad (8) \text{Estimation Technique}$$

This study applied panel ARDL model to empirically evaluate both the long-term and short-run causal relationship between human resource accounting and profitability of listed deposit money banks in Nigeria. The ARDL procedure to cointegration is more advantageous than other cointegrating techniques in that it can be used to model variables that are purely $I(0)$, and $I(1)$ but not $I(2)$, as well as a mixture $I(0)$ and $I(1)$ series. The technique has also been found to be efficient in small sample size distribution and also gives impartial estimations in the long-run equilibrium, and eliminates endogeneity problems (Pesaran et al, 2001; Kutu & Ngalawa, 2016, Kollie, 2020). The panel ARDL also produces both short and long run coefficients simultaneously. The panel ARDL/PMG approach produces unbiased estimates even in the presence of endogenous covariates and is also effective even if the variables have different optimal lag lengths. (Kutu & Ngalawa, 2016; Kollie, 2020).

In implementing the panel ARDL procedure, this study first performed unit root test using three panel unit root tests- Im, Pesaran and Shin W-stat; ADF - Fisher Chi-square; and PP - Fisher Chi-square panel unit root tests. Thereafter, correlation test reported in the form of correlation matrix was also conducted. Furthermore, the panel cointegration tests through the instrumentality of two panel cointegration tests, namely, Kao (1999)'s Kao cointegration test and Pedroni residual cointegration tests were conducted. Finally, the panel ARDL model was estimated. In this study also, the panel pairwise Granger causality tests procedure was applied to the panel data sets (99 observations) in order to evaluate the direction of causality between human resource accounting and profitability of banks in Nigeria.

Results and Discussion

Descriptive Analysis

The descriptive statistics in Table 2 shows that the average salaries and wages paid by the selected listed deposit money banks per annum over the study period (2010-2020) stood at ₦22418.52million while the respective average figures for directors' remuneration (DIREM), and retirement benefits and costs (REBE) were ₦715.9111million and ₦2212.995million respectively. The return on assets (ROA) was averaged 3.170526 per cent while the bank size had a mean of 13.9301. Except salaries and wages (SAWA) which is normally distributed at 5 per cent alpha level, all other variables (ROA, DIREM, REBE and SIZE) are not normally distributed.

Table 2. Descriptive Statistics

	ROA	SAWA	DIREM	REBE	BSIZE
Mean	3.170526	22418.52	715.9111	2212.995	13.93801
Maximum	28.28784	57763.00	4425.000	24590.00	15.84694
Minimum	-13.62812	170.0000	51.00000	18.00000	11.19145
Std. Dev.	5.126056	14800.31	678.5008	3174.679	1.111957
Skewness	2.453111	0.412467	2.669186	4.140479	-0.800592
Kurtosis	13.26684	2.291644	13.13695	26.77738	3.192628
Jarque-Bera	534.1006	4.876927	541.4305	2614.994	10.72869
Probability	0.000000	0.087295	0.000000	0.000000	0.004681
Observations	99	99	99	99	99

Source: Authors' computation

Correlation Analysis

The correlation analysis presented in the form of matrix in Table 3 shows that salaries and wages is negatively correlated ($r=-0.281737$) with return on assets and the relationship is significant at one per cent. Similarly, retirement benefit costs had a negative correlation of -0.080929 and an associated p-value of 0.4258, thus the variable is negatively correlated with return on asset but the relationship is not statistically significant. Furthermore, with a coefficient of -0.403858 and a p-value of 0.0000, bank size can be described to have negative and significant correlation with return on asset. However, directors' remuneration is positively correlated ($r=0.083647$) with return of assets but the relationship is not statistically significant ($p=0.4104$).

Table 3. Correlation Matrix

Correlation				
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Probability	ROA	SAWA	DIREM	REBE	SIZE
ROA	1.000000				

SAWA	-0.281737	1.000000			
	0.0047	-----			
DIREM	0.083647	0.366781	1.000000		
	0.4104	0.0002	-----		
REBE	-0.080929	0.146937	0.186206	1.000000	
	0.4258	0.1467	0.0650	-----	
BSIZE	-0.403858	0.763672	0.285322	0.131383	1.000000
	0.0000	0.0000	0.0042	0.1949	-----

Source: Authors' computation

Panel Unit Root Tests

This study employed three categories of panel unit root tests, namely, Im, Pesaran and Shin W-stat; ADF - Fisher Chi-square; and PP - Fisher Chi-square panel unit root tests. The results of these tests as presented in Table 4 indicate that return on assets (ROA), and directors remuneration (DIREM) are stationary in level enabling us to reject the null hypothesis of non-stationarity (unit root) at level but bank size (SIZE), retirement benefit costs (REBE) and salaries and wages (SAWA) became stationary only after first difference. Therefore, the results of the panel unit root test indicate the variables to be of mixed order of integration of one (I(1)) and zero (I(0)). Based on the mixed order of integration of the variables, the Panel ARDL can be safely applied to the study data (Kollie, 2020).

Table 4. Panel Unit Root Test Results

Variable	Test	Im, Pesaran and Shin W-stat	ADF - Fisher Chi-square	PP - Fisher Chi-square	I(d)
ROA	Level	-6.73715*	68.8992*	47.5033*	I(0)
	1 st Diff	-	-	-	
SAWA	Level	-1.02680	29.5203	17.6745	I(1)
	1 st Diff	-3.59867*	49.0349*	81.6269*	
DIREM	Level	-0.99923	26.4813***	38.7961*	I(1)
	1 st Diff	-3.20831*	45.2407*	89.9215*	
REBE	Level	-1.29808***	27.2283***	37.5189*	I(0)
	1 st Diff	-	-	-	
BSIZE	Level	1.68470	19.9992	26.6258***	I(1)
	1 st Diff	-4.50920*	49.9132*	85.7992*	

Source: Authors' computation. Note: *, ** and *** stationary at 1%, 5% and 10% respectively because their respective p-value is less than 0.01, 0.05 and 0.10.

Panel Cointegration Tests

The Kao, and Pedroni Residual cointegration tests constitute the two panel cointegration tests conducted in this study in order to determine the existence or otherwise of cointegration between human resource accounting and profitability of banks in Nigeria between 2010 and 2020. Based on the results of the Kao, and Pedroni Residual cointegration test in Tables 5 and 6 respectively, the null hypothesis is no cointegration rejected, and the conclusion is that there is cointegration (long-run) between human resource accounting and profitability of listed deposit money banks in Nigeria in the study period.

Table 5. Kao Residual Cointegration Test Result

Test	T-Statistic	Prob.
ADF	1.499529	0.0669***
Residual variance	23.45243	
HAC variance	6.084858	

Source: Authors' computation.

Note: *** indicates rejection of the null hypothesis of no cointegration at 10 per cent significance level.

Table 6. Pedroni Residual Cointegration Tests

	Statistic	Weighted Statistic
Within-Dimension		
Panel v-Statistic	0.814675(0.2076)	-1.945005(0.9741)
Panel rho-Statistic	0.686995(0.7540)	2.077397(0.9811)
Panel PP-Statistic	-9.300631(0.0000) *	-3.010181(0.0013) *
Panel ADF-Statistic	0.349381(0.6366)	-0.610294(0.2708)
Between-Dimension		
	Statistic	
Group rho-Statistic	3.288719(0.9995)	
Group PP-Statistic	-4.479265(0.0000) *	
Group ADF-Statistic	-0.246686(0.4026)	

Source: Authors' computation.

Note: * indicates rejection of the null hypothesis of no cointegration at 1 per cent significance level

Panel ARDL Model Estimation

It is safe to apply panel Autoregressive Distributed Lag (P-ARDL) model since the variables are of mixed order integration of not exceeding one and are still cointegrated. Therefore, the panel long run and short run ARDL model estimates are presented in Table 7. Specifically, the mathematical equation of the results of the long-run estimation is presented in equation (9):

$$ROA_{it} = 0.000170_{(p=0.0002)}SAWA_{it} + 0.001961_{(p=0.0000)}DIREM_{it} + 0.000726_{(p=0.0081)}REBE_{it} - 2.024447_{(p=0.0000)}BSIZE_{it} + u_{it} \quad (9)$$

From the results of the long-run estimates in equation (9), this study indicates salaries and wages to be positively signed (0.000170) with return on asset and the relationship is statistically significant at one per cent. (p=0.0002). Likewise, directors' remuneration is positively associated with return of asset of deposit money bank considering the coefficient of 0.001961. The associated p-value of 0.0000 also suggests that the long-run relationship between directors' remuneration and return of asset is significant at one per cent alpha level. Furthermore, with a coefficient and p-value of 0.000726 and 0.0081 respectively, retirement benefits and cost has positive and significant effect on return on asset of listed deposit money banks in Nigeria in the long run. Moreover, the long-run effect of bank size on their financial performance (return on asset), is established to be negative (-2.024447) and statistically significant (p=0.0000).

Furthermore, equation (10) is representation of the results of error correction and short-run P-ARDL model.

$$\begin{aligned}
 D(ROA)_{it} = & -1.216035_{(p=0.0291)}ECT_{it} - 0.000184_{(p=0.2935)}D(SAWA)_{it} \\
 & + 0.005224_{(p=0.3843)}D(DIREM)_{it} + 0.001528_{(p=0.6719)}D(REBE)_{it} \\
 & + 2.835876_{(p=0.4202)}D(BSIZE)_{it} \\
 & + u_{it}
 \end{aligned}
 \tag{10}$$

In equation (10), the error correction term (denoted as ECT) is negatively signed (-1.216035) and statistically significant at five per cent (p=0.0291). Unlike salaries and wages which is negatively signed (-0.000184), all other variables, directors’ remuneration (0.005224), retirement benefit and cost (0.001528), and bank size (2.835876), have short-run positive effect on return on asset of listed deposit money banks in Nigeria in the study period. However, with associated p-values of 0.2935, 0.3843, 0.6719 and 0.4202 respectively, none of these variables (SAWA, DIREM, REBE, and BSIZE) is significant in explaining the short-run variation in the return on assets of listed deposit money banks in Nigeria in the study period.

Table 7. Panel ARDL Model Estimation Results

Dependent Variable: ROA			D(ROA)		
Long-Run Estimates			Short-Run and ECT Estimates		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
SAWA	0.000170	0.0002*	ECT	-1.216035	0.0291* *
DIREM	0.001961	0.0000*	D(SAWA)	-0.000184	0.2935
REBE	0.000726	0.0081*	D(DIREM)	0.005224	0.3843
BSIZE	-2.024447	0.0000*	D(REBE)	0.001528	0.6719
			D(BSIZE)	2.835876	0.4202

Source: Authors’ computation. Note: * and ** significant at 1% and 5% respectively.

Note: * and ** indicate statistically significant at 1 and 5 percent alpha level respectively.

Panel Pairwise Granger Causality Tests

In addition to the impact analysis via the panel ARDL technique, this study also determined the direction of causality between human resource accounting and profitability of listed deposit money banks in Nigeria using the panel pairwise Granger causality tests. The results of the panel pairwise Granger causality tests as summarized in Table 8 indicate that existence of a unidirectional causality running from return on asset to salaries and wages, and bank size. However, bank size granger-cause return on asset, and salaries and wages but not vice versa. Furthermore, there is a unidirectional causality running from directors’ remuneration to salaries and wages while retirement benefits and cost granger-cause directors’ remuneration in a unidirectional approach.

The study fails to establish any causality between each of the following pairs of variables; return on asset and directors remuneration; return on asset and retirement benefits and cost; retirement benefits and cost, and salaries and wages; bank size and each of directors’ remuneration, and retirement benefits and cost.

Table 8. Panel Pairwise Granger Causality Tests

Unidirectional Causality (→)	No causality (–)
ROA → SAWA	ROA – DIREM
BSIZE → ROA	ROA – REBE
DIREM → SAWA	REBE – SAWA
BSIZE → SAWA	BSIZE – DIREM
REBE → DIREM	BSIZE – REBE

Source: Authors' computation.

Note: ROA=Return on capital employed; SAWA=Salaries and wages; SIZE=Size of the banks; DIREM=Directors remuneration; REBE=Retirement benefits.

Discussion of Findings

From the panel-ARDL analysis of the effect of human resource accounting on the profitability of listed deposit money banks in Nigeria, this study found human resource accounting to have long-run relationship with the profitability of listed deposit money banks in Nigeria. Hence, in the long-run salaries and wages was found to be positively signed and significantly related with return on asset of the selected banks in the study period. In the same vein, directors' remuneration was found to exert significant and positive effect on the return of asset of the selected banks in Nigeria in the long-run. Furthermore, retirement benefits and cost has long-run positive and significant effect on return on asset of listed deposit money banks in Nigeria. However, this study shows that the long-run effect of bank size on their return on asset is negative and statistically significant.

Therefore, basically, this study argues that human resource accounting variables have long-run positive and statistically significant effect on the profitability of listed deposit money banks in Nigeria. This assertion is in congruence with similar studies carried by Bessong et al (2012), Edom et al (2015), Adebawojo et al (2015), Amahalu et al (2016), Onyeukwu et al (2021). However, the findings of this study donot agree with the submissions of other studies like Chukwuka (2018) which reveals that staff development cost impacts negatively on banks performance; Inua and Oziegbe (2018) and Olaoye and Afolalu (2020) which argued that director's remuneration have no significant effect on banks performance; as well as Olaoye and Afolalu (2020) which contended that salaries and wages is of no significant influence on banks performance. The positive significant link proved to be existence between human resource accounting and banks profitability in Nigeria also throws weight behind Schultz (1961)'s human capital theory which considers employees as assets and the costs and expenditures thereon as valuable investments capable improving employees and organsiational performance.

The short-run analysis of this empiric reveals that, unlike salaries and wages which is negatively signed, all other explanatory variables of study (directors' remuneration, retirement benefit and cost, and bank size), have positive effect on return on asset of listed deposit money banks in Nigeria. However, none of these variables is significant in explaining the short-run variation in the return on assets of listed deposit money banks in Nigeria in the study period (2010-2020).

Furthermore, the panel pairwise Granger causality tests indicate the existence of a unidirectional causalities from return on asset to salaries and wages and bank size. This implies the profitability of banks is pointer to their capability to paying higher wages and salaries to their employees. Thus, the more profitable the banks are, the higher their wage-paying capacity. This in line with the Biblical scriptures: "Pray for the peace of Jerusalem: they shall prosper that love thee" (Psalm 122:6, Kings James Version). This implies that employees' contributions to the organisation's profitability will in turn ensure the security of their employment as well as better pay package and welfare for them.

However, further evidence from causality analysis reveals that bank size granger-cause return on asset, and salaries and wages but not vice versa. Furthermore, there is an evidence of a unidirectional causality running from directors' remuneration to salaries and wages

while retirement benefits and cost granger-cause directors' remuneration in a unidirectional approach

Conclusion and Recommendations

This study evaluates both short-run and long-run effects of human resource accounting on the profitability of listed deposit money banks in Nigeria between 2010 and 2020 via panel-ARDL and panel Granger causality test approach. This study empirically proved that in the long run, salaries and wages directors' remuneration, and retirement benefits and cost have positive significant effects on return on asset and the relationship is statistically significant. However, the long-run effect of bank size on their profitability (return on asset), is established to be negative and statistically significant. The short-run analysis reveals that human resource accounting do not have significant effect on the profitability of listed deposit money banks in Nigeria in the study period. Furthermore, this study indicates the existence of a unidirectional causality flowing from return on asset to salaries and wages and bank size which suggests the profitability of banks is pointer to their capability to paying higher wages and salaries to their employee as well as a determinant of corporate size of the banks.

It can therefore be concluded that human resource accounting is a long-run determinant of profitability of banks in Nigeria but in the short-run banks' profitability cannot be explained significant by human resource accounting. This study also argues that the profitability of banks is a pointer to their wage-paying capability as well as a determinant of their corporate size.

The study recommends that banks should investment more in their human capital (HR) particularly by providing a much more guaranteed retirement benefits to their employees while handsomely rewarding their currently serving directors and employees. HR should be properly and prudently accounted for in line with the doctrine of human resource accounting for the ultimate improvement of organisational performance in the banking industry. Since the profitability of the banks is pointer to their capability to paying higher wages and salaries to their employee, it is high time that employee as well as other stakeholders contributed much more fully to the bottom line (profitability) of the banks, for in doing so will their employment, better pay package and welfare be secured and guaranteed.

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