International Journal of Emerging Trends in Social Sciences
ISSN: 2521-3539
Vol. 14, No. 2, pp. 66-76, 2023
DOI: 10.55217/103.v14i2.662

Human resource accounting and organizational productivity of listed manufacturing firms in Nigeria

Grace Oyeyemi Ogundajo[1]♣
Appolos N. Nwaobia[2]
Okezie Uhuaba[3]
Rhoda Temitope Phillips[4]

[1,2,3,4]*Department of Accounting, School of Management Sciences, Babcock University, Ogun State, Nigeria.*
[1]*Email: ogundajog@babcock.edu.ng*
[2]*Email: nwaobiaa@babcock.edu.ng*
[3]*Email: uhuaba0367@pg.babcock.edu.ng*
[4]*Email: phillips0077@student.babcock.edu.ng*

Abstract

In many developing economies, studies have shown that meeting organizational productivity seems complex and characterized with several factors affecting the productive inputs, due to infrastructural deficits and extent of employees' motivations capable of impeding productivity. Beyond these, adequate human resource accounting has been identified as a possible solution. However, the extent to which human resource accounting could impact on organizational productivity remains uncertain. Consequently, this study investigated the effect of human resource accounting on organizational productivity of listed manufacturing companies in Nigeria. An *ex-post facto* research design was employed, while from a population of 66, the study selected 20 manufacturing companies listed in Nigeria as of 31 December 2021, using purposive sampling technique. Data were extracted from the financial statements of the selected companies for a period of 15 years spanning from 2007 to 2021. Using panel data analysis, the study found that human resource accounting had a positive significant effect on organizational productivity of the listed manufacturing companies in Nigeria. Based on the results, the study recommended that managers should consider appropriate incentives capable of improving employees' productivity and adopt adequate human resource accounting models to enhance organizational productivity.

Keywords:
Human resource accounting
Organizational productivity
Pension costs
Staff salaries and welfare
Staff training and development.

Publisher:
Scientific Publishing Institute

Received: *12 April 2023*
Revised: *25 May 2023*
Accepted: *2 June 2023*
Published: *9 June 2023*

(♣ Corresponding Author)

Funding: This study received no specific financial support.
Competing Interests: The authors declare that they have no competing interests.

1. Introduction

Meeting set goals and corporate targets have been one of the challenges phenomenon that companies face consistently. Organization productivity entails the capacity of corporate organizations to optimally produce goods and services towards meeting its set goals and targets with minimum costs in relation to production timeliness, cost effectiveness, human resource. The extent of organizational productivity largely depends on optimal utilization of corporate assets, both human and capital assets. The competence and ability of the management to put to productive use, its assets are significant in achieving set goals and organizational productivity. According to Alzbeta, Martin, and Hitka (2020), the challenges of organizational productivity and corporate performance tend to be complex when there are issues with skilled recruitment of corporate employees and the level of commitment of the employees and performance, motivation and managerial competence. Lee and Kim (2020) reported that organizational productivity though difficult and challenging, yet, each employee's daily performance contributes to the overall organizational productivity.

Organizational productivity is closely related with organization effectiveness and these are embodiments of the degree to which organizations strategically achieve goals and targets. Bolarinwa and Soetan (2019) opined that diverse factors are responsible for organizational productive and these factors are in all forms and implications, these factors in their nature are complex and multidimensional as they tend to differ according to the peculiarity of each organization and effective resource management of the organizations. According to Sidani and Reese (2018), organizational productivity tends to reveal the extent and capacity of companies to convert corporate inputs in form of labour, materials, machines, capital into products or goods and services. In achieving organizational productivity, human element of the factors of production tends to be quite indispensably significant in the corporate business activities and coordination of all other factors. The collective effort and participation of all employees is fundamental and accounting for human efforts requires the human resource accounting.

The problem of organizational productivity is quite enormous and challenging. According to Mourao, Kubo, Santos, and Mazucato (2020) the exigencies and complexities in reaching organizational productivity set goals have been constrained by many factors inhibiting effective productivity. These ranges from corporate underutilization of installed capacities in the manufacturing sector, arising from infrastructural deficits in Nigeria, multiplicity of tax obligations, inadequate supply of electricity to power installed plant and equipment to full capacities (Ortega & Fernando, 2019; Reese & Sidani, 2018). In the recent time, achieving organizational productivity target has become near impossible arising from the unprecedented effect of the COVID-19 and worsened by the increasing insecurity menace and kidnaping incidents in Nigeria. Organizational productivity and corporate effectiveness are the capability of organizations to resourcefully execute its objectives and meet the set goals on a consistent basis and these in perspectives, companies must continually innovate and find better human management and assets effective utilization (Olaore, Adejare, & Udofia, 2021).

Mosquera (2019) posited that human resource accounting has close correlation with organizational productivity and all aspect of human activities must be carefully and reasonably be recognized. Human resource accounting is one of the controversial issues in the literature, as studies by Mourao et al. (2020) and Rupčić (2020) have different views and understanding the accounting and estimation of human resource accounting. The debate and divisive opinions have been heightened considering the fact that accounting standards had failed to come up with a lasting fair measuring principles and generally acceptable reporting standards in relation to proper guidelines and proper considerations and dimensions for the recognition and appropriate monetary value and measurement of human resource as an intellectual asset (Khan, Lew, & Marinova, 2019). According to Mohammed (2020), opinions have been unabatedly divided considering the precise value to attributable to the employees' intellectual value and the inclusion in the companies' financial statements.

Globally, it has become obvious that nations have shifted from industrial economies to skill-based economies, reinforcing the place of human resource accounting (Borge, Filstad, Olsen, & Skogmo, 2018). According to Mohamed (2017), human resources accounting is now significant and an innovation as a unique corporate measure and accounting for the intellectual assets of employees in corporate productive activities. Goh (2019) reported that intellectual capacity has tight relationship with corporate performance as well as organizational productivity all respects. Asika, Chitom, and Chelichi (2017) noted that growing importance of human resource accounting cannot be displaced in many years to come in spite the new technologies. Notwithstanding the significance of human resource accounting, human resource accounting over the years has suffered neglect and due recognition in the class of other intangible assets due to some inherent challenges (Fatma, Arzu, & Esen, 2020). The accounting literature has witnessed vast studies and attempts seeking for an acceptable method of accounting for human resources and human capital valuation. Unfortunately, the human resource accounting has become one of such complexities and problematic discuss in literature, as diverse contradictions abound (Emerole, 2015). Notwithstanding the complexities and problematic scenarios, human resources is the most valuable assets of corporate organizations, and the effective utilization of human capital leads an increase of corporate performance and competitiveness of the corporate organization.

Application of new technologies and information technologies cannot happen without the coordinating efforts of the human capital assets playing much needed roles of human resources management (Haeruddin, Despry, & Darmawati, 2020; Khan et al., 2019). Evidently, human resource accounting has witnessed mixed contextual discusses, scholarly diverse perspectives, divergent opinions, postulations of many divides and presently lacking generally acceptable international pronouncement and recognition of a common harmonized fair value measurement and estimation (Akintoye, 2012; Arasl, Nergiz, Yesiltras, & Gunay, 2020; Enofe, Mgbame, Otuya, & Ovie, 2013). While measurement and valuation of human capital presently lacks precision, lacks international standards setters' definite pronouncement for its global valuation and recognition as a corporate assets value. Yet, the application of human resource accounting has become increasing imperative in improving organizational productivity. Lunsford (2019), documented that beyond the human resource evaluative perspective, human resource accounting enhances adequate coordination as well as accounting, recoding and determination of organizational productivity. With the management and coordination of human resource accounting, assets and cost models are properly assessed in term of the reliability, validity and usefulness of each of the production factors in the supply-chain of organizational productivity. Proper accounting of huge investments on employees' development, in various forms like employee training, welfare, medicals, insurance have not been regarded as investments but expenses consistently been expensed rather than been capitalized.

While there exist vast studies that have researched organizational productivity, yet, there is a dearth of studies that had considered attempting the problem of organizational productivity from the perspective of human resource accounting, creating a gap in the literature. For instance, Fatima and Olaore (2021) and Nguyen and Giang (2019) in separate studies found positive effects, on the contrary, Imran, Ilyas, Aslam, and Fatima (2018) and Khan (2021) documented negative effect. The divergent opinions and mixed results equally suggest inconsistences, unresolved problems, demanding for further studies. In contributing to knowledge and filling gaps in the literature, this study proposed the following research objective, question and then hypothesized as follows:

Research Objective: Examine the effect of human resource accounting on corporate turnover to total assets of listed manufacturing companies in Nigeria.

Research Question: How does human resource accounting affect corporate turnover to total assets of listed manufacturing companies in Nigeria?

Research Hypothesis (Ho1): Human resource accounting has no significant effect on corporate turnover to total assets of listed manufacturing companies in Nigeria.

The remainder of the study was structures as follows: Next in section 2, literature review and theoretical framework were considered. In section 3, the study considered methodology and in section, 4, data analysis, results and discussion of findings were presented. In section 5, the conclusion, recommendations and contribution useful for future studies were considered.

2. Literature Review and Theoretical Framework

2.1. Conceptualization of Variables

2.1.1. Organizational Productivity

Organizational productivity is concerned with the extent and capacity corporate bodies were able to meet its set goals in full strength. The right and efficient management of corporate factors of production in relation to time management, optimal capital investments, and human resources management collectively determines the corporate performance and ultimately the organizational productivity (Lee & Kim, 2020). According to Mohammed (2020), the organizational productivity largely depends on the managerial competence and efficient management of resources and human resource management. Olaore et al. (2021) reported that organizational productivity is critically influence by human resource accounting, the continuous accounting, appraisal and motivation of employees go much more extent in improving organizational productivity. Mosquera (2019) opined that organizational productivity is a reflection of the persistence assessing and improving corporate efficiency and effectiveness of the productive assets. Ortega and Fernando (2019) revealed that there are basic perspectives that enhances organizational productivity, these include, first, corporate governance practice efficiency, second, investment decisions, third production supply chain and work process management and fourthly human resource accounting and management perspective and lastly the corporate culture. The ability of the management to coordinate these factors are significant (Kaminska & Borzillo, 2018; Örtenblad, 2019). The study measures the organizational productivity using the volume of turnover in line with the optimal utilization of corporate assets.

2.1.1.1. Turnover to Total Assets

The study employed turnover to assets as a measure of organizational productivity. According to Maravelakis (2019), the productivity of an organization is measured based on the extent of sales and volume of inflow arising from total turnover against the total assets deployed in the operational activities. The employees' productivity and the supply chain activities from the raw material sourcing, warehousing, production proper, finished good delivery and ultimately the sales of the product all culminate into the organizational productivity (Mazerolle & Goodman, 2013; Oyinlola, Adedeji, & Modupe, 2020). Rose, Dee, and Leisyte (2020) posited that the return on assets as well as the turnover are connected measures of the productivity of an organization. In this regards, turnover to total assets considers the proportion of returns in turnover based on the total assets employed in the process.

2.1.2. Human Resource Accounting

Human resource accounting is defined as the practice of identifying, measuring and reporting information about human resources to enable corporate bodies' effective management of human resource costs (Camelia, Stan, & Brătian, 2020). Some studies have considered the significance of human resource accounting from different dimensions. Mohamed (2017) documented other methods, like monetary method, present value of future economic earning of the employees, the value reward valuation, goodwill method as well as the economic value methods. In a more recent studies, Fatma et al. (2020) and Khan (2021) considered measuring human resource accounting from the point of value of traceable expenses in relation to human resource element of the organization. Following this contemporary understanding, we adopted and measured human resource accounting using the staff training and development and development costs, directors' remuneration, salaries and welfare costs.

2.1.2.1. Staff Training and Development Costs

Human resource accounting recognizes that employees of an organization are one of the significant portion in the factors of production. Labour in production is indispensable despite the level of innovations and technologies, the human element remains important. According to Shukla and Naghshbandi (2015), the investment expended in training and developing employees are recognized as part of human resource cost. While some studies Tortorella, Nascimento, Caiado, Posada, and Sawhney (2019) and Van-Driel (2019) have differed whether to capitalize such cost, or to dispense. While Tortorella et al. (2019) opined that the staff training and development is a capital item and should be capitalized, Van-Driel (2019) contended that such costs be expenses and reported as part of human resources overheads.

2.1.2.2. Directors' Remuneration

The directors' remuneration is defined as all payment to the executive and non-executive director for services rendered to the company in monetary term or in-kind should all be accounted as part of human resource costs (Sidani & Reese, 2018). The director's remuneration is considered part of human resource accounting as the amount of payment and benefit-in-kind when quantified in monetary term can be material in nature and in most cases cannot be totally expenses or capitalized, however it all depends on the amount involved and materiality in line with size and policy of the organization.

2.1.2.3. Salaries and Welfare Cost

The salaries and welfare of employees tend to be a significant motivating factor in the productivity of the organization. According to Kaminska and Borzillo (2018), when the employees are not effectively motivated, it negatively affects the organizational productivity. Emerole (2015) and Egberi (2015) contended that while salaries and welfare are not all that motivates employees' productive, however, salaries and staff welfare count significantly in motivating employees and stimulate passion and dedication to work which turn to impact on eth organizational productivity. Camelia et al. (2020) and Ekere and Amah (2014) reported that staff salaries and welfare had a positive relationship with employees' productivity whereas employees' productivity remains higher ingredient in the overall organizational productivity.

2.2. Theoretical Framework

2.2.1. Human Resources Value Theory

Human resources value theory was the brain idea of Flamholtz, who developed the theory. Flamholtz suggested that the determination of human resources and value attributable to human capital largely lies with the organization concerned (Elbadawi & Soto, 2015). Human capital value reflects the monetary value an organization places its employees individually. The human resource value theory emphasized that corporate organization has parameters which guides them in determining employees' value to an establishment. According to Flamholtz, the human resource value theory served as a framework for developing both monetary and non-monetary measurements of human resource value. It is a value-based paradigm for human resource management. The theory advanced and assessed the validity of a model of an individual's value to an organization (Okpala & Chidi, 2015).

Bakotic (2016) argued that human capital had suffered setback over the years due to lack of clear-cut regulatory policy to harmonize and standardization of fair value recognition, valuation of human resources value and positional consideration in financial statements. Human resource value theory recognizes the economic value of intellectual capital, and beyond this, considers the social and psychological determinants of a persons' value to an organization. The postulations are based on the premise that a human skills and property value to an organization is a product of the attribute he brings to an organization and the characteristics of the organization itself (Lunsford, 2019).

2.2.2. Organization Performance Theory

The employee growth and organizational productivity are closely related and this is inconsonant with the ideology as postulated by Penrose in the year 1959 popularly known as the father growth-and-growth of firm value (Bagözzi & Yi, 2012). The organizational performance theory suggested that it is the responsibility of human elements to properly manage all factors of production to enhance organizational productivity and the achievement of organizational set goals and objectives (Aydin & Ceylan, 2009). The theory further stated the superiority of human capital and indispensability of intellectual assets of the organizations in achieving the organizational objectives. According to Bates and Khasawneh (2005) that it is the sole responsibility of human capital to harness the productive activities and ensure that employees are motivated to enhance persistent employee productivity and in turn organizational productivity. The organizational performance theory also stated that the corporation must ensure availability of productive resources through adequate employee human resource accounting and benefits, and there should be consistent supply of the required resources either from internal or external sources as coordinated by employees. Bakotic (2016) noted that companies desirous of firm growth must ensure higher participation in the market through lowering prices or turnover promotion otherwise the quality of the product or services must be very competitive (Ellickson & Logsdon, 2001). The theory of organizational performance tends to have the same ideology and a close nexus between human capital accounting and organizational productivity, hence the relevance of the theory to the study.

2.2.3. Agency Theory

The agency theory as postulated by Berle and Means in 1932, as cited in Bendickson, Muldoon, Liguori, and Davis (2016) and popularized by Jensen and Meckling (1976) is concerned with contractual and economic relationship between the agents and the principals (Elbadawi & Soto, 2015). The agency theory suggested that the principals have the means and property in business venture but do not possess all the required time and expertise to manage the business, while the agents are group of people who do not own any property or business but have the required diverse knowledge, expertise and time (Martin & Grbac, 2003). Both the principals and the agents were able to strive a contractual deal and understanding, where the principal freely and voluntarily offered the business to the agents to manage on their behalf and the agents accepted the offer (Mafini & Pooe, 2013). However, while the principals otherwise the shareholders, have the feeling that the agents will manage the affairs of the business in the best their interest, as all decisions must be pursued for the sole interest of the shareholders in form of wealth maximization and for reward of wages and salaries as agreed in the offer, the agents (managers) in an effort to achieve shareholders wealth maximization are self-centered on pursuance of the their own interest resulting to conflict of interests (Wiseman, Cuevas-Rodríguez, & Gomez-Mejia, 2012). According to Saadat and Saadat (2016), the managers take advantages of their privileged information resulting to information asymmetry causing adverse effect against the interest of the shareholders, and led to shareholders appoint of directors and auditors as third parties to reduce information asymmetry and monitor the activities of the mangers.

2.3. Empirical Review

Khan (2021) studied the effect of human resource accounting on corporate performance from the perspective of financial performance. The study considered field survey research, using structured questionnaires administered to a total of 268 respondents from the small and medium enterprises employees in Saudi Arabia. In analyzing the collected responses, the study employed ANOVA and linear regression for the data analysis. The result of the analysis revealed that human resource accounting had a negative effect on corporate performance from the perspective of return on equity and return on assets of the small and medium enterprises in Saudi- Arabia.

According to Avortri and Agbanyo (2020); Girdwichai and Sriviboon (2020) and Wadkj and Mos (2021), the motivation of employees is significant to the performance and employees' productivity, which ultimately reflects on the comprehensive organizational performance.

Fatima and Olaore (2021) studied the possible effect of corporate learnings and organizational effectiveness on management productivity and employees' productivity. The study employed a survey field research approach, using structured questionnaires administered to a selection of respondents. The regression analysis conducted revealed that there was a positive association between organizational learning and organizational effectiveness as well as the employees' productivity and management performance. The result of the study tends to suggest that effective staff training and development have the ability to improve organizational productivity.

Yoopetch, Nimsai, and Kongarchapatara (2021) investigated the effect of employee benefit, employee learning and satisfaction on employee performance in hospitality services industry. The study employed primary data, using 608 employees in three sectors of airlines, hotels and spas industries and the study revealed that employee benefits, employee learning and training had a positive significant effect on employee performance as employee satisfaction had a significant effect on employee productivity and performance. Furthermore, the study revealed that employees' motivation enhances creativity and showed a positive significant effect on career growth and employers firm performance. This is consistent with the result of Esfahani, Rezaii, Koochmeshki, and Parsa (2017) who equally found positive significant effect. Imran et al. (2018) had revealed a negative effect while Nguyen and Giang (2019) equally found that overtime and leave allowance had negative significant effect on corporate performance.

Nguyen and Giang (2019) investigated the key factors of the effect of employee satisfaction and performance on organizational performance. The study employed survey research design, using interview of 27 employees of two garment enterprises in industrial parks Binh Duong Province in Vietnam. The study found that reward appreciation, employee development and training, employee benefits had a positive significant effect on organizational performance. In addition, the study revealed that adequate employee motivation and rewards system da a positive effect on organizational performance among the respondents of the two garment industries selected for the study. Consistent with Yoopetch et al. (2021) who found that employee satisfaction and employees productivity had a positive effect on corporate performance, however, overtime work and leave allowances were found to have negative effect on employee productivity and on corporate performance.

Similarly, Esfahani et al. (2017) studied the relationship between human resources management and sustainable employee productivity that will reflect on corporate performance. Questionnaire were distributed to respondents who responded accordingly. It was found that motivated employees had a positive relationship between employees' benefits, productivity and corporate performance. Also, that human resource management positively and significantly influenced the corporate performance sustenance.

3. Methodology

3.1. Design

An *ex-post facto* research design was adopted for the study using secondary data extracted from the financial statements of the selected manufacturing companies.

3.2. Population and Sample Size

All the 66 listed companies in the Manufacturing formed the population, while 20 of these companies were purposively selected as a study sample size for a period of 15 years covering 2007 to 2021, giving a firm-year observation of 300. The companies sampled in the study include: Ashaka Cement Plc, Cadbury Nigeria Plc, Cutix Plc, Fidson Healthcare Plc, First Aluminum Nigeria Plc, Flour Mills Nigeria Plc, Glaxo Smithline Plc, Guinness Nigeria Plc, Honey Well Flour Plc, International Breweries, Larfage Africa, May and Baker Nigeria, McNicholes Plc, Meyer Plc, Morisson Industries, Nestle Nigeria, Nigerian Breweries, PZ Cussons, Unilever Nigeria Plc and Vitaform Nigeria Plc.

3.3. Method of Analyses

The study analysed selected and specified data using descriptive statistics and panel data regression analysis, whereas fixed or random parameters were preferred for interpretation based on the result of the Hausman test and other diagnostics test carried out. Judgments was based on a 5% level of significance, where pooled regression analysis using Ordinary Least Square (OLS) was considered. The validity and reliability of the data were premised on the certification of the financial statements of the companies used by the external auditors.

3.4. Dependent Variable

Organizational productivity has been measured in the literature using various variables. For instance, Khan (2021) employed organizational profitability, Haeruddin et al. (2020) employed turnover to total assets, while Kim and Shu-Chin (2016) and Lee and Kim (2020) employed turnover to number of employees. However, this study adopted the study of Onyam, Usang, and Eyisi (2015); Obara (2013) and Okpala and Chidi (2015) measured organizational productivity using total turnover to total assets.

3.5. Independent Variable

Human Resource Accounting in this study was measured using four selected proxies of staff training and development cost (STDC), pension cost (PEC), directors' remuneration (DRE), salaries & welfare cost (SWC) following the prior studies by Khan (2021).

3.6. Model Specification

$$Y_{it} = \alpha_0 + \beta X_{it} + \mu_{it} \quad (1)$$

Functional relationship

$$TTA = f(STDC, PEC, DRE, SWC) \quad (2)$$

Model

$$TTA_{it} = \alpha_0 + \beta_1 STDC_{it} + \beta_2 PEC_{it} + \beta_3 DRE_{it} + \beta_4 SWC_{it} + \varepsilon_{it} \quad (3)$$

Where

TTA = Turnover to total assets, STDC = Staff training and development Costs, DRE = Director remuneration, SWC = Salaries and welfare cost

α = Constant.

β_1-β_4 = Coefficients of the model.

ε = Error terms.

i= Cross-sectional.

t = Time-series.

3.7. Measurement of Variables

The formulas adopted for the computations of the values of the measures of both dependent and independent variables are presented in Table 1.

Table 1. Measurement of variable.

Dependent variable	Abbreviations	Formula	Source
Turnover to total assets	TTA	Turnover/Total assets	Marchellina and Firnanti (2022)
Independent variables			
Staff training and development cost	STDC	Logarithm of STDC	Khan (2021)
Pension cost	PEC	Logarithm of PEC	Khan (2021)
Director remuneration	DRE	Logarithm of DRE	Akinjare, Ajike, and Sule (2019)
Staff salaries and welfare cost	SWC	Logarithm of SWC	Khan (2021)

4. Data Analysis, Results and Discussion of Findings

Multiple regression (Random-effects Generalized Least Square (GLS) with Driscoll-Kraay standard errors) was used for the analysis and the results is shown in Table 2.

Table 2. Regression and post-estimation results: Human resource accounting and organizational productivity.

$$TTA_{it} = \alpha_0 + \beta_1 STDC_{it} + \beta_2 PEC_{it} + \beta_3 DRE_{it} + \beta_4 SWC_{it} + \mu_{it}$$

Random-effects GLS regression with Driscoll-Kraay standard errors				
Variable	**Coeff**	**Std. err**	**T-stat**	**Prob**
Constant	-20.410	12.790	-1.600	0.145
STDC	-0.070	0.090	-0.790	0.450
PEC	0.050	0.060	0.820	0.432
DRE	0.400**	0.160	2.510	0.034
SWC	0.150	0.100	1.500	0.168
Observations	300	300	300	300
Adj. R^2	0.350			
F-stat/Wald stat	47.27 (0.000)			
Hausman test	6.55 (0.260)			
Breusch-Pagan Langragian multiplier (LM) test	81.83 (0.000)			
Heteroscedasticity test	12.51 (0.000)			
Serial correlation test	53.605 (0.000)			
Pesaran's cross-sectional dependence test	6.045 (0.000)			

Source: Dependent variable: TTA = Turnover to total assets. Independent variables human resource accounting and proxies: (STDC = Staff training and development costs, Pension cost, DRE = Director remuneration, SWC = Salaries and welfare cost). ** = 5% significance level.

4.1. Pre-Estimation Results

4.1.1. Hausman Test

The study carried out Hausman test to determine the significance level of the parameter. Therefore, going by the result of the diagnostic tests to determine the best estimating technique out of Random effect, Fixed effect and Pooled OLS and suitability of the model by evaluating that it is free from econometric problem or that the problem found are corrected; the study conducted an Hausman test to determine the more appropriate technique between fixed effect and random effect; the result of the Hausman text with the probability of 0.26 supported its null hypothesis and accord the appropriateness to random effect.

4.2. Langragian Multiplier (LM) Test

In addition, in the result is equally confirmation of the result earlier obtained in the Hausman test, the study re-confirms using the Langragian Multiplier test that was carried out and the result with *p-value* = 0.00 tend to support the Hausman result which suggested.

Consequently, the study stated that random effect is preferred and the most appropriate estimating technique among other parameters of fixed effect, random effect and Pooled Ordinary Least Square (OLS) respectively.

4.3. Heteroscedasticity Test, Serial Correlation Test and Cross-Sectional Dependence Test

The study considered the diagnostic tests relevant to panel analysis for the heteroscedasticity, serial correlation test as well as cross sectional dependence test. Checking for variations of the residuals of the model using heteroscedasticity test with the probability value of *p-value* = 0.00 shows that the model is heteroskedastic, meaning that the residuals of the model are trending over time, thus the null hypothesis is rejected. Also, checking the model if the coefficients and residuals are correlated using Wooldridge test and with the probability value of p-value = 0.00, being lower than 5% significant level, it means that the coefficients and the residual of the model are correlated and thus, the model has serial correlation problem. The probability value of cross-sectional dependence test of *p-value* = 0.00 also revealed that the model has cross-sectional dependence problem.

The results of the diagnostic tests confirmed that the model has the three econometric problems-heteroscedasticity, serial correlation test as well as cross sectional dependence test. Hence, it is estimated using Random-effects GLS Regression with Driscoll-Kraay standard errors Regression.

$$STA_{it} = \alpha_0 + \beta_1 STDC_{it} + \beta_2 PEC_{it} + \beta_3 DRE_{it} + \beta_4 SWC_{it} + \varepsilon_{it}$$

$$STA_{it} = -20.41 - 0.07STDC_{it} + 0.05PEC_{it} + 0.40DRE_{it} + 0.15SWC_{it} + \varepsilon_{it} - Restated$$

4.4. Estimation Results of the Analysis

Based on the regression result presented in Table 2 which investigated the effect of human resource accounting (Staff training and development cost (STDC), pension cost (PEC), directors' remuneration (DRE), and salaries and welfare cost (SWC) on organizational productivity (turnover on total assets). The results revealed that pension cost, directors' remuneration, and salaries and welfare cost have positive effect (β_2 = 0.050, t = 0.820; β_3 = 0.400; t = 2.510; β_4 = 0.150; t = 1.500) > 0. The positive results derived are consistent with the expectation. However, staff training and development exhibited a negative effect (β_1 = -0.070; t = - 0.790) < 0, and this is not in tandem with the expectation of the study.

From the probability of *t-test* estimation, the significance of the effect of each measures of organizational productivity on TTA at 5% (percent) significance level was evaluated. According to the result, DRE has a probability value of 0.034; this implies that DRE significantly affects TTA since the probability value is less than the chosen significance level of 5%. In contrast, STDC, PEC, and SWC exert insignificant effects on TTA because their probabilities are all greater than 5% chosen significance level (STDC, *ρ-value* = 0.450; PEC, *ρ-value* = 0.432; SWC, *ρ-value* = 0.168).

The level and nature of the effect of each of the determinants measures were estimated using their coefficient values. The results indicate that DRE with a coefficient value of β_3 = 0.40; implies that a percentage increase in the volume of information expected to be disclosed in respect to DRE, TTA would increase by 0.40 percent. On the other hand, STDC has a coefficient value of β_1 = - 0.07, suggesting that a percentage increase in the level of disclosure of information relating to Staff training and development cost would result to a decline in the TTA by 0.07 percent. As for PEC, it implies that as the firm increases the level of information expected to disclose according to the index used by 1 percent, this would result to an increase in TTA by 0.05 percent. Similarly, as the disclosure of information relating to SWC increases by 1 percent, TTA would increase by 0.15 percent. In conclusion, DRE has significant positive effect on TTA while PEC and SWC have positive but insignificant effects on TTA. As for STDC it has an insignificant negative influence on TTA.

Adj.R^2 measured the composite effect of the indicators of human resource accounting costs on the organizational productivity while the remaining changes are caused by factors not considered in the model. In other words, it considered the measured human resource motivational investments in the proportion of the changes in the organizational productivity of the manufacturing companies in Nigeria as a result of changes in the Staff training and development costs, Pension cost, Director Remuneration, and Salaries and welfare cost explains about 35 per cent changes in the organisational productivity of the manufacturing companies in Nigeria, while the remaining 65 per cent were other factors explaining changes in the organizational productivity of the manufacturing companies in Nigeria but where not captured in the model. The moderate percentage changes seemed weak, this could equally suggest that the organizational level of compliance to human resource accounting costs disclosure in Nigeria was weak compared to some studies where the percentage of *Adjusted* R^2 are substantially higher.

The result of the Wald-statistics of 47.27 with degree of freedom of $F(4, 295)$ representing the four constructs of independent variables in 300 firm-year observations and having a probability value of 0.000 being less than the 5% chosen significant level of the study, implies that STDC, PEC, DRE, and SWC, jointly and significantly affect TTA. Therefore, the null hypothesis of this study is hereby rejected while the alternate hypothesis is accepted and the study concluded that human resource accounting significantly affects organizational productivity of manufacturing companies in Nigeria.

5. Discussion of Findings

The study examined the effect of human resource accounting on organizational productivity surrogated with total turnover to total assets as measures of organizational productivity. The result of the analysis revealed mixed results: pension cost revealed a positive effect, directors' remuneration had a positive effect, and staff salaries and welfare revealed positive effect. However, staff training and development cost revealed a negative effect. However, the joint analysis using all the combination of all the explanatory variables in the F-statistics revealed that human resources accounting had a positive effect on turnover to total assets. Based on this, the study concluded that human resource accounting had a positive significant effect on organizational productivity of the listed sampled manufacturing companies in Nigeria. The findings of this study related to the outcome of the previous studies conducted by Esfahani et al. (2017) which opined that employees' benefits enhances productivity and organizational performance; Nguyen and Giang (2019) on Vietnam firms found that reward appreciation, employee development and training, employee benefits, and adequate employee motivation had a positive significant effect on organizational performance; Yoopetch et al. (2021) who found that employees' satisfaction and productivity positively affect corporate performance Fatima and Olaore (2021) who reported positive effect, On the contrary, other prior studies have found contradictory results. For instance, the studies of Khan (2021) reported negative effect and the study by Imran et al. (2018) equally reported negative effect. The contrast in the results of studies conducted on human resource accounting and organizational productivity could be caused by the extent of information disclosures regarding human resource which varied from country to country; legislation sin countries in respect to human resources, and varied measures of human resource accounting as well as organizational productivity adopted in the studies over time.

6. Conclusion, Recommendations and Contribution to Knowledge for Future Studies

6.1. Conclusion

The study investigated the effect of human resource accounting on organizational productivity of manufacturing companies in Nigeria. Based on the outcome of the analysis conducted, it was obtained that human resource accounting, measured as staff training and development, pension cost, directors' remuneration and staff salaries and welfare serves as motivating factors capable of impact on organizational productivity.

6.2. Recommendations

Some of the results revealed insignificant effect of staff training and development, pension costs and staff salaries and welfare. This could suggest that accounting for human resource in relation to monetary incentives in most instances do not motivate employees' productivity and ultimately the organizational performance. The management of the manufacturing companies should devise other factors that could motivate and enhance employees' productivity and in-turn organizational productivity. The managers should consider the amount of salaries and robustness of welfare packages whether they are good enough to stimulate employees' effectiveness and productivity to enhance organization productivity.

6.3. Limitation and Future Studies

The study encountered some limitations as it failed to consider other things: First, the other sectors other than the manufacturing companies were not considered. Secondly, the study considered only 20 manufacturing companies within a period of 12 years only were considered. Thirdly, other factor determinants and measures of human resource accounting and organizational productivity were not considered. Notwithstanding, the results obtained will bring novelty and immense contribution to knowledge. Future studies can be conducted using other human resource accounting and organizational productivity measuring variables not considered and other sectors not considered in this study.

References

Akinjare, Y. S., Ajike, M. S., & Sule, T. O. (2019). The impact of human resource accounting (HRA) on the performance of Nigerian firms. *JABU International Journal of Social and Management Sciences*, *7*(1), 252-265.

Akintoye, I. (2012). The relevance of human resource accounting to effective financial reporting. *International Journal of Business Management and Economic Research*, *3*(4), 566-572.

Alzbeta, K., Martin, M., & Hitka, M. (2020). Evaluating the effectiveness in human capital in e- business enterprises in the context of sustainability. *Sustainability*, *10*(9), 1-23. https://doi.org/10.3390/su10093211

Arasl, H., Nergiz, A., Yesiltras, M., & Gunay, T. (2020). Human resource management practices and service provider commitment of green hotels service providers: Mediating role of resilience and work engagement. *Sustainability*, *12*(21), 1-22. https://doi.org/10.3390/su12219187

Asika, E. R., Chitom, J. A. R., & Chelichi, I. F. (2017). Appraisal of human resource accounting on profitability of corporate organization. *Economics*, *6*(1), 1-10. https://doi.org/10.11648/j.eco.20170601.11

Avortri, C., & Agbanyo, R. (2020). Determinants of management fraud in the banking sector of Ghana: The perspective of the diamond fraud theory. *Journal of Financial Crime*, *28*(1), 142-155. https://doi.org/10.1108/jfc-06-2020-0102

Aydin, B., & Ceylan, A. (2009). Does organizational learning capacity impact on organizational effectiveness? Research analysis of the metal industry. *Development and Learning in Organizations: An International Journal*, *23*(3), 21-23. https://doi.org/10.1108/14777280910951577

Bagözzi, R., & Yi, Y. (2012). Specification, evaluation, and interpretation of structural equations models. *Journal of the Academy of Marketing Science*, *40*(1), 8-34. https://doi.org/10.1007/s11747-011-0278-x

Bakotic, D. (2016). Relationship between job satisfaction and organisational performance. *Economic Research*, *29*(1), 118-130. https://doi.org/10.1080/1331677X.2016.1163946

Bates, R., & Khasawneh, S. (2005). Organizational learning culture, learning transfer climate and perceived innovation in Jordanian organizations. *International Journal of Training and Development*, *9*(2), 96-109. https://doi.org/10.1111/j.1468-2419.2005.00224.x

Bendickson, J., Muldoon, J., Liguori, E. W., & Davis, P. E. (2016). Agency theory: Background and epistemology. *Journal of Management History*, *22*(4), 437-449.

Bolarinwa, S. T., & Soetan, F. (2019). The effect of corruption on bank profitability. *Journal of Financial Crime*, *26*(3), 753-773. https://doi.org/10.1108/jfc-09-2018-0102

Borge, B. H., Filstad, C., Olsen, T. H., & Skogmo, P. Ø. (2018). Diverging assessments of learning organizations during reform implementation. *The Learning Organization*, *25*(6), 399-409. https://doi.org/10.1108/tlo-02-2018-0024

Camelia, O.-S., Stan, S., & Brătian, V. (2020). Corporate sustainability and intangible resources binomial: New proposal on intangible resources recognition and evaluation. *Sustainability*, *12*(10), 4150. https://doi.org/10.3390/su12104150

Egberi, E. (2015). Motivation and employees' productivity in local government system in Nigeria: An evaluation. *Journal for Studies in Management and Planning*, *1*(3), 148-163.

Ekere, A., & Amah, E. (2014). Staff benefits and organizational performance. A study of private hospitals in rivers state, Nigeria. *IOSR Journal of Business and Management*, *16*(2), 24-28. https://doi.org/10.9790/487x-16232428

Elbadawi, I. A., & Soto, R. (2015). Resource rents, institutions, and violent civil conflicts. *Defence and Peace Economics*, *26*(1), 89-113. https://doi.org/10.1080/10242694.2013.848579

Ellickson, M. C., & Logsdon, K. (2001). Determinants of job satisfaction of municipal government employees. *State and Local Government Review*, *33*(3), 173 184. https://doi.org/10.1177/0160323X0103300302

Emerole, O. B. (2015). Effect of non-monetary rewards on productivity of employees among selected government parastatals in Abia State, Nigeria. *IOSR Journal of Business and Management*, *17*(4), 6-11.

Enofe, A., Mgbame, C., Otuya, S., & Ovie, C. (2013). Human resources accounting disclosures in Nigeria quoted firms. *Research Journal of Finance and Account*, *4*(13), 7-12.

Esfahani, S. A., Rezaii, H., Koochmeshki, N., & Parsa, S. S. (2017). Sustainable and flexible human resource management for innovative organizations. *AD-Minister*, *30*(1), 195-215 https://doi.org/10.17230/ad-minister.30.10

Fatima, Z. T., & Olaore, G. O. (2021). Effect of organizational learning and effectiveness on the operations, employees' productivity, and management performance. *Vilakshan - XIMB Journal of Management*, *19*(2), 110-127. https://doi.org/10.1108/XJM-09-2020-0122

Fatma, B. S., Arzu, O., C., & Esen, E. (2020). Human resources disclosures in corporate annual reporting of insurance companies: A case of developing countries. *Sustainability*, *12*(8), 1-20. https://doi.org/10.3390/su12083452

Girdwichai, L., & Sriviboon, C. (2020). Employee motivation and performance: Do the work environment and the training matter? *Journal of Security and Sustainability Issues*, *9*, 42-54. http://doi.org/10.9770/jssi.2020.9.J(4)

Goh, S. C. (2019). Measurement of the learning organization construct: A critical perspective and future directions for research, in the Oxford handbook of the learning organization. In (pp. 316-332). Oxford: Oxford University Press.

Haeruddin, S., Despry, N. A., A., & Darmawati, M. (2020). The role of natural and human resources on economic growth and regional development with discussion of open innovation dynamics. *Journal of Open Innovation: Technologies, Markets and Complexity*, *6*(4), 1-24. https://doi.org/10.3390/joitmc6040103

Imran, M. K., Ilyas, M., Aslam, U., & Fatima, T. (2018). Knowledge processes and firm performance: The mediating effect of employee creativity. *Journal of Organizational Change Management*, *31*(1), 512-553. https://doi.org/10.1108/JOCM-10-2016-0202

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal Financial Economics*, *3*(1), 305-360.

Kaminska, R., & Borzillo, S. (2018). Challenges to the learning organization in the context of generational diversity and social networks. *The Learning Organization*, *25*(2), 92-101. https://doi.org/10.1108/TLO-03-2017-0033

Khan, S. (2021). Impact of human resource accounting on organizations' financial performance in the context of SMEs. *Accounting*, *7*(3), 621-628. https://doi.org/10.5267/j.ac.2020.12.016

Khan, Z., Lew, Y. K., & Marinova, S. (2019). Exploitative and exploratory innovations in emerging economies: The role of realized absorptive capacity and learning intent. *International Business Research*, *28*(3), 499–512. https://doi.org/10.1016/j.ibusrev.2018.11.007

Kim, D., & Shu-Chin, L. (2016). Human capital and natural resource dependence. *Structural Change and Economic Dynamics*, *40*(3), 92-102. https://doi.org/10.1016/j.strueco.2017.01.002

Lee, J., & Kim, S. (2020). Does human resources investment for internal control system enhance future cash flow predictability? *Sustainability*, *12*(20), 1-16. https://doi.org/10.3390/su12208500

Lunsford, D. L. (2019). An output model for human resource development analytics. *Performance Improvement Quarterly*, *32*(1), 13-35. https://doi.org/10.1002/piq.21284

Mafini, C., & Pooe, D. R. (2013). The relationship between employee satisfaction and organisational performance: Evidence from a South African government department. *SA Journal of Industrial Psychology*, *39*(1), 1-9. https://doi.org/10.4102/sajip.v39i1.1090

Maravelakis, P. (2019). The use of statistics in social sciences. *Journal of Humanities and Applied Social Sciences*, *1*(2), 87-97. https://doi.org/10.1108/jhass-08-2019-0038

Marchellina, V., & Firnanti, F. (2022). *Financial ratio and company characteristics effect on earnings management.* Paper presented at the Proceedings of the Ninth International Conference on Entrepreneurship and Business Management (ICEBM 2020) Advances in Economics, Business and Management Research.

Martin, J. H., & Grbac, B. (2003). Using supply chain management to leverage a firm's market orientation. *Industrial Marketing Management*, *32*(1), 25-38. https://doi.org/10.1016/s0019-8501(01)00192-4

Mazerolle, S. M., & Goodman, A. (2013). Fulfillment of work–life balance from the organizational perspective: A case study. *Journal of Athletic Training*, *48*(5), 668-677. https://doi.org/10.4085/1062-6050-48.3.24

Mohamed, E. S. (2017). Resource gaps, foreign capital flows and economic growth in Sudan: An empirical econometric analysis. *African Journal of Economic and Sustainable Development*, *6*(4), 292-316. https://doi.org/10.1504/ajesd.2017.10016183

Mohammed, E. S. E. (2020). Resources rents, human development and economic growth in Sudan. *Economies*, *8*(4), 1-22. https://doi.org/10.3390/economies8040099

Mosquera, R. (2019). The long-term effect of resource booms on human capital. *Available Online: Labour Economics*, *74*(1), 1-21. https://doi.org/10.1016/j.labeco.2021.102090

Mourao, P., Kubo, E., Santos, I., & Mazucato, V. (2020). Economic development and change in human resources management in a sustainable agriculture sector: Recent evidence in Brazilian sugar-alcohol companies. *Sustainability*, *12*(18), 1-15. https://doi.org/10.3390/su12187559

Nguyen, T.-L., & Giang, P. X. (2019). Improving employee performance in industrial parks: An empirical case of garment enterprises in binh duong province, Vietnam. *European Journal of Investigation in Health, Psychology and Education*, *10*(1), 44-58. https://doi.org/10.3390/ejihpe10010005

Obara, L. C. (2013). Conventional human asset accounting treatment and corporate profitability evaluation. *European Journal of Accounting Auditing and Finance Research, 1*(3), 66-82.

Okpala, P., & Chidi, O. (2015). Human capital accounting and its relevance to stock investment decisions in Nigeria, university of Lagos, Nigeria. *The European Journal of Economics, Finance and Administrative Sciences, Issue, 21*(2), 64-76.

Olaore, G. O., Adejare, B. O., & Udofia, E. E. (2021). The nexus between the increasing involvement of youth in betting games and unemployment: The Nigerian perspective. *Journal of Humanities and Applied Social Sciences, 3*(3), 163-181. https://doi.org/10.1108/jhass-02-2020-0026

Onyam, E. G., Usang, I. E., & Eyisi, A. S. (2015). The impact of human resource accounting on the profitability of a firm: Empirical evidence from access bank of Nigeria plc. *European Journal of Accounting, Auditing and Finance Research, 3*(7), 72-90.

Ortega, F. S., & Fernando. (2019). Measurement of the human capital applied to the business eco-innovation. *Sustainability, 11*(12), 1-16. https://doi.org/10.3390/su11123263

Örtenblad, A. R. (2019). Background and introduction, in the Oxford handbook of the learning organization. In (pp. 2-18). Oxford: Oxford University Press.

Oyinlola, M., Adedeji, A., & Modupe, B. (2020). Exploring the nexus among natural resource rents, human capital and industrial development in the SSA region. *Economic Change and Restructuring, 53*(1), 87–111. https://doi.org/10.1007/s10644-018-09243-3

Reese, S., & Sidani, Y. (2018). A view of the learning organization from the practical perspective: Interview with Michael Marquardt. *The Learning Organization, 25*(5), 353-361. https://doi.org/10.1108/TLO-04-2018-0068

Rose, A.-L., Dee, J., & Leisyte, L. (2020). Organizational learning through projects: A case of a German university. *The Learning Organization, 27*(2), 85-99. https://doi.org/10.1108/tlo-11-2018-0200

Rupčić, N. (2020). Context related learning opportunities for individual and organizational improvement in learning organizations. *The Learning Organization, 27*(2), 173-180. https://doi.org/10.1108/tlo-02-2020-250

Saadat, V., & Saadat, Z. (2016). Organizational learning as a key role of organizational success. *Procedia-Social and Behavioral Sciences, 230*, 219-225. https://doi.org/10.1016/j.sbspro.2016.09.028

Shukla, A., & Naghshbandi, M. (2015). Comparative analysis of human resource accounting (HRA) practices in Indian companies. *International Journal of Research and Development-A Management Review, 4*(4), 1-7.

Sidani, Y., & Reese, S. (2018). A view of the learning organization from a corporate governance perspective. *The Learning Organization, 25*(6), 434-442. https://doi.org/10.1108/TLO-07-2018-0122

Tortorella, G., Nascimento, D., Caiado, R., Posada, J. G. A., & Sawhney, R. (2019). How do different generations contribute to the development of a learning organization in companies undergoing a lean production implementation? *The Learning Organization, 27*(2), 101-115. https://doi.org/10.1108/TLO-02-2019-0035

Van-Driel, H. (2019). Financial fraud, scandals, and regulation: A conceptual framework and literature review. *Business History, 61*(8), 1259-1299. https://doi.org/10.1080/00076791.2018.1519026

Wadkj, W., & Mos, M. (2021). Relationship between employee productivity and firm's profitability from shareholders' and firm's perspectives: A comparative study. *Sri Lanka Journal of Business Studies and Finance, 1*(1), 38-49.

Wiseman, R. M., Cuevas-Rodríguez, G., & Gomez-Mejia, L. R. (2012). Towards a social theory of agency. *Journal of Management Studies, 49*(1), 202-222. https://doi.org/10.1111/j.1467-6486.2011.01016.x

Yoopetch, C., Nimsai, S., & Kongarchapatara, B. (2021). The effects of employee learning, knowledge, benefits, and satisfaction on employee performance and career growth in the hospitality industry. *Sustainability, 13*(8), 1-14. https://doi.org/10.3390/su13084101