Effect of Corporate Human Capital on Financial Performance of Quoted Nigerian Agricultural Firms' (2007 – 2020)

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Abstract: **This study examined the effect of corporate human capital on financial performance of quoted Nigerian Agricultural firms. The agricultural sector in Nigeria are faced with a lot of challenges (use of crude equipment's in farming, improper information, agri-marketing, etc.) which hinder productivity. Specifically, the effect of human capital efficiency, capital employed efficiency and structural capital efficiency on return on assets was ascertained. Secondary data for a period 2007 to 2020 were sourced from the annual reports of all the firms quoted on the Nigerian Stock Exchange (NSE). The Panel Ordinary Least Square (POLS) and the Granger Causality test were the technique employed in estimating the models. The result of the analysis revealed that human capital efficiency and structural capital efficiency have significant effect on return on assets; Agricultural firms should improve their human capacity development (workforce be up to date on ever changing technology) to enhance productivity. This is based on the significant effect of human capital efficiency on return on assets. More investment on human and their growth in the agricultural sector is recommended as it is a significant key for the success.**

***Keywords*: Corporate human capital; financial performance**

I. INTRODUCTION

Investments in human capital by firms comes with a cost. Firms, especially large ones amidst technological innovations keeps (periodically depending on policies of the firm) a fraction of their earnings for human capital development in order to stay competitive in business. Similarly, small firms in most emerging economies does not see human capital development as contributory to improved returns. At times, firms embark on human capital development on the basis of employees' output. The out of the employees' are assessed through performance appraisal system as may be determined by the firm. According to Isychou, Chountalas, Magoutas and Fafaliou (2016), human capital is often considered as one of the most fundamental requirements for high organizational performance, whereas key driver for the achievement of higher levels of employees' productivity is considered the employment of a suitable performance appraisal system. However, the emphasis on human capital in firms reflects the view that market value depends less on tangible resources, but rather on intangible ones, particularly human resources (Stiles & Kulvisaechana, 2005). Firms seek to optimize their workforce through comprehensive human capital development programmes not only to achieve business goals but most important is for the long term survival and sustainability of the organization (Ukenna, Ijeoma, Anionwu & Olise, 2010).

In current global market, firms are composed by competitors, regardless of industry, and develop a competitive advantage, it is important that firms truly leverage on the workforce as a competitive weapon (Marimuthu, Arokiasamy & Ismail, 2009). According to Armstrong (2006), the challenge is to ensure that firms have capability to find, assimilate, compensate and retain human capital in the shape of talented individuals they need who can drive a global organization that is both responsive to its customers and the burgeoning opportunities of technology. The agricultural sector in Nigeria are faced with a lot of challenges (use of crude equipment's in farming, improper information, agri-marketing, etc.) which hinder productivity. Before the discovery of oil in large quantity, agriculture was the source of revenue in the 1960s and early 1970s. Despite government policies in revitalising the sector, no meaningful result has surfaced as Nigeria still relies on importation of food items, especially rice.

Objective Statement

This study seeks to ascertain the effect of corporate human capital on financial performance of agricultural firms in Nigeria.

II. LITERATURE REVIEW

Corporate human capital may be interpreted in different ways by scholars but all point to the fact that it involves the development of human capital by organization to sustain output or performance. As stated by Rahim, Atan and Kamaluddin (2017), the underlying concepts in these definitions include the notions that human capital is emphasis on the skills and knowledge of employees rather than on the physical assets of a company. Human Capital has been emphasized on in organizations this reflects the how the market value relies on less resources that are tangible, but on intangible resources, especially human resources thus

attracting, employing and retaining the right employees, fulfils this equation (Khayinga & Muathe, 2018). Firm performance is a general structure which refers to the operations of enterprise (Pamela, Umoh & Worlu, 2017). Performance measurement can be categorized into two which are financial and non-financial performance (Samad, 2013). Financial performance would measure the performance in terms of money such as profit and sales, while non-financial performance would measure the performance in terms of quality of the product.

Theories have arisen in an attempt to explain the nexus between corporate human capital development and firms' performance. This study focuses on Human Capital Theory and Resource Based Theory. However, this study is anchored on the Resource Based View on the premises that firms possess resources, a subset of which enable them to achieve competitive advantage, and a subset of those that lead to superior long term performance. The theory sees human capital as a resource that cannot be substituted or imitated which gives a firm a competitive advantage over others. Firms' possess resources, a subset of which enable them to achieve competitive advantage, and a subset of those that lead to superior long term performance (Amber, 2016). Resources that are valuable and rare can lead to the creation of competitive advantage. That advantage can be sustained over longer time periods to the extent that the firm is able to protect against resource imitation, transfer, or substitution". The theory confirms that firms' competitive advantage is sustained by organizational valuable resources, and capabilities, which are not common and cannot be easily substituted.

Amin (2018) investigated the relationship between entrepreneurial human capital and performance of organizations in Pakistan. It adopted a quantitative methodological framework which collected data from annual reports of selected organizations registered in Lahore Stock Exchange (LSE) of Pakistan. This study used both Regression analysis and correlation techniques to find the relationship and degree of relationship between entrepreneurial human capital and organizational performance. The findings showed that entrepreneurial human capital (education, experience and skills) are positively associated with the performance of organizations.

Odhon'g and Omolo (2015) sought to establish the effect of human capital investment on organizational performance of pharmaceutical companies in Kenya. The independent variables include: training, education, knowledge management and skills development. The main underpinning theories in this study include: Human Capital, Skill Acquisition and Sustainable Resource Theory. Two hundred (200) observations were used in the study. Study used questionnaires in data collection, descriptive and inferential statistics used in the analysis. The study found a positive significant relationship between human capital investment and organizational performance.

To find out the impact of human capital on organization performance in service sector of Punjab, Pakistan, Ali and Chaudhry (2017) collected data from five major cities of Punjab, Pakistan. Respondents were faculty members of universities and officer grade employees of banking sector. Analysis showed that human capital does affect the career, job and life satisfaction of employees which are indicators of organization performance.

Ukenna, Ijeoma, Anionwu and Olise (2010) examined the effect of investment in human capital development on organisational performance. Twenty-five small scale business owners were purposively selected in Awka metropolis of Nigeria. A structured five-point likert type questionnaire was designed and distributed and a 100% return rate was recorded. ANOVA, t-test, multiple regression analysis, simple regression analysis, and Pearson's correlation coefficient were all employed to conduct relevant analyses. The result revealed that training and skill are stronger predictors of human capital effectiveness over and above knowledge and education.

Cifuentes and Martinez-Leon (2015) analysed the impact of human capital on reputation perceived by employees and financial performance (by means of the return on capital employed -ROCE-). Using a database of Spanish audit sector and applying an exploratory and confirmatory factor analyses, three factors of human capital are obtained (Staff Quality, Staff Management and Staff Results) which have been related to the dimensions of employees' views of reputation and ROCE through a path analysis. The results revealed that staff quality (firms with creative employees, who perform their best and think actions through, and where there is no trouble if individuals left) has a significant and positive influence on all the dimensions of reputation. Staff management (firms with clear recruitment and succession training programs, upgrade employees' skills and employees who give their all) has a significant and positive impact on resource management, ethics and media reputation. Staff results (employees are satisfied and they do not have to bring down to others' level) have a positive and significant effect on business leadership, resource management, ethics and media reputation. No significant effects are found in when human capital factors and financial performance are linked as a consequence of the financial crisis.

Rahim, Atan and Muathe (2016) explored the relationship between human capital efficiency and firm's performance in Malaysian technology industry. Using accounting data of all technology companies listed under Main Market and Ace Market of Bursa Malaysia in year 2009. The study applied Value Added Intellectual Coefficient (VAICTM) methodology developed by Ante Pulic to measure human capital efficiency. The results showed that there was not much difference in terms of human capital efficiency between the Main Market and Ace Market. Results from correlation analysis indicate that human capital efficiency has significant and positive relation with firm's performance.

Tumwine, Nasiima and Kamukama (2014) determined the elements of human capital that are influential in steering the performance of medium and large manufacturing firms (MLMC). A valid research instrument was utilized to conduct a survey on 359 MLMCs (256 Medium firms and 103 large manufacturing companies) and 897 respondents that are representative of 397 MLMCs and 1,087 respondents. Correlation and regression analysis were conducted to ascertain the validity of the hypotheses. It was established that human capital elements (employee educational level, experience and motivation) are associated with MLMC`s performance. Furthermore, human capital as a whole accounts for 55.9 percent of the variation in performance Uganda`s MLMCs.

Perera and Thrikawala (2012) investigated the impact of investment in human capital on financial performances of the companies in Sri Lanka. Financial information in financial statements of listed companies under Colombo Stock Exchange for the period of 2 years from 2009 to 2010 were used. Sample of the study was selected as 40 companies listed under Colombo Stock Exchange. Data analysis was carried out with aid of SPSS (Statistical Package of Social Sciences). Findings revealed that there is a significant relationship between investment in human capital and firm financial performances (0.021).

Farrukha and Joiyaa (2018) examined the impact of intellectual capital on the overall financial performance and financial efficiency of manufacturing firms in Pakistan. For this purpose, panel data regression analysis has been conducted to check the effect of major explanatory factors like human capital efficiency, structural capital efficiency, and capital employed efficiency has been considered for the outcome factor. The outcomes of the study reveal the fact that there exists the significant association between the various components of Intellectual Capital and the firm performance.

Chemmanur, Kong, Krishnan and Yu (2018) looked into the relationship between the human capital of firms' top management teams (management quality) and their long-run performance using panel data from the BoardEx database on firms' top management characteristics and a management quality index constructed using common factor analysis on various individual proxies for top management quality. They analysed the channels through which management quality affects firm performance and found a positive relationship between management quality and firm investment and between management quality and new product introductions in the immediate future.

III. METHODS

This research adopted an ex-post facto longitudinal/panel research design. The choice of this research design is that it examines features of various firms at more than one fiscal period. The data used in the analysis were secondary in nature and extracted from the annual reports of the five (5) agricultural firms quoted on the Nigerian Stock Exchange Nigerian from 2007 to 2020, and which have operated on the exchange for a least period of ten years. There are only five (5) agricultural firms quoted on Nigerian Stock Exchange (NSE) as at 31st December, 2020 which are Presco Plc, Livestock Feeds, FTN Cocoa Plc, Okomu Oil and Ellah Lake. The five (5) agricultural firms constitute the sample size of this study. The dependent variable is corporate human capital measured by Human Capital Efficiency (HCE), Capital Employed Efficiency (CEE), Structural Capital Efficiency (SCE), while the dependent variable is firm performance measured by Return on Assets (ROA).

A linear and multivariate modified regression model of Perera and Thrikawala (2012) was adapted and modified. The original model is state as:

$$FP = f(HCE, CEE, SCE) \dots\dots\dots\dots\dots\dots\dots 3.1$$

Where:

FP = Financial performance defined in term of Return on Assets (ROA), Return on Equity (ROE) and Market Capitalization (MC)

HCE = Human Capital Efficiency

CEE = Capital Employed Efficiency

SCE = Structural Capital Efficiency

The functional form is expressed as:

$$ROA = f(HCE, CEE, SCE) \dots\dots\dots\dots\dots\dots\dots\dots 3.2$$

Econometrically transforming equ. 3.2 thus becomes:

$$ROA_t = \beta_0 + \beta_1 HCE_t + \beta_2 CEE_t + \beta_3 SCE_t + \varepsilon_t \quad \dots 3$$

Where:

ROA = Return on Assets
HCE = Human Capital Efficiency
CEE = Capital Employed Efficiency
SCE = Structural Capital Efficiency
e = Stochastic or disturbance term.
t = Time dimension of the variables
β_0 = Constant or intercept
β_{1-3} = Coefficients to be estimated or the coefficients of slope parameters

IV. RESULT AND DISCUSSION

The LLC test was performed at first difference at individual intercept and individual intercept and trend. The null hypothesis of the LLC test is that the variable is stationary. The null hypothesis of stationarity is accepted only when the p-value is less than 0.05. The LLC unit root result in Tables 1 at individual intercept at first difference show that the p-values of LLC test statistic for all the variables are significant at 5% level of significance. The null hypothesis that the variables have unit root at first difference is accepted.

Hence, all the variables are stationary at first difference at the 5% level of significance and integrated of order one i.e. 1(1).

Table 1: LLC Test Result at First Difference: Individual Intercept

Variables	LLC Test Statistic	Pooled Coefficient	Pooled t-Stat.	Remark
ROA	-7.26810 (0.00)*	-1.95301	-11.180	Stationary
ROE	-22.3455 (0.00)*	-1.01211	-35.057	Stationary
NPM	-2.50535 (0.01)*	-2.11135	-6.7230	Stationary
HCE	-4.12128 (0.00)*	-1.36078	-4.2770	Stationary
CEE	-2.70512 (0.00)*	-1.65354	-7.4960	Stationary
SCE	-4.41015 (0.00)*	-1.41006	-4.5820	Stationary

Source: Computer Output using E-view 10.0.

Note: The optimal lag for LLC test is selected based on the Schwarz Info Criteria (SIC), p-values are in parentheses where (*) and (**) denote significance at 1% and 5% respectively.

Table 2 depicts the Kao's co-integration test result. The p-value of the t-statistics is significant at 5% level of significance for only human capital efficiency, which is the rejection of the null hypothesis of no co-integration for return on assets and human capital efficiency. Put differently, return on assets is related in long run only with human capital efficiency.

Table 2: Kao Residual Co- integration Test

Models Estimated	Argumented Dickey-Fuller	
	t-Statistic	Prob.
ROA →HCE + CEE + SCE	-2.615063	0.0045

Source: Computer output data using E-views 10.0

Notes: The ADF is the residual-based ADF statistic. The null hypothesis is no co-integration. (*) and (**) indicate that the estimated parameters are significant at the 1% and 5% level respectively

The pooled OLS, fixed and random effect were the estimation approaches used. The fixed and random effect estimations, period fixed and random effect specification were performed. The result of the panel OLS estimations for the model is detailed in Table 3. The hausman test suggests the random effect estimation is preferred to fixed effect due to insignificant p-value of the Chi-square. The result reveals that it is only capital employed efficiency that has a positive but insignificant relationship with return on assets, while human capital efficiency and structural capital efficiency have negative significant relationship with return on assets of agricultural firms quoted on the Nigerian Stock Exchange. The coefficient of the constant 0.632488 indicates that if corporate human capital expressed by human capital efficiency, capital employed efficiency and structural capital efficiency is held constant, agricultural firms' return on assets would be 63.25%. A unit increase in capital employed efficiency would result in a corresponding increase in return on assets by 57.94%. On the other hand, return on assets would depreciate by 71.55% and 71.85% following a percentage rise in human capital efficiency and structural capital efficiency respectively. The adjusted R-square value of 0.307858 shows that the explanatory variables jointly accounted for 30.79% variations in return on assets of agricultural firms within the period studied. The F-statistic which determine the overall significance joint effect of the independent variables shows that corporate human capital significantly explained the variations in return on assets as the p-value (0.00) is significant at 5% level. The Durbin Watson statistic (1.8) which is the traditional test of autocorrelation in a model is within the acceptable range of that the variables in the model are not serially correlated.

Table 3: Panel OLS of Return on Assets and Corporate Human Capital

Variables	Pooled OLS		Fixed Effect		Random Effect	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
C	0.650426	0.0309	0.564041	0.0743	0.632488	0.0422
HCE	-0.715380	0.0000	-0.714014	0.0001	-0.715460	0.0000
CEE	0.513707	0.3559	0.822027	0.1602	0.579384	0.2951
SCE	-0.718118	0.0000	-0.717642	0.0000	-0.718472	0.0000
R-squared	0.336167		0.487837		0.343051	
Adjusted R-squared	0.300604		0.328497		0.307858	
S.E. of regression	1.217196		1.192677		1.184815	
Sum squared resid	82.96764		64.01154		78.61198	
Log likelihood	-94.85950		-87.07788			
F-statistic	9.452853		3.061615		9.747525	
Prob(F-statistic)	0.000038		0.002208		0.000028	
Durbin-Watson stat	1.822121		1.802825		1.818648	
Hausman Specification Test						

	Chi-Sq. Statistic	2.264083	
	P-value	0.519400	

Source: Computer output data using E-views 10.0

Note: Periods included: 12, Cross-sections included: 5, Total Number of Observations: 60

To examine the effect of corporate human capital on financial performance of agricultural firms quoted on the Nigeria Stock Exchange this study applied the granger causality test. The essence of choosing the granger causality over ordinary least square regression is based on the fact that it takes into consideration the dynamic nature of variables. The lag length selected was one (1) on the premises that the data applied were gotten financial statement of firms which are on yearly/annual bases. The result in Table 4 reveals that human capital efficiency and structural capital efficiency have significant effect on return on assets of agricultural firms quoted on the Nigerian Stock Exchange. This is on the argument that causality flows from human capital efficiency and structural capital efficiency to return on assets at 5% level of significance. There was no effect of capital employed efficiency on return on assets of agricultural firms as no evidence of causality from either direction.

Table 4: Return on Assets and Corporate Human Capital

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
HCE does not Granger Cause ROA ROA does not Granger Cause HCE	55	26.6392 0.06759	0.0000 0.7959	Causality No Causality
CEE does not Granger Cause ROA ROA does not Granger Cause CEE	55	3.31685 0.02671	0.0743 0.8708	No Causality No Causality
SCE does not Granger Cause ROA ROA does not Granger Cause SCE	55	18.4439 0.51676	0.0000 0.4754	Causality No Causality

Source: Computer output data using E-views 10.0

The Kao co-integration in Table 2 reveals the presence of a long run relationship only between human capital efficiency and return on assets of agricultural firms quoted on the Nigeria Stock Exchange. The panel OLS result in Table 3 shows that human capital efficiency and structural capital efficiency have significant negative relationship with return on assets of agricultural firms. This negates the findings of Rahim, Atan and Kamaluddin (2017), Perera and Thrikawala (2012) and Farrukha and Joiyaa (2018). However, it disagrees with the result of Anyanwu, Ezu, Osadume and Ananwude (2017) on the negative relationship between human capital efficiency and return on assets of oil and gas firms in Nigeria. From the granger causality test in Table 4, human capital efficiency and structural capital efficiency have significant effect on return on assets of agricultural firms. These results in an affirmation of the earlier result of Anyanwu, Ezu, Osadume and Ananwude (2017) on the significant effect of corporate human capital on financial performance. In summary, based on the granger causality test, corporate human capital exerts significant influence on financial performance of firms.

V. CONCLUSION AND RECOMMENDATIONS

The effect on corporate human capital and performance cannot be ignored as it has received considerable attention by scholars. This study established the effect of corporate human capital on financial performance of agricultural firms quoted on the Nigeria Stock Exchange (NSE) from 2007 to 2020. Data analysis with the aid of granger causality technique amidst peculiarity of our business environment, we envisioned within the period reviewed, the significant effect of human capital variables on return on assets of agricultural firms. In view of the findings of this study, agricultural firms should improve their human capacity development (workforce be up to date on ever changing technology) to enhance productivity. This is based on the significant effect of human capital efficiency on return on assets.

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