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Human Capital Efficiency and Performance of Commercial Banks Listed on the Nairobi Securities Exchange, Kenya

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Abstract	**Original Research Article**

Modern businesses are characterized by innovation, technological advancement, skills and knowledge management. The success of a firm is hinged on continual innovation, rely on new technologies and leverage on skills and knowledge development for the employees rather than physical assets such as plant or machinery to improve performance. Human Capital is therefore the cornerstone of the growth of firms and the economy at large. Thus, knowledge has become the new frontier in corporate management because, value can be generated through intangible assets not often reflected in the financial statements. Human Capital is an integral intangible asset in any organization. The use of the Value Added Intellectual Coefficient (VAIC^{TM}) model has been widely used to measure the contribution of intangible assets on the performance of firms. Consequently, understanding Human Capital Efficiency is an integral part of firm performance. The banking sector in Kenya is highly competitive, with each player striving to achieve high profitability. Yet, to succeed in such an environment, creativity, innovation, skills and efficiency is imperative. This study examined the influence of Human Capital Efficiency (HCE) on performance of listed commercial banks listed on the Nairobi securities exchange for the period 2013 to 2022 with specific emphasis on the VAIC^{TM} model. The Linear Regression Model was adopted. The results show that there is no significant relationship between ROA and Human Capital Efficiency, *P = 0.071> 0.005* with R- Square of 27.5% implying that the variability in ROA in the banking sector is least determined by the listed predictor variables. This result is also supported by the ANOVA results, *P = 0.071> 0.005, F=1.993.* Further, the results also showed that there is a significant relationship between ROE and Human Capital efficiency *P = 0.000<0.005* with R- Square of 57.3% implying that the variability in ROE in the banking sector is determined by the listed predictor variables while 42.7% is explained by other factors. This result is further supported by the ANOVA results from the analysis, *P = 0.000< 0.005, F=7. 047.*Therefore, the study recommends that Commercial banks should pay more consideration to Human Capital Efficiency, Capacity development, mentoring, management and motivation. Banks should for instance consider to offer staff competitive salaries and other benefits commensurate with their commitment and also, create opportunities for staff promotion and career advancement. At the same time, commercial banks need to develop training programs to improve staff qualifications, and invest in facilities, equipment and technologies that provide conducive working conditions that enable the employees to improve productivity and contribute to better and improved performance.
Keywords: *Banking Efficiency, Return on Assets, Return on Equity, Commercial Banks, Human Capital, Efficiency.*

1.0 INTRODUCTION

The world economies today, are fast becoming knowledge-based economies through innovations and technological advancement. Knowledge has become the new frontier in corporate management because value can be generated through intangible assets not often reflected in the financial statements. Progressive and forward looking firms, despite having huge financial resources, physical and infrastructural investments, can only realise better and improved performance and quality of goods and services if they have a high calibre human capital in order to have a competitive edge.

Performance, depicted by high dividend pay-out is determined by the firm's long-term profitability (Parvutoiu, Popescu & Grigoras, 2010). For this to be realised, Human capital plays a critical role. Firms should therefore devise strategies for profit optimization through efficient resource utilization; physical, financial and human, for better performance. A suitable

combination of this resources leads to increased productivity. Thus, human capital plays an important role in productivity improvement, efficiency and firm strategy implementation (Yusuf, 2013). This is because it has the power of initiative, expertise and administration, and determines the success of the firm irrespective of the amount of investment in physical and financial assets.

Knowledge-based resources are the main catalysts for businesses growth and sustaining competitive advantage in a dynamic business environment (Ting and Lean, 2009). To succeed in such an environment, creativity, innovation and skills management is imperative for business success. Although these intangibles relate strictly with intellectual capital that is difficult to measure, they are critical in the successful management of modern corporate entities (Firer & Williams, 2003). It is apparent that most business enterprises still choose to invest more in physical assets rather than intangible human capital sills to drive their performance and profitability.

Human capital encompasses many components. However, it primarily concerns the quality of the labour force of the organization. There are three dimensions of the concept of human capital. The first dimension is the investment perspective by Schultz (1961), who opines that human capital is the result of an investment such that the value of human capital is invested to enhance physical strength and personal intelligence and to gain knowledge and skills. The second view, is the partial output conjecture advanced by Weijie and Zhao (2001). This perspective considers human capital as the knowledge, skills, experience, relevant working capacity and technical innovation of managers.

Finally, the third perspective is the overall output view fronted by Wang *et al.*, (2005), where they argue that human capital as the total value of personal physical strength, knowledge, intelligence, and skills used to create products and services. This view describes human capital as the working capacity of a person. According to Micah *et al.*, (2012), human capital and resources are the talents, skills, energy, and knowledge, which can be applied to produce goods or to provide services. Further, Baron (2011), indicates that human resources include knowledge, skills, development ability, and creativity possessed by the employees of an organization. Shih *et al.*, (2010) argues that human capital is not tradeable and is not possessed by an organization but it is the result of employee knowledge and professional skills.

According to Ting and Lean (2009), human capital is the know-how and previous experience, teamwork, creativity, employee flexibility, ability to tolerate ambiguity, motivation, satisfaction, academic competency, loyalty, training, and formal education. Chen *et al.*, (2004) indicate that that value cannot be created without human capital and hence, is an intangible asset that creates future economic value and can be useful in assessing efficiency and predicting future performance of the firm.

2.0 OBJECTIVE

To determine the effect of Human Capital Efficiency on Performance of Commercial Banks Listed on the Nairobi Securities Exchange, Kenya.

2.1 Specific Objectives
1. To evaluate the effect of Human Capital Efficiency on Performance of Commercial Banks in Kenya measured by Return on Assets
2. To evaluate the effect of Human Capital Efficiency on Performance of Commercial Banks in Kenya measured by Return on Equity

2.2 Hypothesis Development

Based on empirical review, and grounded on the results of various studies in literature particularly, Yusuf (2013), Smriti and Das (2018), Buallay (2017), Parham & Heling (2015) and others, the following hypothesis is developed:

H_{01}: *Human capital efficiency has no significant effect on the performance of the commercial banks in Kenya measured by return on assets.*

H_{02}: *Human capital efficiency has no significant effect on the performance of the commercial banks in Kenya measured by return on equity.*

3.0 Literature and Empirical Review

Extant literature provides that there is a positive relationship between human capital efficiency and firm performance (Ghosh & Mondal, 2009; Goh, 2005; Ting & Lean, 2009). Oppong *et al.*, (2019) examined data on 33 insurance firms in Ghana from 2008 to 2016 to measure intellectual capital and the effect of its components on firm performance. The results showed that human capital efficiency has a significant effect on the productivity of insurance firms.

Smriti and Das (2018) examined the impact of intellectual capital on financial performance for seven hundred and ten (710) Indian companies from 2001 to 2016. The results indicated that Human Capital Efficiency and structural capital efficiency are equally important contributors to performance of firms. Further, human capital efficiency was found to have a major impact on firm productivity.

Hoang *et al.*, (2018) conducted a survey of 319 ICT firms in Vietnam. The survey aimed at measuring the effect of intellectual capital on firm performance. The specific focus of the survey was on human capital, social capital, organizational capital using exploratory factor analysis, confirmatory factor analysis, and moderating analysis. The results showed that human capital and social capital had a strong and significant relationship to firm performance.

Buallay (2017) examined the relationship between the three components of intellectual capital; human capital efficiency, structural capital efficiency, and capital employed efficiency and three indicators as proxies of firm performance; return on assets, the return on equity, and the Tobin's Q for 171 firms listed on the Saudi stock exchange from 2012 to 2014. The results showed that human capital efficiency had a significant and positive relationship with return on equity. Likewise, Rahim *et al*., (2017) examined 55 Malaysian technology firms in the year 2009. The results showed that human capital efficiency had a significant and positive relationship with firm performance.

According to Kwarbai and Akinpelu (2016), in their multiple linear regression models, analysed the effect of human capital efficiency on firm performance for the industrial goods companies listed on the Nigerian Stock Exchange between 2009 to 2014. The results showed that human capital efficiency had a positive and significant relationship with ROA and earnings per share (EPS). Further, the results showed that the lagged human capital efficiency had a negative relationship with growth in the number of employees.

In as study carried out on 33 Dutch production firms from 2007 to 2012 by Parham and Heling (2015), the aim was to measure the effect of human capital efficiency on firm performance. The results indicated the existence of a positive relationship between human capital efficiency with firm performance proxied by return on assets, return on equity and employee productivity.

Further, Yusuf (2013) analysed data of 14 banks on the Nigerian Stock Exchange over a five-year period. The results showed that there is no significant relationship between human capital efficiency on the banks' return on equity. Clarke *et al*., (2011) carried out a survey on the impact of human capital efficiency on firm performance for 2,161 firms listed on the Australian stock exchange between 2003 and 2008. The results indicated that human capital efficiency had a significant relationship with firm performance.

Phusavat *et al*., (2011) studied the relationship between human capital efficiency on firm performance measured by return on assets, return on equity, revenue growth and employee productivity for eleven (11) manufacturing firms in Thailand for the period 2006 to 2009. The results of this study showed that human capital efficiency had a significant relationship with employee productivity. According to Hsu and Wang (2010) who studied the effect of human capital efficiency, relational capital efficiency, and structural capital efficiency on the performance of 242 high-technology firms from 2001 to 2008, the results showed that structural capital efficiency had a strong and significant relationship with firm performance.

Further, the findings showed that human capital efficiency and relational capital efficiency had no significant effect on firm performance. In a study by Iwamoto and Suzuki (2019), the findings indicated that human capital is an important determinant of a firm's performance. According to Vithana *et al*., (2019) firms have become progressively intent in the role of human capital and hence, the disclosure of human resources has become more essential.

4.0 METHODOLOGY
4.1 The VAIC™ Model
Human Capital Efficiency is a component of the Value Added Intellectual Coefficient (VAIC™), a model (Pulic, 1998, 2000) for measuring intellectual capital (IC). The model considers the efficiency of value creation for a firm's tangible and intangible assets and categorises intellectual capital into customer capital and structural capital.

Further, Nazari *et al*., (2007) considered that, the VAIC™ model consists of three-dimensional elements: human capital efficiency, structural capital efficiency and capital employed efficiency. Human capital efficiency as a key component of the VAIC model, is defined as employees' skills, general knowledge, innovation, and ability (Bontis *et al*., 2000). Human capital is a strategic resource, which supports success and is necessary since employees' knowledge and skills are essential in the context of a complex and constantly changing operating business environment (Subramaniam & Youndt, 2005). Therefore, Human capital efficiency assesses the knowledge and skills of individuals, and that knowledge provides individuals with increased cognitive ability, leading them to be more efficient. According to Rahim *et al*., (2017), the VAIC™ model was designed to enable management and other stakeholders to effectively monitor and evaluate the efficiency of their investment in IC as it relates to value creation using accounting-based values.

The model was thus developed to enable managers, shareholders, and other stakeholders to monitor and evaluate the effectiveness of a company's total resources and each of the key resource components. The model offers new insight into how effectively the value creation process at companies is measured and monitored using accounting-based metrics.

The VAIC™ model has thus been identified by several scholars as an authentic model for measuring IC, since it derives its data from audited financial statement of firms, making it a reliable and consistent model. A number of researchers, (Ocheni, (2018), Ogbodo *et al*., (2017), Anyanwu, *et al*., (2017), Ozkan *et al*., (2016), Inyada (2018) and Khan (2018) have used this model in their works and have provided evidence supporting the practicality of the VAIC™ model.

4.1.1 VAIC$_{TM}$ Model Specification

The paper adopts the VAIC$_{TM}$ model approach to measure human capital efficiency (HCE) as the marginal contribution of each unit of human capital to value added. The steps that follow highlight the model development starting with the Human Capital Efficiency.

Human Capital (HC) relates to the overall employees' compensation and all expenses that is related to their training and development. Structural Capital (SC) is the result of Human Capital's past performance (organization, licenses, patents, image, standards, and relationship with customers), and it is calculated as:

$$SC = VA - HC\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

Where; HC (Human Capital) = overall employees' compensations and all expenses that are related to their training and development. Human Capital Efficiency (HCE) is an indicator which shows how much VA is created on each monetary unit invested in HC.

$$HCEi = \frac{VAi}{HCi}\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2$$

Where; VA_i is the value added and HC_i is the human capital; the expenditure on employees in form of training and development costs and other outlays.

Value added (VA) refers to the newly created value, obtained as the difference between inputs and outputs of the operating activities. OUTPUT is the total income from all products and services sold during the particular fiscal year while INPUT is the total costs and expenses incurred by the firm during that particular fiscal year (excluding labour expenses, which are employees' compensation and all expenses that are related to their training and development.

For purposes of this study, output is used to refer to the total revenue during a fiscal year for each bank, while input is the total costs and expenses excluding labor expenses, which are employees' compensations and all expenses that are related to their training and development. In this analysis, labor expenses are considered an investment and not cost.

$$VA = OUTPUT - INPUT\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3$$

Structural Capital Efficiency (SCE) is the indicator that shows the share of SC in value creation by a firm. It is the structural capital per unit of value added.

$$SCE = SC/VA\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4$$

Intellectual Capital Efficiency (ICE) is the indicator that shows how efficiently IC has created value. It is obtained as the sum of human capital efficiency and structural capital efficiency.

$$ICE = HCE + SCE\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 5$$

Capital Employed Efficiency (CEE) is the indicator that shows how much VA is created on each monetary unit invested in CE. It is obtained as the ratio of value added per unit of capital employed.

$$CEE = VA/CE\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 6$$

Where, CE (Capital Employed), refers to both Physical and Financial assets owned by the firm, the commercial banks in Kenya.

Finally, Value Added Intellectual Coefficient (VAIC^{TM}) indicates the value creation efficiency of all resources (sum of the previous indicators). It expresses the intellectual ability of a firm, a region or a national economy as a whole.

$$VAIC^{TM} = SCE + ICE + CEE\ldots\ldots\ldots\ldots\ldots\ldots\ldots 7$$

4.2 Regression Model and Variables

From past research, various measurement techniques, such as return on capital employed, net profit after tax and total shareholder return (Khan & Johl, 2019), refined economic value added (Soukhakian & Khodakarami, 2019), and stock returns (Jokar & Daneshi, 2018) among others have been used to measure performance.

This study adopted ROA and ROE as dependent variables to measure financial performance as used in Jordão & Novas, (2017) and Smriti & Das, (2018) among other studies. ROA measures how profitable a company is relative to its total assets. ROE denotes the profit available for ordinary equity holders and is calculated by dividing net profit by equity. The independent variables used were HCE, VAIC, SIZE and their lagged values and also the lagged values of ROA and ROE. The following regression models are therefore specified;

Model 1:
$$ROAit = \beta0 + \beta1ROAit\text{-}1 + \beta2HCEit\text{-}1 + \beta3HCEit + \beta4SIZEit + \beta5SIZEit\text{-}1 + \beta6VAICit + \beta7VAICit\text{-}1 + \beta8ROEit\text{-}1 + \varepsilon it\ldots.8$$

Model 2:
$$ROEit = \beta0 + \beta1ROEit\text{-}1 + \beta2HCE\ it\text{-}1 + \beta3HCEit + \beta4SIZEit + \beta5SIZEit\text{-}1 + \beta6VAICit + \beta7VAICit\text{-}1 + \beta8ROEit\text{-}1 + \varepsilon it\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots9$$

Where:
ROA$_{it}$ = Return on assets, an indicator of the profitability of individual banks. ROA is measured as Net profit before tax divided by Total Assets.

ROE$_{it}$ = Return on Equity, an indicator of the profitability of individual banks, measured as the ratio of Net Income to Shareholders' Equity

SIZE$_{it}$ = Bank Size measured as the natural logarithm of total assets of the bank

HCE$_{it}$ = Human Capital Efficiency, an indicator of human capital performance measured as the value added

to investment in human capital in form of training costs and other employee outlays of individual banks.

$VAIC_{it}$ = value added intellectual coefficient computed by adding the three major components of intellectual capital: Human capital efficiency (HCE), StructuralCapital Efficiency (SCE) and Capital Employed Efficiency (CEE).
$ROA_{it-1}, VAIC_{it-1}, ROE_{it-1}, SIZE_{it-1}, HCE_{it-1}$ = Are Lagged variables

4.3 Sample Specification
This study examined the influence of Human Capital Efficiency (HCE) on performance of commercial banks listed on the Nairobi securities exchange for the period 2013 to 2022 with specific emphasis on the

$VAIC^{TM}$ model. The Linear regression model is used. All the Commercial banks listed whose data met the requirements of the study were included.

5.0 RESULTS AND DISCUSSIONS
Model 1: Human Capital Efficiency on ROA
The summarised regression model on the relationship between ROA and the predictor variables is shown in the table below. The results show that there is no significant relationship between ROA and Human Capital efficiency, *P = 0.071> 0.005* with R- Square of 27.5% implying that the variability in ROA in the banking sector is least determined by the listed predictor variables. This result is further supported by the ANOVA results from the analysis, *P = 0.071> 0.005, F=1.993.*

Table 1: Regression Model Summary

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.525[a]	.275	.137	.05385	.275	1.993	8	42	.071
a. Predictors: (Constant), VAICt_1, ROAt_1, ROEt_1, SIZE, HCE, SIZEt_1, HCEt_1, VAIC									

This is further supported by the ANOVA statistics as shown below.

Table 2: ANOVA Results

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.046	8	.006	1.993	.071[b]
	Residual	.122	42	.003		
	Total	.168	50			
a. Dependent Variable: ROA						
b. Predictors: (Constant), $VAIC_{t-1}$, ROAt_1, ROE_{t-1}, SIZE, HCE, $SIZE_{t-1}$, HCE_{t-1}, VAIC						

From the coefficients of the regression model, all the predictor variables do not have a significant influence on ROA, except for previous years Value Added Intellectual Capital Coefficient, $VAIC_{t-1}$ which is highly significant at *P = 0.003<0.005*. However, the results indicate that bank size in the current year, Human Capital efficiency in the current year and Value Added intellectual Capital in the previous year reduced profits in the current year.

Similarly, VAIC, HCE_{t-1}, ROA_{t-1}, ROE_{t-1}, and $SIZE_{t-1}$ increased profit in the current year. This finding is consistent with Ngoc Phu Tran & Duc Hong (2020)

who found that HCE, HCE_{t-1} and ROA_{t-1} have an impact on ROA using the GMM model. Particularly, they find that Previous years ROA increased the current years' profit.

This indicates that there is a strong link between past performance and current performance of the bank. From the results of this study, there is therefore a strong but not significant relationship between Human Capital efficiency and performance measured by ROA, in which case we accept the *H01; Human capital efficiency has no significant effect on the performance of the commercial banks in Kenya measured by return on assets(ROA).*

Table 3: Regression Coefficients - ROA

Coefficients[a]											
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics		
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF	
1	(Constant)	.039	.042		.927	.359	-.046	.124			
	SIZE	-.003	.003	-.181	-.855	.397	-.009	.004	.386	2.593	
	VAIC	.013	.007	.667	1.820	.076	-.001	.028	.129	7.770	
	HCE	-.003	.010	-.111	-.301	.765	-.022	.017	.127	7.857	
	HCEt_1	.012	.010	.457	1.255	.216	-.007	.031	.130	7.686	

ROAt_1	.043	.139	.043	.307	.761	-.237	.323	.896	1.116
ROEt_1	.131	.099	.193	1.327	.192	-.068	.330	.816	1.225
SIZEt_1	.001	.003	.100	.474	.638	-.005	.008	.387	2.587
VAICt_1	-.023	.007	-1.148	-3.169	.003	-.038	-.008	.132	7.604
a. Dependent Variable: ROA									

Model 2: Human Capital Efficiency on ROE

The summarised regression model on the relationship between ROE and the predictor variables is shown in the table below. The results show that there is a significant relationship between ROE and Human Capital efficiency $P = 0.000 < 0.005$ with R-Square of 57.3% implying that the variability in ROE in the banking sector is determined by the listed predictor variable while 42.7% is explained by other factors.

Table 4: Regression Model Summary - ROE

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.757[a]	.573	.492	.06092	.573	7.047	8	42	.000
a. Predictors: (Constant), VAICt_1, ROAt_1, ROEt_1, SIZE, HCE, SIZEt_1, HCEt_1, VAIC									

This finding is also supported by the ANOVA statistics, $P = 0.000 < 0.005$ and $F = 7.047$ as indicated in Table 5.

Table 5: ANOVA Results - ROE

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.209	8	.026	7.047	.000[b]
	Residual	.156	42	.004		
	Total	.365	50			
a. Dependent Variable: ROE						
b. Predictors: (Constant), VAICt_1, ROAt_1, ROEt_1, SIZE, HCE, SIZEt_1, HCEt_1, VAIC						

Further, the coefficients of the predictor variables are as shown in Table 6 below. The results indicate that the bank size, both current year and previous year is highly significant, $P = 0.000 < 0.005$ in influencing the ROE. However, while the current years' bank size increases ROE, the previous years' bank size reduces ROE.

Similarly, the previous period HCE, ROA, ROE and VAIC are highly significant, $P = 0.000 < 0.005$, in explaining the current years' ROE of banks. Specifically, ROE_{t-1}, HCE, and HCE_{t-1} have a positive and significant impact, $P = 0.000 < 0.005$, on ROE. Thus, the return on equity in previous years and human capital efficiency in the current year increase ROE in the current year. However, current years' VAIC, human capital efficiency and bank size in previous years reduces ROE in the current year.

From this findings, we reject the null hypothesis, H_{02}: *Human capital efficiency has no significant effect on the performance of the commercial banks in Kenya measured by return on equity.*

Table 6: Regression Coefficients - ROE

Coefficients[a]										
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	.114	.048		2.406	.021	.018	.210		
	SIZE	.013	.003	.629	3.873	.000	.006	.020	.386	2.593
	VAIC	-.010	.008	-.334	-1.187	.242	-.027	.007	.129	7.770
	HCE	.023	.011	.588	2.079	.044	.001	.045	.127	7.857
	HCEt_1	-.043	.011	-1.120	-4.007	.000	-.065	-.021	.130	7.686
	ROAt_1	.565	.157	.383	3.597	.001	.248	.881	.896	1.116
	ROEt_1	.429	.112	.429	3.843	.000	.204	.654	.816	1.225
	SIZEt_1	-.015	.003	-.689	-4.248	.000	-.021	-.008	.387	2.587
	VAICt_1	.029	.008	.960	3.454	.001	.012	.045	.132	7.604
a. Dependent Variable: ROE										

From the correlation results in Table 7, ROA has a positive relationship with only, ROA$_{t-1}$, ROE$_{t-1}$ and Negative relationship with all Human Capital Efficiency Variables implying that the variables move in the opposite direction, hence an inverse relationship, particularly SIZE, VAIC, HCE, HCE$_{t-1}$, SIZE$_{t-1}$ and VAIC$_{t-1}$. The variables move in the opposite direction, such that an increase in any of this variables leads to a decrease in ROA.

Table 7: Correlation Statistics - ROA

Correlations										
		ROA	SIZE	VAIC	HCE	HCEt_1	ROAt_1	ROEt_1	SIZEt_1	VAICt_1
Pearson Correlation	ROA	1.000	-.127	-.030	-.023	-.158	.023	.132	-.110	-.284
	SIZE	-.127	1.000	.445	.393	.286	-.115	-.057	.730	.337
	VAIC	-.030	.445	1.000	.906	.745	.004	.032	.406	.787
	HCE	-.023	.393	.906	1.000	.797	-.004	.102	.362	.753
	HCEt_1	-.158	.286	.745	.797	1.000	-.023	.156	.393	.906
	ROAt_1	.023	-.115	.004	-.004	-.023	1.000	-.281	-.127	-.030
	ROEt_1	.132	-.057	.032	.102	.156	-.281	1.000	.144	.135
	SIZEt_1	-.110	.730	.406	.362	.393	-.127	.144	1.000	.445
	VAICt_1	-.284	.337	.787	.753	.906	-.030	.135	.445	1.000

From the correlation results in Table 8, ROE has a positive relationship with Human Capital Efficiency variables for the current year and negative for the previous year. Particularly, SIZE, VAIC, HCE, ROA$_{t-1}$, ROE$_{t-1}$ and VAIC$_{t-1}$, imply that the variables move in the same direction, such that an increase in any of this variables leads to an increase in ROE. However, previous years HCE and bank size have an inverse relationship implying that an increase may lead to reduction in ROE.

Table 8: Correlation Statistics - ROE

Correlations										
		ROE	SIZE	VAIC	HCE	HCEt_1	ROAt_1	ROEt_1	SIZEt_1	VAICt_1
Pearson Correlation	ROE	1.000	.144	.135	.156	-.063	.270	.190	-.153	.077
	SIZE	.144	1.000	.445	.393	.286	-.115	-.057	.730	.337
	VAIC	.135	.445	1.000	.906	.745	.004	.032	.406	.787
	HCE	.156	.393	.906	1.000	.797	-.004	.102	.362	.753
	HCEt_1	-.063	.286	.745	.797	1.000	-.023	.156	.393	.906
	ROAt_1	.270	-.115	.004	-.004	-.023	1.000	-.281	-.127	-.030
	ROEt_1	.190	-.057	.032	.102	.156	-.281	1.000	.144	.135
	SIZEt_1	-.153	.730	.406	.362	.393	-.127	.144	1.000	.445
	VAICt_1	.077	.337	.787	.753	.906	-.030	.135	.445	1.000

From the results, Humana Capital Efficiency has significant influence on Bank performance in Kenya. Therefore, increased in investment in employee competencies would lead to improved financial performance of the banks measured by particularly return on equity. While this is true, an insignificant relationship between human capital efficiency and firms' performance has also been found in previous studies, particularly Firer & Williams, (2003) and Puntillo, (2009).

6.0 FINDINGS AND CONCLUSION

The importance of human capital efficiency on the performance of commercial banks listed on the Nairobi Securities Exchange has not been widely researched. This paper therefore provides empirical evidence on the impact of human capital efficiency on ROA and ROE for Commercial Banks Listed on the NSE 2013 to 2022, using the Regression Model. The findings confirm the generally held view that human capital efficiency leads to better performance of a firm. Further, the findings also suggest the view that Human Capital Efficiency could be higher in the banking sector compared to other sectors as opined by Firer and Williams, (2003) and Kubo & Saka, (2002). Human Capital Efficiency has high and significant effect on bank performance as measured by ROE. The impact on ROA is insignificant. The results are also consistent with Ikapel, (2016) who found that HCE has a significant and positive relation with bank performance measured by Net Interest Margin (NIM) for some commercial banks listed on the Nairobi Securities Exchange, where HCE was found to be higher than structural Capital Efficiency (SCE). Thus, using the VAIC^{TM} model, the study results indicate that Human Capital efficiency affects the financial performance of banks in Kenya, which is in line with the findings from previous studies by Nimtrakoon, (2015); Oppong *et al*., (2019); Parham and Heling, (2015); Smriti and Das, (2018) and Tran and Vo, (2018).

6.1 Policy Implications and Recommendations

The empirical results of this study shows that human capital efficiency has an impact on the performance of commercial banks in Kenya. Therefore, Commercial banks should pay more consideration to Human Capital Efficiency development, management and motivation. Banks should for instance consider to offer staff competitive salaries and other benefits commensurate with their commitment and also create opportunities for staff promotion and career development.

At the same time, commercial banks need to develop training programs to improve staff qualifications, and invest in facilities and equipment that provide conducive working conditions that enable the employees to improve productivity and contribute to better and improved performance to reduce employee turnover.

The findings also indicate that commercial banks should also rethink the growth model and shift from mainly relying on capital investment to synthesizing and effectively using high-quality human capital with scientific, technological and creative competence to improve performance. High quality Human Capital leads to improved labor productivity, quality service, efficiency, competitiveness and sustainability and greater performance of the bank.

The findings of this study provides policymakers and bank managers with empirical evidence to understand human capital efficiency in the banking sector and its contribution to the performance of the sector in Kenya. Therefore, the Government, through the Central bank of Kenya and bank managers should develop policies and strategies to underscore the importance of human capital efficiency and management on the financial performance of commercial banks in Kenya.

6.3 Limitations

The limitation of this study was its focus on the impact of human capital efficiency on the performance of commercial firm profitability, measured by ROA and ROE, therefore, so for a more comprehensive analysis of the role of Human capital efficiency on bank performance, further research could extend to the other components of performance such Net Interest Income, return on Average Assets (ROAA), Return on Average Equity (ROAE). A comparative study can also be undertaken with other sectors.

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