The global banking sector continues to grapple with increasing nonperforming loans, unprecedented growth in financial innovations and competition which have distorted interest income stream. In response, banks are now searching for innovative income generating avenues to as a survival strategy. The portfolio theory conjectures that income diversification reduces income volatility and improves profitability. However extant literature shows mixed results. It’s from this background the study sought to investigate the effect of income diversification on bank performance.

Using 310 annual observations drawn from 31 Kenyan commercial banks for the period 2008–2017, the study found that income diversification had a positive and significant effect on bank performance. Therefore, commercial banks are advised to consider diversifying in non-lending activities to better their financial performance. In view of this, the study has implications for bank regulators, scholars and practitioners.

**Keywords:** Income diversification, non-interest income, performance, Herfindahl-Hirschman Index

**INTRODUCTION**

Over the last two decades, the global banking sector has faced major challenges that have destabilized interest income. Studies show that the sector continues to grapple with rising non-performing loans, stringent regulations and unprecedented growth in financial technologies (Gololo, 2018; Dimitrios & Mike, 2016; Psillaki & Mamatzakis, 2017). In response, banks have
expanded into non-traditional activities such as stock brokerage and underwriting that generate noninterest income to cushion themselves against the deteriorating interest income and for survival (Ferrari et al., 2018; Mohamed & Bett, 2018; Ng’ang’a, 2019). Empirical studies show that noninterest income accounts for around 40 percent of banks total income (about 40% of banks total operating incomes (Kiweu, 2012; Stiroh, 2002; Busch & Kick, 2009; DeYoung & Rice, 2004). Previous studies have investigated the relationship between income diversification and bank performance though the findings are mixed. Some studies claim that income diversification improve performance (Jen Huang & Cheng 2006; Alhassan & Tetteh, 2017; Chiorazzo et al., 2008), reduces risk exposure (Saunders et al., 2016, Abedifar et al., 2014; Calmès & Théoret, 2015), lowers banks spread (Mujeri & Younus, 2009; Kannan et al., 2001) and increases bank market power (Ovi et al., 2014) and enhances firm productivity. On the contrary, there are studies claiming that income diversification reduces profitability besides exposing banks to income volatility (Berger et al., 2010; Mercieca et al., 2007; Delpachitra & Lester 2013; Chen et al., 2017; Lepetit et al., 2008). Surprisingly, a branch of studies suggests that income diversification has no effect on bank performance; therefore, banks should focus on financial intermediation (Hahm, 2008). A probable explanation for the inconsistent finding is contextual issues. Most of the previous studies were done in America, China, Europe and Asia that have relatively more advanced legal and financial institution thus fewer incentives to trigger and sustain diversification (Lepetit et al., 2008; Chiorazzo et al., 2008; Mercieca et al., 2007; Stiroh, 2002; DeYoung & Rice, 2004).

Against this background, this study seeks to contribute to the scanty literature on the effect of income diversification on performance in developing countries. Though the financial sector in developed economies is largely underdeveloped studies show that the sector has a significant influence on poverty alleviation (Abdin, 2016), education (Sun & Yannelis, 2016), entrepreneurship (Toms & Wright 2019) and agriculture (Anetor et al., 2016). The study will focus on the Kenyan banking sector which is considered as one of the most vibrant and innovative in Africa for pioneering in mobile money transfer (Kasekende & Nikolaidou, 2018; Muthinja & Chipeta, 2018). However, with the enactment of interest capping in 2016, the sector has seen an increased appetite for noninterest income. Olaka (2017) noted that interest capping
created a fertile ground for informal lending besides a noticeable decline in individual lending that is likely to crowd out credit to the private sector.

**LITERATURE REVIEW**

Bank diversification can take different forms. However, due to regulatory limits and the need to improve performance income diversification, specifically noninterest income, that has attracted a lot of attention from practitioners, scholars and regulators. Income diversification refers to increasing the share of the fee, net trading profits and other noninterest income within the net operating income of a bank (Gurbuz *et al.*, 2013). Besides, Ebrahim and Hasan (2008) view income diversification as the expansion into new income-earning financial services away from traditional intermediation services. In principle, income diversification is a shift from lending activities towards non-lending activities such as investment banking, trading and insurance (Busch & Kick, 2009). According to Mujeri and Younus (2009), income diversification entails advisory services, asset management services, and sale of insurance and mutual fund products, payment products, electronic bill payments and sale of credit cards.

Generally, income diversification generates non-interest income which is grouped into fee income and non-fee income Activities that generate fee income include loan processing, bill discounting, letters of credit and guarantee, account keeping, service and management (Lepetit *et al.*, 2008; DeYoung & Roland, 2001). While non-fee income arises from foreign exchange transactions, investment in government and corporate securities, rental premises owned by the bank and gains from the sale of premises (Rushdi & Tennant, 2003).

Both in practice and theory income diversification should improve firm performance. Markowitz (1952) modern portfolio theory postulates that a firm can reduce income volatility and improve overall financial performance by engaging in a range of income-generating activities. Arguing from this theoretical perspective, non-interest income and interest income are uncorrelated since they are earned from different activities; therefore, income diversification should compensate firms for any loss in mainstream revenue. However, empirical studies on the relationship between income diversification and bank performance continue to be a subject of extensive
debate among scholars. On one hand, a branch of studies claims that income diversification has a negative effect on performance by exposing the bank to income volatility. Lepetit et al., (2008) analyzed the relationship between bank income structure and risk. The study considered 734 European commercial and cooperative banks drawn from 14 European countries and panel data from 1996 - 2002. The study found that income diversification exposed banks to a higher level of risk and income volatilities. Conversely, trading income was favourable to bank risk. DeYoung and Rice (2004) examined income diversification and performance causality. The study considered a sample of 4,712 U.S. commercial banks and data from 1989-2001. The results showed that income diversification was associated with higher though unstable profits implying income diversification worsens risk-return tradeoff. On the other hand, some researchers claim income diversification improves bank performance and lessens risks. Sanya and Wolfe (2010) used a panel dataset of 226 listed banks across 11 emerging economies to examine the relationship between revenue diversification and financial performance. The study found a positive relationship between diversification and performance. Besides, the study noted that compared to other noninterest incomes, fee-based activities had a higher explanatory power. Elsa et al., (2006) examined the anatomy of bank diversification. They used a sample of 380 listed European banks and 1,917 observations for years 1996 - 2003. The study found that income diversification improved bank profitability. Baele et al., (2007) studied whether bank diversification has an effect on stock markets. The study used a data set of 255 banks, drawn from 17 European countries, from 1989 - 2004. The findings of this study revealed that diversification had a positive and significant effect on banks financial performance.

Following the inconclusive results as discussed above, DeYoung and Rice (2003) made several observations. First, interest income is earned through relationship-based activities with high switching costs compared to fee-based transactions which occasionally are one-off hence the benefits of diversification are short-term. Second, nonlending activities are likely to impact adversely on banks operating and financial leverage thus lessening diversification gains (DeYoung & Rice, 2003). While Lepetit et al., (2008) claim that through cross-subsidization and cross-selling the effect of income diversification might be invisible. Besides, some researchers argue that income diversification is likely to breed lazy banks (Kumhof & Tanner, 2005; Kumar
Unfortunately, none of this proposition has been validated empirically.

Coming from this background and considering the importance of the special nature of financial institutions in developing countries, in particular Africa, it is important to investigate the effect of income diversification on bank performance in developing countries. Extant literature shows that just as few studies have been done on income diversification in Africa, besides none examined the direct link between income diversification and bank performance (Senyo et al., 2015; Alhassan & Tetteh, 2017). The research hypothesis is shown below.

\[ H_0: \text{Income Diversification has no significant effect on performance} \]
\[ H_a: \text{Income Diversification has a significant effect on performance} \]

**RESEARCH DESIGN**

According to Zikmund et al., (2013) research design denotes methods and procedures for collecting and analyzing the needed information comprising of sampling methodologies, data collection techniques, data analysis, and cost schedules. This research is both longitudinal and explanatory. A longitudinal study uses continuous or repeated measures to follow specific individuals over an extended period of time (Caruana, 2017). In this study, the variables will be examined over the period between 2008 and 2017. Saunders et al., (2011) affirm that explanatory studies seek to establish a causal relationship between variables with the main emphasis being to study a problem in order to explain the relationship between variables.

**Study Population**

The study population comprised of 42 commercial banks and 1 mortgage finance company (CBK, 2016). The inclusion and exclusion criterion whether the bank operated between 2008 and 2017 and after data collection only 31 banks qualified for further analysis.
Measurement of Variables

The study had five variables namely; the dependent variable (firm performance), the independent variable (income diversification) and control variable (firm size, firm age, and lending strategy) as illustrated by a conceptual framework below. Financial performance was measured as return on assets, which is the ratio of a firm’s net earnings to total assets. ROA shows the extent to which a firm is utilizing its assets. A high ROA means that the firm is utilizing its assets efficiently and for value (Van Vu et al., 2018; Juma & Atheru, 2018; Eklof et al. 2018). ROA is computed as the ratio of net income/ profit to total assets. Banks’ operating income comprises of interest income generated from lending activities and non-interest income earned from nonlending activities. The standard measure of income diversification is the Herfindahl-Hirschman Index (Jouida, 2018; Olarewaju, 2018; Nepali, 2018; Batool & Jamil, 2019; Brahmana et al., 2018). The study adopted the Herfindahl-Hirschman Index (HHI) as the measure for income diversification. HHI is computed as follows;

\[
\text{HHI} = 1 - \left(\frac{\text{NII}}{\text{NOI}}\right)^2 + \left(\frac{\text{NONI}}{\text{NOI}}\right)^2
\]

Where;
- NII: Amount of net interest income
- NONII: Amount of non-interest income
- NOI: Net operating income

HHI varies between 0 and 1.00. HHI of 0.50 shows average income diversification while HHI closer to 1.00 represents the highest level of income diversification. As HHI increases the bank becomes more diversified. Hence the lower the value of HHI the more concentrated the firm is.

The study controlled for factors that are likely to affect the endogenous variable to rule out alternative explanations and enhance the predictive power of the exogenous variable and the mediator. Specifically, the control variable comprised of;

i) Firm age has an impact on financial performance. This variable was measured as the number of years since the incorporation of the firm. (Lei & Chen, 2019; Ilaboya and Ohiokha, 2016). Firm Age (FA) = Number of years since incorporation
ii) Firm size measured as the natural logarithm of total bank assets (Wan & Zhang, 2018; Pucheta-Martínez et al., 2019; Chiorazzo et al., 2008). Large banks have more resources and opportunities for diversification compared to smaller banks. Firm Size (FS) = Logarithm Total Assets

iii) Lending Strategy denoted as the ratio of total loans to total assets (Edirisuriya et al., 2015; Gurbuz et al., 2013; Buch et al., 2019). This variable controls for the effects of lending strategy on risk-adjusted bank performance

**Empirical model**

The study used panel data consisting of 31 banks for 10 years. The empirical model that was used to relate the relationship between income diversification and bank performance is shown below;

\[
FP_{it} = \beta_0 + \beta_1 \text{INDIV}_{it} + \beta_2 \text{FA}_{it} + \beta_3 \text{FS}_{it} + \beta_4 \text{LS}_{it} + \varepsilon_{it}
\]

Where; FP= Firm Performance; INDIV= Income Diversification; FA= Firm Age; FS= Firm Size; LS = Lending Strategy; \(\varepsilon_{it}\) = Error term

**Data collection and Analysis**

The study employed annual bank-level data from 2008 to 2017 for 42 banks out of the 31 banks were fully in operation over the period. The inclusion and exclusion criteria was based on whether data available and complete. The final sample consisted of 310 annual observations. Data was extracted from the individual banks and the Central Bank of Kenya annual supervisory reports. Data analyzed through descriptive and inferential statistics. Specifically, the data was summarized through mean and standard deviations. Correlation analysis was used to establish the nature and magnitude of the relationship between while regression analysis was used to test the research hypothesis. Before analysis, the data was log-transformed then several panel data diagnostic tests; unit root, heteroskedasticity, autocorrelation, and multicollinearity were done and they established that the data was suitable for regression analysis. The results of the Hausman test (Pr> Chi2= 0.000) supported the use of the fixed effect regression model.
RESULTS AND DISCUSSION

The results will be discussed in this part of the article. Table I illustrates the summary statistics for the research variables. Table II shows the results of pairwise correlation analysis while Table III shows the results of the random effect regression analysis.

Table I indicates that the average industry return on asset for the period 2008-2017 was 3%. Additionally, the table shows that the average bank age is 34 years and the mean bank size is Ksh 76.6 billion. Further, the table shows that the average income diversification was 0.40 which can be interpreted as an intermediate level of income diversification.

Table I: Summary Descriptive Statistics of Research Variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>Std. Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm Performance</td>
<td>310</td>
<td>0.03</td>
<td>0.00</td>
<td>0.10</td>
<td>0.018354</td>
</tr>
<tr>
<td>INDIV</td>
<td>310</td>
<td>0.40</td>
<td>0.00</td>
<td>0.51</td>
<td>0.0915641</td>
</tr>
<tr>
<td>Lending Strategy</td>
<td>310</td>
<td>0.57</td>
<td>0.02</td>
<td>0.86</td>
<td>0.1216674</td>
</tr>
<tr>
<td>Firm Size</td>
<td>310</td>
<td>766000000000</td>
<td>22890000000</td>
<td>556000000000000</td>
<td>96200000000</td>
</tr>
<tr>
<td>Firm Age</td>
<td>310</td>
<td>34.82</td>
<td>1.00</td>
<td>121.00</td>
<td>29.22061</td>
</tr>
</tbody>
</table>

Source: Author 2019

The results of the pairwise correlation are shown in Table II. The table illustrates that income diversification and performance is positive and significant (r=0.699, p<0.01). The correlation between firm age and firm performance and significant (r=0.294, p<0.01); same case to firm size and firm performance (r=0.372, p<0.01) as well as firm size and firm age (r=0.542 p<0.01). However, the correlation of the two control variables, firm size, and firm age, with process capital was positive though nonsignificant at 1% and 5%. Table II further revealed that the relationship between bank lending strategy and performance was negative and significant at 1% (r=-0.122, p<0.01)
Table II: Results of Correlation Analysis

<table>
<thead>
<tr>
<th></th>
<th>FP</th>
<th>INDIV</th>
<th>FA</th>
<th>FS</th>
<th>LS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm Performance (FP)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income Diversification (INDV)</td>
<td>.699**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm Age (FA)</td>
<td>.294**</td>
<td>.177**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm Size (FS)</td>
<td>.372**</td>
<td>.210**</td>
<td>.542**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Lending Strategy (LS)</td>
<td>-.122*</td>
<td>-0.104</td>
<td>-0.056</td>
<td>-0.032</td>
<td>1</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Source: Author 2019

Table III: Results of Regression Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Fixed Effect</th>
<th>Random Effect</th>
<th>GEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income Diversification</td>
<td>.322(15.70)**</td>
<td>.337(16.48)**</td>
<td>.336(16.63)**</td>
</tr>
<tr>
<td>Firm Age</td>
<td>-.392(2.78)</td>
<td>-.161(-0.24)</td>
<td>-.026(-0.38)</td>
</tr>
<tr>
<td>Firm Size</td>
<td>.147(1.74)</td>
<td>.112(2.38)**</td>
<td>.111(2.29)**</td>
</tr>
<tr>
<td>Lending Strategy</td>
<td>-1.35(-1.28)</td>
<td>.112(2.38)**</td>
<td>-.190(1.88)</td>
</tr>
<tr>
<td>__cons</td>
<td>-2(-3.86)**</td>
<td>-2.26(-7.16)**</td>
<td>-2.24(-6.93)**</td>
</tr>
</tbody>
</table>

| sigma_u                | 0.248        | 0.125         |
| sigma_e                | 0.213        | 0.212         |
| R-squared              | 0.4958       | 0.4751        |
| Number of Observations | 310          | 310           | 310 |

Source: Researcher, 2019

The study hypothesized that income diversification had no significant effect on performance. The fixed effect regression results as per Table III show that the relationship was positive and
statistically significant ($\beta = 0.332, \rho < 0.05$). Similar results were reported by the random effect model significant ($\beta = 0.337, \rho < 0.05$) and the Generalized Estimation Equation significant ($\beta = 0.336, \rho < 0.05$). Thus, the null hypothesis was rejected and the alternative hypothesis accepted. Empirically, a one percent change in income diversification led to a 32.2% change in bank performance. Similarly, firm size had a positive and significant effect on performance ($\beta = 0.147, \rho > 0.05$). Conversely, the findings indicated that firm age ($\beta = -0.392, \rho > 0.05$) and lending strategy ($\beta = -0.135, \rho > 0.05$) had an adverse effect on performance. The overall model predicts a 49.6% change in bank performance. These findings are supported by previous studies (Carroll & Stater, 2008; Elsas et al., 2006; Chiorazzo et al., 2008; Edirisuriya et al., 2015). Additionally, the findings are consistent with the propositions of the modern portfolio theory. The study, therefore, argues that by diversifying into nonlending activities banks will improve financial owing to efficient internal capital markets, economies of scale, cross-selling and cross-subsidization. Hence, in an era of interest capping, high competition from non-banking entities and unprecedented growth in financial innovation, bank managers should consider income diversification as a source of competitive advantage and long-term profitability.

CONCLUSION

The study developed a conceptual framework through an extensive literature review that also aided the formulation of research hypotheses. The focus was on income diversification and bank performance. The unit of analysis was commercial banks in Kenya. The study extracted data from annual financial data from the respective banks and the Central Bank of Kenya annual supervisory reports. The findings of this study revealed that income diversification improves firm performance. Nonetheless, the extent banks can engage in non-lending activities is usually limited under banking laws and regulations. Specifically, banks are restricted to activities that either complement or are incidental to lending. Therefore, the study argues that such limits the impact of income diversification on performance. The study recommends that regulatory authorities should relax such regulations to allow banks to engage in a wider scope of activities to exploit intellectual capital and ultimately improved performance. Alternatively, the regulator can impose diversification ceilings that are sufficient to cushion banks from interest income volatility. Due to unavailability of data, noninterest income was measured in aggregate form thus
prospective researcher can consider decomposing non-interest income into its constituent elements.

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