International Journal of Commerce and Management Research
ISSN: 2455-1627, Impact Factor: RJIF 5.22
www.managejournal.com
Volume 3; Issue 8; August 2017; Page No. 65-74

Financial ratio analysis as determinant of profitability in African banking industry

Abdullahi Ahmed, Dr. Peter Teru

Department of Accounting, Adamawa State University, Mubi Adamawa, Nigeria

Abstract
This study compels an in depth investigation on the determinants of profitability of the African banking industry. The data set is made up to 340 observations over a period of ten years ranging from 2004-2013 in respect of thirty four banks from nine different countries across African continent that satisfied the requirements of this research work. Data were obtained from the Bankscope database, Bloomberg database and companies annual report using the websites of the sampled banks. Ordinary linear regression analysis using SPSS software was used to estimate the coefficient of the variables. The major outcomes of the analysis shows that among the different financial ratios used for this research work only asset turnover ratio, bank size and total loan to total asset are not significant in determining the profitability of the African banks. The study found that price earnings, dividend yield, equity to total assets and debtors to total asset ratios are highly significant and they are good internal measures for determining the profitability of the African banks. This study suggested that the management of these banks should take a necessary action of ensuring collateral (security) are presented before giving out any loans to customers and they also ensured that such loans are repaid as it when due. The banks size should be increase for the banks to benefit from the advantages of economics of scale and the management should also ensured proper utilization of the banks' assets. Further study can be carried out by other researcher using external factors like macroeconomic variables such inflation, unemployment and gross domestic product (GDP).

Keywords: financial ratio, profitability, banking industry

Introduction
Banking sector in any country plays a significant role in influencing the economy through its contributions towards improving the stability and efficiency of allocating and utilizing of fund (Islam *et al.* 2014) [23]. Many researchers have studied the determinants of profitability using different measures but none has applied the combination of investment ratio, efficiency ratio, asset composition ratio, capital adequacy ratio and bank size at the same time to analyse profitability of the banking industry in Africa as a whole. This serves as a rationale for wanting to examine whether such ratios have any impact on the profitability of the banking industry in Africa as well as the performance of such banking industry as it relates to profit. Therefore, profitability in the banking sector is an important indicator of the stability and growth of such sector and the economy as whole (Al-Jafari & Alchami, 2014) [6].
Financial ratio analysis is a technique for determining the profitability of the firms or companies using its financial data (Annual Financial Statements) by the management or financial analyst (Vance, 2003) [32]. However, every firm is concerned with profitability as a key to its financial and economic sustainability and also for the welfare of investors and employees. As such, it is the role of the company's management to shows their profit before and after tax to the equity shareholders and other users who are concerned with company's financial statements in their annual financial report. Thus, financial ratio analysis helps banks in determining their profitability which entails improves their ability to generate revenue and minimizing cost.
The study will contribute to our understanding of whether financial ratios (investment ratio, efficiency ratio, capital adequacy ratio and asset composition ratio and bank size) have an impact in determining the profitability of the African banking sector. The study will help the investors in making their investment decision and on the other hand also help the student's further research. Therefore, for the purpose of this research work seven variables will be used. These include; Dividend Yield Ratio (DYR), Price Earnings Ratio (PER), Total Asset Turnover Ratio (TATR), Debt to Total Asset Ratio (DTAR), Equity to Total Asset Ratio (EQTAR), Total Loan to Total Asset Ratio (TLTAR) and Bank Size (nLog) as an independent variables. Whereas, the profitability as a dependent variable to be represented by Return on Asset Ratio (ROA) (Alexander *et al.* 2011) [9].

Background of the study
Since, eighteen century banks has being playing a significant role in promoting the economics activities of the African countries through sufficient provision of loan, means of deposit and also given room for investors to invest their wealth with the aim of generating income. Thus, financial deregulation has substantially transformed the economy of the African countries (Sufian, *et al.* 2012) [30]. This regulation policy has played a significant role in ensuring that only bank that has a minimum capital based will be considered as a listed licensed to operate in the country, therefore, for this reason the study is going to considered only those listed banks in Africa in order to examine their profitability using efficiency, investment, capital adequacy, asset composition and bank size.
This study has not been well addressed by the previous researchers because non of them have addressed the issue on the whole African banks. This gave us the rational to empirically used different ratios to determine the profitability of banks in Africa as a whole. Thus, this research work would enable the management of any business organisation in determining how to maximize their profitability using the

internal factors (financial ratios). Thus, firms can maximize their profitability through external source of funding and also creating a strong management team that will monitor the utilization of the company's assets.

The sample of thirty four out of one hundred and thirty four listed banks in Africa will randomly selected for this research work, a panel data will be used to run a regression in order to determine the impact relationship between the financial ratio analyses and the banks' profitability. Ratio analysis is one of the key determinants of the company's profit over a period by expressing one number in terms of another in order to know the exact relationship that exist between these two numbers. Consequently, a panel of thirty four banks for ten period is going to arrange in an excel sheet in order to obtain three hundred and forty observations for running the regression analysis, as well as the descriptive statistic.

Aims and objectives

The aim of this study is to find out whether financial ratio analysis has any significant impact on the profitability of African banking industry by examining the relationship between the dependent variable (profitability) and independent variables (financial ratios).

The first objective of this research is to examine whether asset composition ratio (total loans to total assets) is associated with the profitability in comparison to other banks in Africa. The Second objective is to examine whether capital adequacy ratio (equity capital to total assets) is associated with the profitability in comparison to other banks in Africa. The third one is to examine whether bank size (natural logarithm) is associated with the profitability in comparison to other banks in Africa. The forth objective is to examine whether some efficiency ratios (asset turnover and debtors to total asset) are associated with profitability in comparison to other banks in Africa and lastly, to examine whether some investment ratios (dividend yield and price earnings) are associated with the profitability in comparison to other banks in Africa.

It is expected that this research will contribute to the literature on financial ratio analysis of (Innocent, Mary & Mathew, 2013) [22], (Ayanda, Christopher & Mudashiru, 2013) [5], (Khandoker *et al.* 2013) [24], (Al-Jafar & Alchami, 2014) [6], (Qin & Pastory,2012) [28], (Francis, 2013) [20], (Adesina & Olurotimi, 2013) [3] and (Dietrich & Wanzenried, 2010) [15] by being one of the few studies to 'empirically' examine the relationship between different financial ratios and profitability of banks in the African banking industry.

Literature review

This study will review the academic literature on the determinants of profitability of the banking sectors and other companies where applicable. Thus, profitability means the ability to make a profit from the business activities carried out by an organisation or company over a given period (Francis, 2013) [20]. Profitability also can be seen as a measure of the growth and future performance of the firm. The primary goal of any business is to make a profit (Sufian *et al.* 2012) [30]. Thus, measuring of profitability in the banking sector can be made in different ways, using internal factors such as ratios or external factors such as macroeconomic variables. According to Qin & Pastory (2012) [28] profitability in banking sector can be measured by the banks' ability to retain capital, absorbs loan losses, supporting the growth of assets and ability to provide returns to their investors. For the purpose of this study profitability is represented by the return on asset and can be determined by using financial ratios which are, dividend yield, price earnings, asset turnover, debtors to total asset, equity to total asset, total loans to total asset and natural logarithms of total asset. Therefore, in the next section the researcher will review the literature on the determinants of profitability because our research question focused on whether financial ratio analysis has a significant impact in determining the profitability in the African banking industry.

This section reviews the literature on determinants of profitability of firms or companies. Different studies have been conducted in this area and have succeeded in finding different results depending upon the period and the countries under investigation by the researchers. For example, Francis (2013) [20] carried out a studied on determinants of commercial banks profitability in Sub-Saharan Africa, Chaudhuri (2008) [13] analysed the profitability ratios of HCL company which is one of the world leading global technology and IT enterprise in India, Al-Omar & Al-Mutairi (2008) [4] investigated the impact of bank-specific in Kuwait, Ayanda *et al.* (2013) [5] investigated the determinant of banks profitability in the developing economy taken Nigeria as case study, Adesina & Olurotimi (2013) [3] Determined the Banks' Profitability: Panel Evidence of Bank-Specific variables in Nigeria, Innocent *et al.*(2013) [22] uses financial ratios analysis to determine the profitability of the Nigerian Pharmaceutical companies, Dietrich & Wanzenried (2010) [15] investigated the determinants of bank profitability before and during the financial crisis in Switzerland and Sufian *et al.* (2012) [30] Determined the Bank Performance in the Developing Economy. Thus, some of the studies found that there was a significant impact on the profitability and those factors determining it, whereas other studies find that there is no significant relation whatsoever.

In any country, financial institutions play a crucial role in the development and promoting the economy (Ahmad *et al.* 2012) [8]. Therefore, bank as one of the financial institutions in Africa must be financially and economically sound in order to generates more revenue out of which a reasonable profit would be made that can be used for re-investment and financing activities, payment of dividends to company's preference shareholders, buying back of shares from the market and it can also be used for payment of taxes to the government.

Ayanda *et al.* (2013) [5] uses various parameters such financial ratios (example, asset turnover) and macroeconomics variables (example, inflation) to determine the profitability of the banking sector in developing countries using only First Bank Nigeria Plc as their case study. Even though they have data for three decades from 1980 to 2010, their recommendation will lead to bias because they did not use different banks for their research. But this study will empirically examine the relationship between the profitability and financial ratios using thirty four (34) banks across different countries in Africa. Bejaoui & Bouzgarrou (2014) examine the profitability of only sixteen commercial banks in Tunisia for the period of twelve years, but this research work would not rely on one country alone and fewer banks because it will consider many banks from different countries across Africa.

Egbe & Udofia (2014) [17] determine the profitability of the Nigerian commercial banks; they used total assets, total deposit and number of branches to be the major determinants of profitability. Therefore, using total deposit and the banks total

assets will not give a clear figure of a profit because deposit can be made and withdrawn at any time from the bank. They could have used some standard ratios or bank size in determining this profitability. Another limitation of their research was that, reliance on the unlisted banks because they used corporative banks which are very weak in terms of capital and management control. But our research work used potential ratios and banks size to determine the profitability of strong and listed commercial banks in Africa which have enough capital based and strong management team.

Khandoker *et al.* (2013) [24], Al-Jafar & Alchami (2014) [6], Dietrich & Wanzenried (2010) [15], Delen, Kuzey & Uyar (2013) [16] and Chaudhuri (2008) [13] uses various techniques to determine profitability in either firms or companies but none of these researchers focused on Africa in general, but this study will empirically examine the relation between profitability and some financial ratios in the African banking industry.

Francis (2013) [20] used efficiency ratio, liquidity ratio and some macroeconomic variable such as inflation to examine the profitability of 216 commercial banks in Sub-Sharan Africa not taking into cognisance some of these banks are not listed on the stock exchange, which implied that they may face some financial distress at any time. Thus, this study would examined only banks that has been listed in order to avoid problem of banks being liquidated or face financial distress in the near future and also to avoid problem of accounting reporting date associated with unlisted banks.

Ayadi & Boujelbene (2012) [7] uses financial technique to determine profitability in the Tunisian banking Industry and their study showed that there was a positive impact on the size of the bank and profitability. Bank expenditure plays a significant role when determining the profitability. Therefore, we expected that the management of banks in Africa should be very careful when giving out loans to people as it might affect their profit which might affect growth and development of such industry. Therefore, we expect a negative impact on the profitability and the African banks size because when size goes down the profitability is expected go up. Profitability shows how efficient and liquid the company's management can make a profit by using all resources (assets) available in the market. Bank profitability can be determined using some ratios which can be expressed as external or internal factors (Dietrich & Wanzenried, 2010) [15]

Generally, management of any organisation played a significant role in ensuring that profit is always achieved in order to meet the company's daily needs. (Ayanda *et al.* 2013) [5]. Thus, most the literatures reviewed have some gaps which can be explained in the next section.

The gap and justification of this study is that, although there is a lot of studies on the relationship between financial ratio and profitability such as, Qin & Pastory (2012) [28], Innocent *et al.* (2013) [22], Ayanda *et al.* (2013) [5], Khandoker *et al.* (2013) [24], Al-Jafar & Alchami (2014) [6], Dietrich & Wanzenried (2010) [15], Delen, Kuzey & Uyar (2013) [16], Sufian *et al.* (2012) [30], Bejaoui & Bouzgarrou (2014) and Chaudhuri (2010). Most of these studies focused on Asia and Europe and those that focused on Africa only emphasised on single country for their research but there is hardly study to the knowledge of the researcher that empirically examined the relationship between financial ratios and profitability across the African countries using panel data.

The justification of this research work is that, it will be benefit to the financial managers when finding the profitability of their firms or companies, it also assists the investors when making an investment decision on which firm or company to put their wealth and lastly, it create room for further research in different sectors of the economy. The next section will explain how our research question was formed and how hypothesis formulated in an attempt to answer such research question.

Empirical review

The empirical review of this study will be observed using the different hypothesis that suit the study topic. Therefore, many studies have been carried out in determining the banks' profitability in many countries, using different techniques, but this study assumed that financial ratio analysis appears to be the most appropriate measure for determining the firms' profitability and this led to the research question for this study that is, to investigate the following main research question

- Do financial ratios (e.g. total loans and advances to total asset, equity to total asset, bank size, asset turn over, debtor to total asset, dividend yield and price earnings) have significant impact on the profitability (return on assets) of some listed banks in Africa?

The hypotheses below have been formulated in an attempt to answer our main research question.

Loan to total asset ratio

Loan and advances to total assets (asset composition); According to Ani *et al.* (2012) [2] loans and advances are one of the sources of income for the company and the more income generated by the firm the more profit will be made. Therefore, in their study they found that loan total assets have a positive impact on the banks' profitability. All things being equal the more banks' deposit are transforming into loans and advances the higher the profit that will be generated and because of that the research expected that loan to total assets ratio would yield positive impact on the profitability of the African banks.

Amba & Almukharreq (2013) [1] says since loan to total asset ratio explain how bank's assets are tied to loans and advances, the higher of this ratio the lower liquid the bank will be and in their study they also found that such ratio have no significant impact on the Islamic banks profitability since most of the Islamic banks were not affected by the financial crisis. On the other hand, they found that loans to total assets have positive significant impact on the profitability of conventional banks during the financial crises. Thus, the researcher assumed that the total loans to total asset may have a positive significant on the profitability of the African banks because the selected banks for this study most of them are non-Islamic banks and highly depend on interest rate as part of their earnings.

H1 Total loans to total assets ratio (assets composition) has a positive impact on the profitability (ROA) of the African banks.

Equity to total assets ratio

Equity to total assets ratio (capital adequacy) have positive impact on the profitability of the banks that are highly capitalized (Francis, 2013) [20] a well-capitalized bank may experience higher returns which may reduce the cost of expected financial distress. Since, the sample used for this research work are listed on the stock exchange based on their capital, the researcher assumed that equity to total asset would

have a positive impact on the profitability of the African banks. Dietrich & Wanzenried (2011) in their study they found that equity to total assets of the Switzerland's commercial banks does not have a significant impact on profitability before the financial crises but had a positive significant impact during the financial crisis ranging from 2007-2009 because those banks, that are not challenged by this crisis, are drawing the attention of customers to make more deposit (savings) which lead to higher returns. Thus, because our research covered both before and during the banks global financial crisis we assume that African banks, that are not challenged by this crisis, had more deposit in their possession which lead to higher returns hence equity to total assets will yield a significant impact on their profitability (return on asset). Perera *et al.* (2013) [27] found that equity to total asset is significant and have positive relation with the profitability of the banks in South Asian, because those banks are highly capitalized and they are sourcing deposit and other means of funding their businesses at a lower cost which increase their profit. We assumed that all the listed banks used for this research work are well capitalized and would enable them earn higher profit; therefore, equity to total asset is expected to yield a positive impact on the profitability of the selected listed banks in Africa.

Bejouri & Bouzgrron (2014) in their study 'the determinants of Tunisian banks profitability' found that equity to total asset have positive impact on the Tunisian development banks and also have a positive influence on the profitability of the Tunisian deposit banks, even though they are holding high liquid assets in their possession which lead to a lower profit and lower risk. Thus, the researcher assumed that the African banks would not hold too many liquid assets in their possession because they will invest it to generate profit, as a result of this equity may have a positive impact on the profitability of the African banks.

H2 Equity to total assets ratio (capital adequacy) has a positive significant impact on the profitability (ROA) of the African banking industry.

Bank size

The bank size is measured by the total assets using its natural logarithm (nLog) in order to identify how potential the size of the bank affects the profitability. Dietrich & Wanzenried (2010) [15] find out that banks with larger size in Switzerland are less profitable than the medium and small size banks during the past three years of financial crisis which yield a negative impact on the banks' size and the banks' profitability in Switzerland. However, the reason for this negative impact was that larger banks in Switzerland have higher loan loss provisions and also have a lower interest margin. Thus, African banks are assumed to have higher loans loss provision and lower interest margin because of their size and tend to be riskier and hence negatively related to profitability.

Ani *et al.* (2012) [2] found out that the bank size has a significant negative relation with the bank's profitability. Thus, since the larger the bank size the lesser the risk as a result of economic of scale the researcher assumed a statistical negative relation between the bank size and the bank profitability of the African banks, since most these banks have smaller size. Note that economic of scale are cost advantage that the company may gain as a result of its size, that is the larger the size the more economical of scale that the firm will benefit.

H3 The bank size (natural logarithm of the total assets) has a negative impact on the profitability (ROA) of the African banks.

Debtors to total asset ratio

Debtors to total assets ratio is expected to have a positive impact on the profitability. Since the higher of this ratio the riskier the company will be (Alexander *et al.* 2011) [9]. Therefore, every firm would try to avoid such risk for the benefit of their business. Naturally many debtors are in the habit of not paying their debts in good time, but banking industry is unlike other sector because they have good debt monitoring committee that are responsible for collecting all debt within a stipulated period. Therefore, the researcher assumed that debtors to total assets ratio would yield a positive impact on the profitability of the African banks. Innocent *et al.* (2013) [22] in their study they found that debtors are not paying their debt promptly because it will take longer period for the pharmaceutical companies in Nigeria to recover their money back from their customer as a result of that, it affects the companies' profit negatively. Thus, we assumed that banks would not tolerate longer recovery time of debt from the customers and hence we assumed a positive impact relation between debt to total assets ratio and the banks' profitability in Africa.

H4 Debtors to total assets ratio (efficiency ratio) has a positive impact on the profitability (ROA) of the African banking industry.

Total asset turnover ratio

Total assets turnover ratio means the number of times the value of intangible and tangible assets are used to generate revenue. Innocent *et al.* (2013) [22] in their study found that assets turnover have a negative relation with weakly significant impact on the profitability of some selected pharmaceutical companies because of poor utilization of their efficient assets in generating income. Thus, since most of the company may like to keep their liquid assets in order to meet the unforeseen circumstance in the developing nation it assumed that this ratio would be low which may result in a weaker or no significant impact on the return on assets (profitability) of the African banks.

H5 Total assets turnover ratio (efficiency ratio) has no impact on the profitability (ROA) of the African banking industry.

Dividend yield ratio

Even though, there are only few previous studies to the knowledge of the researcher that used this (investment ratio) dividend yield ratio to determine profitability but we assumed this ratio would have a positive relation with the profitability of the African banks because;

Dividend either declared or already paid out will have an impact on the company's when analysing the actual retains earning on the statement of equity change (Elliot & Elliot, 2013) [18] Therefore, because of its influence on retain earnings this could also affect the value of the company's equity in the company's financial statement. Profitability is the key indicator of the company's ability to pay a dividend to its shareholders. Mohammed & Joshua (2006) [26] highly profitable firms tend to pay more dividend than unprofitable

one. That is the more the company earns the more dividend would be declared and paid, in their study they found that there was a positive relation between the profitability and dividend payout of the listed companies in Ghana. Since the dividend is normally paid out from the company's profit, the higher the company's profit the higher the dividend yield ratio. Thus, it is expected that dividend yield may have a positive impact on the profitability of the African banks because the goal of every firm is to maximized profit and satisfied the shareholders through payments of dividend in order to retain them in company. Thus, the research assumed that dividend yield would have a positive impact on the profitability of the African banks since their goal is to maximized profit and satisfy their shareholders' needs.

H6 Dividend yield (investment ratio) has positive significant impact on the profitability (ROA) of the African banking industry.

Price earnings ratio

Despite the fact, there are no previous studies to the knowledge of the researcher that used this investment ratio (price earnings ratio) but we assumed this ratio to have negative impact on the profitability (ROA) because;

Price earnings ratio is an indicator of investment in the company and it represent the amount of profit earned by the company during a particular period which is available to the ordinary shareholder for each number their ordinary share held (Alexander *et al.* 2011) [9]. Since this ratio represent a return for ordinary shareholders, the higher the profit the high of this ratio which would lead to a negative impact on the banks' profitability. Price earnings are measured by the profit or returns generated by the company and serves as earnings to the ordinary shareholders from their shares invested. Higher of this ratio is indicating that the shareholders of the company may expect a higher growth earning in the future (Elliot & Elliot, 2013) [18]. The more profit earn by the firm the higher of this ratio and the more investors' expectation of the company's growth. Therefore, it is assumed that it might affect the banks' profitability negatively.

H7 Price Earnings ratio (investment ratio) has negative significant impact on the profitability (ROA) of the African Banks.

Methodology

The aim of this study is to investigate the profitability in the African banking industry, using financial ratios as determinant factors. There are various methods of carrying out a research but choosing appropriate research method is an important part of designing a research. Thus, this section will explain the method selected by the researcher and the method of data collection used for this research work as well as the limitation of the selected method. Secondary data will be used for this research that will be obtained from the financial statements of thirty four listed banks in the Bankscope database for the period of ten years from 2004 to 2013.Thus, descriptive statistic, correlation and regression analyses will be use for the purpose of research method using SPSS software.

Method of data collection

Since the main aim of this study is to determine profitability in the African banking industry using some ratios. Therefore, the data for only listed public commercial banks in Africa can be obtained in order to avoid the problems of accounting reporting date associated with some Islamic Banks and Microfinance banks. For this reason, different sources that include, Bloomberg database, Bankscope database, Google search and other relevant websites had been used in the course of this research work because of the availability and easier use of such sources. Panel data for this study has been obtained for ten period ranging from 2004 to 2013. This research work has been conducted using secondary data that has obtained from the banks' annual financial report using the Bloomberg and other relevant websites.

Sample selection

The panel data used in the empirical work were obtained from the Bloomberg database. The sample of thirty four out of the one hundred and thirty four listed banks in Africa was selected from the Bankscope database. Thus, the sample represents 22.39 percent of the total population of all listed commercial banks in Africa.

This section explains the methods of analysis employed by the researcher in the course of the study. Basically, descriptive statistics will first be applied to explore the characteristics of the variables under investigation. Secondly, regression analysis using ordinary least squares (OLS) will also be applied to test the impact of the independent variables on the dependent variable, because OLS is a linear regression that is used for measuring linear relationship between two or more observed variables. SPSS can be used to run the regression using Excel spreadsheet because Excel provide a powerful tool for financial modelling which are used by many financial firms for their daily financial activities (Day, 2012) [14].

The reasons for using ordinary linear regression because is a simple mathematical technique that gives assurance a straight line represent the relationship that exist between the dependent variable and independent variables (Hair *et al.* 2007) [21] Since our aim is to find impact relation between the profitability (single dependent variable) and some financial ratios (multiples independent variables).

Thus, this study would make use of ordinary least square regression analysis and descriptive statistic because these methods has been applied by many researchers, these include; Innocent *et al.* (2013) [22] when analysing the effect of some financial ratios on the profitability of some listed pharmaceutical companies in Nigeria. After the analysis, they found that some of these ratios have a negative correlation while other has a positive correlation between the profitability of Pharmaceutical companies. Lin and Zhang (2007) [25] they also used both descriptive statistic and Least Square Regression to determine the effect of banks ownership reform and performance using profitability of domestic private banks, foreign banks and state-owned commercial banks as a measure determinants and found that state owned commercial banks are less profitable, less efficient and have worse quality of asset than the other two types of banks.

Goddard *et al.* (2004) [19] they used OLS regression analysis to determine the performance of the European banks using the profitability of such banks from 1992-1998 but after the analysis they have found that this OLS regression method was unsuitable because of the inclusion of individual bank, effect the error term which create non-zero covariance between the

dependent and independent variables.

Measuring of dependent variable

Return on Asset Ratio (ROA): In line with the previous studies for example, Adesina & Olurotimi (2013) [3], Ayanda *et al.* (2013) [5] and Ani *et al.* (2012) [2] that examined the determinants of profitability where financial ratios have been used as measured factors and used return on asset to represent profitability. Thus, for this reason the researcher decided to use the return on asset as a dependent variable to represent banks' profitability. Thus, return on assets indicates how much profit the company is making from the asset or capital invested (Alexander *et al.* 2011) [9].

$$\text{Formula} = \frac{Profit\ before\ Tax + Interest}{Total\ assets} * 100$$

Measuring of independent variables

For the purpose of this study six ratios and natural log of the banks' total assets are used as internal determinants which include;

Dividend Yield Ratio (DYR): This one of the investment ratio which explained the relationship between what investors are hoping to receive from shares and the amount invested in the shares (Weetman, 2011) [33]. This ratio is assumed to have a positive impact on the bank's profitability since the investors are hoping to earn more returns on their shares invested and the companies are willing to satisfy them. Therefore, the higher the company's dividend yield ratio the more investors would like to invest.

$$\text{Formula} = \frac{Dividend\ per\ share}{Share\ price} * 100$$

Price Earnings Ratio (PER): This is the comparison between the amounts invested in one firm or company with the earning per share or it can be seen as a number of years for which the current reported profit is being represented by the current share price (Weetman, 2011) [33]. It assumed that this ratio may yield a negative impact on the profitability because the higher of this ratio the higher the investors' confidence (Elliot & Elliot, 2013) [18]

$$\text{Formula} = \frac{Share\ price}{Earnings\ per\ share}$$

Asset Turnover Ratio (TATR): This indicates how well the company or firm is using its tangible and intangible assets in order to generate revenue and it assumed that this ratio has no significant effect on the companies' profitability (Innocent *et al.* 2013) [22] Note that, higher asset turnover ratio is an indication that the firm is generating more revenue.

$$\text{Formula} = \frac{Sale\ (Revenue)}{Total\ Assets}$$

Debtors to Total Asset Ratio (DTAR): This ratio defines the amount of debt relative to asset of the firm or company. (Alexander *et al.* 2011) [9]. Thus, the higher of this ratio the riskier the company will be, higher debtors to total asset indicate that the company is highly relying on loan to finance most of its activities. According to Innocent *et al.* (2013) [22] since the higher of this ratio the more profitable the company will be it assumed that this ratio might have a positive impact on the company's profitability.

$$\text{Formula} = \frac{Short\text{-}term\ debt + long\text{-}term\ debt}{Total\ Asset}$$

Equity capital to total assets (EQTA)

This is one of the basic ratios for the bank's capital strength (Ahmad *et al.* 2012) [8].Thus, company with high equity l ratio are considered to be the most secure in an event of financial distress or liquidation. This ratio is assumed to have a positive impact on the profitability because equity to total assets is expected to be higher which make the company to demand lesser external fund for investment because of its capital strength.

$$\text{Formula} = \frac{Total\ equity\ capital}{Total\ assets}$$

Loans and advances to total assets (LTAR): This ratio is obtained by dividing the bank's total loans over the total assets. The researcher assumed this may have a positive impact on the profitability. The more bank loans the banks decided to issue the more likely the profit will be generated (Ayadi and Boujelbene, 2012) [7].

$$\text{Formula} = \frac{Total\ loans\ and\ advances}{Total\ assets}$$

The bank size: This measured by the natural logarithm of the banks' total assets in order to reduce the effect of scaling it to the other numbers of ratios used and to be consistent with such ratios used in the study (Ani *et al.* 2012) [2] Formula= nl of (total assets).

Model specification

The variables under study include; Dividend Yield Ratio (DYR), Price Earnings Ratio (PER), Total Asset Turnover Ratio (TATR), Debt to Total Asset Ratio (DTAR), Total Loan and Advances to Total Assets Ratio (TLTA), Equity to Total Assets Ratio (EQTA), Bank Size (nLog), and Return On Assets Ratio (ROA) in order to test the relationships among these variables as well as the impact of the independent variables on the dependent variable, the variables are represented in a functional form as follows.

ROA = f (DYR, PER, ATR, DTAR, TLTA, EQTA, nLog,)

Where profitability is given as a function of DYR, PER, ATR, DTAR, TLTA, EQTA and nLog respectively. Hence, the model to be estimated can be specified as follows:

$$ROA_t = \alpha + \beta_1 DYR_t + \beta_2 PER_t + \beta_3 ATR_t + \beta_4 DTAR_t + \beta_5 TLTA_t + \beta_6 EQTA_t + \beta_7 nLog_t + \varepsilon_t$$

A priori expectation can be given as follows:

$$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, > 0$$

Our priori expectation is that Dividend Yield Ratio (DYR), Price Earnings Ratio (PER), Asset Turnover Ratio (ATR), Debt to Total Asset Ratio (DTAR), Total Loan to Total Asset (TLTA), Equity to Total Asset (EQTA) and Natural

Logarithms of Total Asset (nLog) are expected to have impact on the profitability of the banking industry in Africa.

Where:

f = function of the independent variables
ROA = Return On Asset Ratio
DYR = Dividend Yield Ratio
PER = Price Earnings Ratio
ATR = Asset Turnover Ratio
DTAR = Debt to Total Asset Ratio
TLTA= Total Loan Total Asset Ratio
EQTA= Equity to Total Asset Ratio
nLog = Natural Logarithms (Bank Size)
ε = error term
t = time period
α = intercept
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, and\ \beta_7$ = coefficients of the independent variable

Finding and discussion of the result

The African banking industry comprises banks with different sizes and business mixes which is shown by descriptive statistic in Table 1, this described the variables used which are ROA (profitability), dividend yield ratio (DYR), price earnings ratio (PER), asset turnover ratio (ATR), debtor to total asset (DTAR), total loan to total asset (TLTA), ratio of equity to total asset (ETAR) and natural log of total asset have a positive mean values ranging from 4.1345 for the dividend yield ratio to 2.54 for ROA (profitability). From Table 1 it also shows that asset composition and capital adequacy have the highest standard deviation of 177.72365 and 58.03530 respectively. This indicates that the observations in the data set are widely distributed from the mean which means that most of the banks in African are consistent with an increase in total equity as result of forced consolidation by the regulatory authorities in most of the African countries during 2004 and 2005. This consolidation has provided the banks in Africa with a lot of loans which resulted increased in the asset composition.

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
DYR- X1	308	.00	55.28	4.1345	4.14554
PER-X2	304	1.09	354.34	14.9950	24.49174
DTAR-X3	338	.00	68.81	11.5436	12.65069
TATR-X4	331	0	46	.51	3.118
LTAR-X5	288	.00	3053.00	58.9777	177.72365
ETAR-X6	338	-12.18	1074.00	15.8524	58.03530
NATURAL LOG	335	-6	5	.01	1.008
ROA	335	-9	15	2.54	2.315
Valid N (list wise)	255				

Source: Authors' SPSS

Empirical analysis and result

This section would present the results of our research analysis which are presented in Table 2 below.

H1 was formulated where total loans total asset (LTAR) is expected to have a positive impact on the profitability, but the result revealed that LTAR has no significant impact on the profitability. Thus, we reject this hypothesis because asset composition has no significant relation to profitability of the African banks.

H2 was formulated for equity to total asset ratio (ETAR) to get a positive impact on the profitability. However, the result revealed that capital adequacy has positive significant impact on the profitability of the African banks. Therefore, we accept this hypothesis.

H3 Bank size (nLog) on the other hand, was expected to be negatively significant on the profitability of the African banks but the result showed that this hypothesis has negative relation but not significant as such this hypothesis would not be accepted.

H4 suggested that debtors to total assets (DTAR) must have a positive significant on the profitability and the result yield that such ratio has positive significant on the banks' profitability and we accept the hypothesis.

H5 suggested that total asset turnover (TATR) has no impact on the profitability of the African banks and result also confirmed that it has no significant impact on the profitability therefore we accept this hypothesis.

H6 suggested that dividend yield ratio (DYR) is positively and significantly related to the profitability of the African banks and result also reveals a significant impact on the profitability. Therefore, we accept the hypothesis.

H7 suggested that price earnings ratio (PER) has a negative significant impact on the profitability of the African banks and the result also yield that this ratio has a negative significant impact on such profitability. Thus, we accept this hypothesis.

Regression Coefficient

Table 2: Relationship b/w financial ratios and profitability

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.653	.301		2.168*	.031
DYR- X1	.062	.027	.130	2.292*	.023
PER-X2	-.011	.004	-.147	-2.632**	.009
DTAR-X3	.019	.009	.119	2.103*	.036
TATR-X4	.046	.072	.035	.643	.521
LTAR-X5	-.001	.001	-.078	-1.407	.161
ETAR-X6	.139	.020	.397	6.993***	.000
nLOG-X7	-.075	.148	-.028	-.503	.616
Adj. R^2				.234	
F				12.080***	.000

a) Dependent Variable: ROA
b) Predictors:(Constant), DYR-X1, PER-X2, DTAR-X3, TATR-X4, LTAR-X5, ETAR X6, nLog-X7
*P<0.05;
**P<0.01;
***P<0.001.

***Source*:** Authors' SPSS

Discussion of findings

Table 2 above represents the regression coefficient which indicated that the investment ratio (dividend yield ratio) has significant positive relationship with profitability of the African banks at p* of 0.050>0.023.This relationship shows that dividend yield ratio could significantly affect the banks' profitability positively because more dividend are being paying to preference shareholders. This is consonance with the finding of Mohammed & Joshua (2006) [26]. Because, we used similar samples though our samples comprises the whole Africa. Price earnings ratio is another investment ratio that has statistical negative significant relations with the profitability of the African banks at p* of 0.050>0.009. That is mean more earnings are paid to ordinary shareholders which cause a negative impact on the profitability of the African banks.

The debtors to total asset ratio (efficiency ratio) is positively related to banks' profitability at p* of 0.050>0.036. This indicated that the banks management are taken all the necessary measure of ensuring that debtors are paying their debt as when due. This is also consistent with the findings of Innocent *et al.* (2013) [22]. Total asset turnover ratio is another efficiency ratio used in this research and was expected to yield insignificant impact on the profitability and fortunately it does not have any statistical relationship with the African banks' profitability. This could be as a result poor utilization of the assets by the banks' management in most of the African banks. Asset composition (ratio of total loans to total asset) does not have statistically significant effect on the banks' profitability in Africa. The reason of this was that most these banks have very low loan loss provision. That is to say they are not making enough provision on loan in case of any default. Thus, these banks do not have higher lending rate. This is consonance with the findings of Dietrich & Wanzenried (2011).

Capital adequacy (ratio of equity to total asset), as we anticipated capital adequacy has found to be strongly statistical and positively related to the profitability of the African banks at p* of 0.050>0.000. This result indicates that well-capitalized banks can source deposits and other funding at low cost, thereby increasing their profit level. African banks were well-capitalized as result of consolidation that took place in almost all the African countries have made them source deposit and other funding at very low cost which increases the banks' profit. Similar finding have been reported by the following, Perera *et al.* (2013) [27], Al-Jafari & Alchami (2014) [6] and Bejaoui & Bouzgarron (2014) [12].

Bank size (natural log of total asset) is insignificantly and negatively related to the profitability of the African banks which contrary to our hypothesis that say the size of the African banks is negatively significant with profitability. This insignificant negative relation indicates that as the size of the banks in Africa increases the profitability of those banks reduces. This is in line with the findings of Adesina & Olurotimi (2013) [3].

Table 2 above shows the coefficient of multiple determination of adjusted R^2 which explained the extent to which financial ratio affect the profitability (ROA). In this case, the model summary indicates that 23.4% (0.234) of the variation in the profitability of the African banks are being described by internal factors. These internal factors are controlled by the management and include asset composition, capital adequacy, banks size, efficiency ratio and investment ratio.

Conclusion and recommendation

Equity to total asset, debtors to total asset and dividend yield ratio bear a positive significant on the profitability of the African banks, but equity to total asset seem to have a stronger statistical relation with profitability (return on asset). This indicates that these ratios are important factors in determining the profitability. Thus, price earnings ratio is also an important factor in determining the profitability of the African banks because it has a statistical negative impact on the profitability. However, total asset turnover ratio has a negative impact on the profitability though it is not significant this is due to poor utilization of the company assets. Thus, bank size and loan to total asset has no significant impact and therefore, are not good determinants of the profitability of African banks.

Contribution to knowledge

Empirically examine the relationship between financial ratios and profitability of the African banks, this research has contributed to the literature of (Innocent, Mary & Mathew, 2013) [22], (Ayanda, Christopher & Mudashiru, 2013) [5],

(Khandoker *et al.* 2013) [24], (Al-Jafar & Alchami, 2014) [6], (Qin & Pastory, 2012) [28], (Francis, 2013) [20], (Adesina & Olurotimi, 2013) [3] and (Dietrich & Wanzenried, 2010) [15].

Implication for businesses

This research work would enable the management of any business organisation in determining how to maximize their profitability using the internal factors (financial ratios). Thus, firms can maximize their profitability through external source of funding and also creating a strong management team that will monitor the utilization of the company's assets.

Recommendation

The management of African banks should constitute a strong team that would effectively manage their assets, they should also increase their banks size in order to enjoy economic of scale. Further research may be carried out in different area, for example, small and medium enterprise (SMEs) using either internal factors (financial ratios) or using some exogenous factors such as macroeconomic variable like GDP, inflation and interest rate to determine the profitability in these sectors.

References:

1. Amba SM, Almukharreq F. Impact of Financial Crises on Profitability of Islamic Vs Conventional Banks. International Journal of Financial Research. [Online] Available<URL:http://dx.doi.org/10.5430/ijfr.v4n3p83>. 2013-2014; 4(3):83.
2. Ani WU *et al.* An empirical Assessment of the determinants of profitability in Nigeria, Journal of Accounting and Taxation. 2012; 4(3):38-43.
3. Adesina SK, Olurotimi A. Determinants of Bank Profitability: Panel Evidence of Bank-Specific Variables in Nigeria,' International Journal of Management Science & Business Research, [Online] Available: <http://www.ijmsbr.com/volume- 2-issue-2/> [Accessed on 02 November, 2014]. 2013; 2(2), 2226-8235.
4. Al-Omar H, Al-Mutairi A. Bank-Specific Determinants of Profitability in Kuwait. Journal of Economic and Administrative Sciences. 2008; 24(2):20-34.
5. Ayanda MA, Christopher IE, Mudashiru MA. Determinants of Banks Profitability in the Developing Economy: Evidence from the Nigerian Banking Industry. International Journal of Contemporary Research in Business. 2013; 4(9):155-181.
6. Al-Jafari KM. Alchami M. Determinant of Bank Profitability: Evidence from Syria. Journal of Applied Finance and Banking. 2014; 4(1):17-45.
7. Ayadi SN, Boujelbene Y. The Determinants of profitability of the Tunisian Deposit Banks. Journal of Business and Economics-management. 2012; 2(12):1-21.
8. Ahmad S, Nafees B, Khan ZA. Determinants of Profitability of Pakistanis Bank: Panel Data Evidence for the Period 2001-2010. Journal of Business Economics. 2012; 4(1):149-165.
9. Alexander D, Britton A, Jorissen A. International Financial Reporting Analysis. 5th ed. Hampshire: South-Western Cengage Learning, 2011.
10. Ashvin RD. Financial Management as a Determinant of Profitability; A Study of Indian Pharmaceutical Sector. South Asian Journal of Management. 2012; 19(1):124.
11. Bankscope database. [Online] Available: <https://bankscope.bvdinfo.com/version 2014103/Search.QuickSearch.serv?_CID=78&context=VT5SAE1VJ92HAZ4>, 2014.
12. Bejaoui R, Bouzgarron H. Determinants of Tunisian Bank Profitability. International Journal of Banking and Finance Research. 2014; 8(4):121-131.
13. Chaudhuri T. Analysis of the Profitability Ratios of HCL. Journal of Financial Economics, Available Online: doi:http://dx.doi.org/10.2139/ssrn.1672242. Accessed 14 June, 2014. [Online] Available: <http://ssrn.com/abstract=1672242> [Accessed on 02 November, 2014], 2008.
14. Day AL. Mastering Financial Modelling in Excel. 3rd ed. Harlow: Pearson Education Limited, 2012.
15. Dietrich A, Wanzenried G. Determinants of bank profitability before and during the crisis: Evidence of Switzerland. Journal of International Finance, Market, Institution & Money. 2010; 21:307-327.
16. Delen D, Kuzey C, Uyar A. Measuring Firm Performance Using Financial Ratio: A decision tree approach. Journal of Finance,. [Online] Available: <http://dx.doi.org/10.1016/j.eswa.2013.01.012> [Assessed on 19 June, 2014]. 2013; 40:3970-3983.
17. Egbe IE, Odufia CE. Determinants of Bank Profitability: A Disaggregate Analysis of Commercial Banks' Profit in Nigeria. International Journal of Business and Social Science. 2014; 5(5):200-211.
18. Elliot B, Elliot J. Financial Accounting and Financial Reporting. 16th ed. Essex: Pearson Education Ltd, 2013.
19. Goddard J, Molyneux P, Wilson JOS. The profitability of the European Banks: A cross-sectional and Dynamic Panel Analysis. The Manchester School. 2004; 72(3):363-381.
20. Francis ME. Determinant of Commercial Bank Profitability in Sub-Sharan Africa. International Journal of Economics and Finance. 2013; 5(9):1916-9728.
21. Hair FJ, Money HA, Samouel P. Research Methods for Business. 1st ed. West Sussex: John Wiley & Sons Ltd, 2007.
22. Innocent CE, Marry IO, Mathew MO. Financial Ratio Analysis as a Determinant of Profitability in Nigerian Pharmaceutical Industry. International Journal of Business & Management. 2013; 8(8):107-117.
23. Islam, *et al.* Performance Evaluation of the Banking Sector in Bangladesh. Journal of Business and Economic Research. 2014; 4(1):70-106.
24. Khandoker SH, Raul RK, Rahman SMG. Determinants of Profitability of Non-Bank Financial Institutions: Evidence from Bangladesh. International Journal of Management Science & Business Research. 2013; 2(4), 31-42.
25. Lin X, Zhang Y. Banks ownership reforms and Banks performance in China. Journal of Banking and Finance. 2007-2009; 33:20-29.
26. Mohammed A, Joshua A. Determinants of Dividend Pay-out Ratios in Ghana. Journal of Risk Finance. 2006; 7(2):136.

27. Perera S, Skully M, Chaydhry Z. Determinants of Commercial Banks Profitability: South Asian Evidence. Asian Journal of Finance Accounting. 2013; 5(1):365-380.
28. Qin X, Pastory D. Commercial Banks Profitability Position: The case of Tanzania. International Journal of Business and Management. 2012; 7(13):136.
29. Sauders M, Lewis P, Thornhill A. Research Methods for Business Students. 6th ed. Essex: Pearson Education Limited, 2012.
30. Sufian F, Akbar M, Noor MN. Determinant of banking performance in the developed Economy: Does bank origin matters? [Online] Available: <http://gbr.sagepub.com/content/13/1/1> [Assessed on 12 November, 2014]. 2012; 13(1):1-2.
31. Thomas A, Ward AA. Introduction to Financial Accounting. 6th ed. Berkshire: McGraw-Hill, 2009.
32. Vance DE. Financial Analysis and Decision Making. 1st ed. New York: McGraw-Hill, 2003.
33. Weetman P. Financial and Management Accounting (An Introduction). 5th ed. Harlow: Person Education Limited, 2011.