

Financial Inclusion Using Traditional Banking Channels and its Effect on Financial Performance of Commercial Banks in Kenya

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Abstract

Commercial banks play a vital role in resource allocation and as such financial inclusion is significant to banks existence and subsequently to their financial performance. This study sought to establish the degree of financial inclusion using traditional banking channels, determine financial performance of commercial banks and find out the effect on financial Inclusion on financial performance of commercial banks in Kenya. This study focused on the supply side whereas most of the studies are on the demand side thus extends the frontiers of knowledge on effects of financial inclusion on the commercial banks from a developing country context and has implications for theory, policy and practice. The theories that underpinned this study were the financial intermediation theory and asymmetric information theory. A sample of 30 commercial banks for a 9-year period from 2005-2013 were analysed. A financial inclusion index was computed and three financial performance measures Return on Assets (ROA), Return on Equity (ROE) and (Net Interest Margin (NIM) were computed and separately regressed with the Index of Financial Inclusion to test the effect. The study revealed that the level of financial inclusion in Kenya as depicted by the index of financial inclusion was low during the study period with a progressive marginal increase. Results on performance of commercial banks in Kenya from 2005-2013 was average and consistent throughout the study period. The study also indicated that financial inclusion had a statistically significant positive effect on all the three measures of bank performance. The study recommends that commercial banks should take an active role in increasing financial inclusion as it is consistent with banks' profit motive. The use of an index of financial inclusion by banks that incorporates the new delivery channels is also recommended.

Keywords: Financial Inclusion, Financial Performance, Commercial Banks, Kenya

Introduction

Commercial banks play a vital role in resource allocation (Ongore & Kusa, 2013) and remain the dominant channel of financial intermediation in emerging market economies. Financial services when available and easily accessible to all are capable of distributing opportunities evenly to poorer households and economically disadvantaged geographical regions. Consequently, financial institutions as major players in the economic system need to be accessed and used by all through financial inclusion initiatives.

The denial of financial services and the conditions that lead to depriving an individual or a group from the benefits of these services is called financial exclusion (Kumar & Mishra, n.d) which has its roots on social exclusion. According to Kempson and Whyley (1999) there are six types of financial exclusions namely physical access exclusion, access exclusion, condition exclusion, price exclusion, marketing exclusion and self-exclusion. Access exclusion refers to

the restriction of access through the processes of risk assessment; condition exclusion is where the conditions attached to financial products make them inappropriate for the needs of some people while price exclusion occurs where some people can only gain access to financial products at prices they cannot afford. Conversely marketing exclusion is whereby some people are effectively excluded by targeting marketing and sales and finally self-exclusion refers to people deciding that there is little point applying for a financial product because they believe they would be refused. For financial inclusion to succeed the intricate and multifaceted issues of social exclusion must be addressed.

Background Information

Financial Inclusion is an intervention strategy that seeks to overcome the market friction that hinders the markets from operating in favour of the poor and underprivileged (Aduda & Kalunda, 2012). Financial inclusion offers incremental and complementary solutions to tackle poverty, to promote inclusive development and to address MDGs (Chibba, 2009). Financial inclusion or banking sector outreach is a process that ensures ease of access, availability and usage of the formal financial system without any discrimination by all members of an economy (Sarma, 2010). Recent empirical evidence using household data indicates that access to basic financial services such as savings, payments and credit can make a substantial positive difference in improving poor people's lives (Dupas & Robinson, 2009). However according to the United Nations (UN) approximately 2.7 billion people in the world do not have access to formal financial services like savings accounts, credit, insurance, and payment services, where 80 percent of these are in Africa (Demirgüç-Kunt & Klapper, 2012). The global financial crisis (GFC) of 2007-2009 put to test the rationale of financial inclusion when bank failures were associated with financial inclusion (Carneiro, 2011; Ghosh, 2008). Financial inclusion on the other hand has been linked to improved banks' financial performance (Allen *et.al.*, 2012; Kerata, 2007).

The Financial system of Kenya, though the largest in East Africa, has failed to provide adequate access to banking services to the bulk of the population and lending is skewed in favor of large private and public enterprises in urban areas (Aduda & Kalunda, 2012). This is evidenced by distribution of bank branches at 93 percent in urban and rural areas and 7 percent in arid and semi-arid areas (Beck, Cull, Fuchs, Getenga, Gatere, Randa, & Trandafir, 2010). This data demonstrates that there is exclusion and that the poorer section of the society, who are found in rural and arid and semi arid areas have not been able to access adequately financial services. This is despite the laudable reports on the state of financial inclusion in Kenya.

The important role played by banks and the proportion of people without formal banking services justifies the need to make banking services accessible, available and attractive to all without any form of discrimination through a process known as financial inclusion. Despite all the importance and renewed attention on financial inclusion accelerated by the GFC its effect on financial institutions is not conclusive. This study proposes to determine the relationship between financial inclusion and financial performance of commercial banks in Kenya.

There is no universal agreement on what financial inclusion is and the differences emanate from the context in which it is used, geographical location and state of economic development of the area. Sarma and Pais (2011) define financial inclusion as a process that ensures the ease of access, availability and usage of the formal financial system for all members of an economy. Hannig and Jansen (2010) define financial inclusion as the absence of price or non-price barriers in the use of financial services. The providers and scope of financial inclusion has evolved from basic banking services to include remittances, savings, loans, financial

counseling and insurance (Sahrawat, 2010). The term banking sector outreach or financial inclusion refers to the access to banking services and their use by households and firms (Beck, Demirguc-Kunt & Peria, 2006).

This study defines and operationalizes financial Inclusion as the process of availing appropriate financial products and services needed by all sections of the society in general, at an affordable cost and in a fair and transparent manner by regulated conventional institutional players in this case commercial banks (Sarma and Pias, 2010; Aduda & Kalunda, 2012). It further deals with traditional physical banking channels of branches and not electronic channels like automatic teller machines (ATMs) or online and internet based channels. This is due to the assumption that these channels are not available to those previously financially excluded.

Financial inclusion can be measured by use of a number of variables such as ease of access, quality and usage of the financial products and services and impact. This can be done by use of indicators such as bank accounts per adult; geographic and demographic branch and ATMs penetration; demographic loan and deposit penetration; loan-income ratio; deposit-income ratio or deposit-Gross domestic product (GDP) Ratio; cash-deposit ratio and credit disbursement to disadvantaged social groups (Sahrawat, 2010). Sarma and Pias (2011) designed an index of financial inclusion (IFI) that captures information on three dimensions of financial inclusion namely penetration, availability and usage, in a single number lying between 0 and 1, where 0 denotes complete financial exclusion and 1 indicates complete financial inclusion in an economy. Banking penetration is measured by size of the banked population, availability of banking services by availability of banks and their outlets while the number of bank branches and the number of ATMs per 100,000 people are used to measure the availability of banking services.

Financial performance generally measures a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. Financial ratios, derived from accounting data, are common internal measures of banks' financial performance (Ongore & Kusa, 2013). The commonly used ratios are Return on Assets (ROA), Net Interest Margin (NIM) and Return on Equity (ROE). ROA measures the ability of the bank management to generate income by utilizing company's assets. ROA has a major drawback since it is distorted by banks' off balance sheet (OBS) activities. NIM calculated as net interest income divided by total assets, and can be used to overcome the OBS bias. ROE shows shareholders return for their investment. Higher levels of these ratios are desirable.

In the past banks have been paying close attention to the relationship between costs and income, with the believe that the affluent minority are responsible for generating most of the profits of banks and other financial services firms (Pollard,1996). As a result, such individuals and groups are subject to a process of super inclusion as financial institutions attempt to sell them an ever-growing range of services and products. With financial inclusion agenda this is now changing and it can be argued that the entrance of new customers through financial inclusion can have a positive effect too on bank performance (Allen *et.al*, 2012; Kerata, 2007) nevertheless the long-term effect can be negative (Bateman & Chang, 2009; Kipesha & Zhang, 2013). In the last two decades studies have shown that commercial banks in Sub-Saharan Africa are more profitable than the rest of the world (Flamini *et al.*, 2009 as quoted by Ongore and Kusa (2013). This is majorly due to investment in risky ventures, huge gap between the demand for bank service and the supply and concentration in government ownership in the

industry. Proponents of financial inclusion assert that greater diversification of bank assets as a result of increased lending to smaller firms and individuals leads to increased profitability.

The banking industry in Kenya is regulated by the Central Bank of Kenya (CBK) Act, Banking Act, Companies Act and other prudential guidelines issued by the CBK. The CBK is responsible for overall regulation and supervision of banks. Over the past decades, there have been numerous revisions and reforms to the Banking Act, CBK Act and prudential guidelines aimed at strengthening CBK's supervisory role (Beck, *et al.*, 2009). The banking industry was liberalized in 1995 and exchange controls lifted leading to strengthened supervision, self-regulation and increased competition among the previously dominating local banks (Kerandi, *et al.*, 2014).

In Kenya, the concept of financial inclusion has been fused with the goals of poverty alleviation and general economic growth as envisaged in the Vision 2030, the country's economic blueprint (Beck, *et al.*, 2009). Financial inclusion has been characterized by increased bank and branch network, shift from brick and mortar outlets, agency banking, innovations in product development, use of information communication and technology (ICT) and emergence of non-bank financial institutions.

Statement of the Problem

A bank is considered successful if it can effectively intermediate funds from the surplus to the deficit units and still remain profitable. Hanning and Jansen (2010) note that every year 150 million new customers enter financial markets worldwide mainly due to financial inclusion initiatives, increasing the activity of banks and hypothesizing increased profitability. However, the subprime lending and resultant GFC which was a result of financial inclusion (Carneiro, 2011; Ghosh, 2008) put to test the justification of financial inclusion and its effect on economic stability and institutions performance. This was further supported by discoveries of multiple lending and suicide instances that were associated with MFIs lending (Gokhale, 2009). Currently commercial banks which are mainly profit seeking have shown growing interest in financial inclusion. This change in the financial inclusion landscape has elicited a lot of attention from researchers, policy makers and financial institutions. Specifically, the effect of financial inclusion on commercial bank performance needs to be empirically established.

To establish the effect of financial inclusion on commercial bank performance the level of financial inclusion needs to be determined. A number of studies have been done on standalone indicators of financial inclusion such as access and usage dimensions (Beck *et al.*, 2006; Allen *et. al.*, 2012; Burgess & Pandey, 2005, however a composite measure is preferred. Sarma and Pias (2011) designed an index of financial inclusion (IFI) that captures information on three dimensions of financial inclusion in a single number lying between 0 and 1, where 0 denotes complete financial exclusion and 1 indicates complete financial inclusion in an economy. The index of financial inclusion is a measure of inclusiveness of the financial sector of a country and uses variables at the micro level to depict the efforts of individual banks in financial inclusion. This study fills this gap by using a composite measure of financial inclusion in the context of commercial banks in Kenya.

A number of studies have been conducted on financial institutions in relation to financial inclusion and financial performance (Allen *et.al.*, 2012; Ongore & Kusa, 2013; Kereta, 2007). Allen *et.al.* (2012) in a study in Kenya found that indeed rural people were bankable. The study indicated that the business model used by Equity Bank, a leading private commercial bank, of providing financial services to population segments typically ignored by traditional commercial banks could indeed generate sustainable profits.

Objectives

The objectives of the study were threefold;

- ii) To establish the level of financial inclusion by commercial banks in Kenya.
- iii) To establish the financial performance of commercial banks in Kenya.
- iv) To determine the effect of financial inclusion on financial performance of commercial banks in Kenya.

The study then tested the following hypotheses:

H₀₁ Financial inclusion does not significantly affect financial performance of commercial banks in Kenya.

Given that financial performance is measured using three distinct variables namely ROA, ROE and NIM the following three sub hypotheses were derived from hypothesis one. Sub hypotheses a, b and c are presented as follows:

- H_{01a}: Financial inclusion does not significantly affect ROA of commercial banks in Kenya.
- H_{01b}: Financial inclusion does not significantly affect ROE of commercial banks in Kenya
- H_{01c}: Financial inclusion does not significantly affect NIM of commercial banks in Kenya

Conceptual Model

The conceptual framework presented in Figure 1 depicts the relationship between financial inclusion the independent variable, and financial performance the dependent variable.

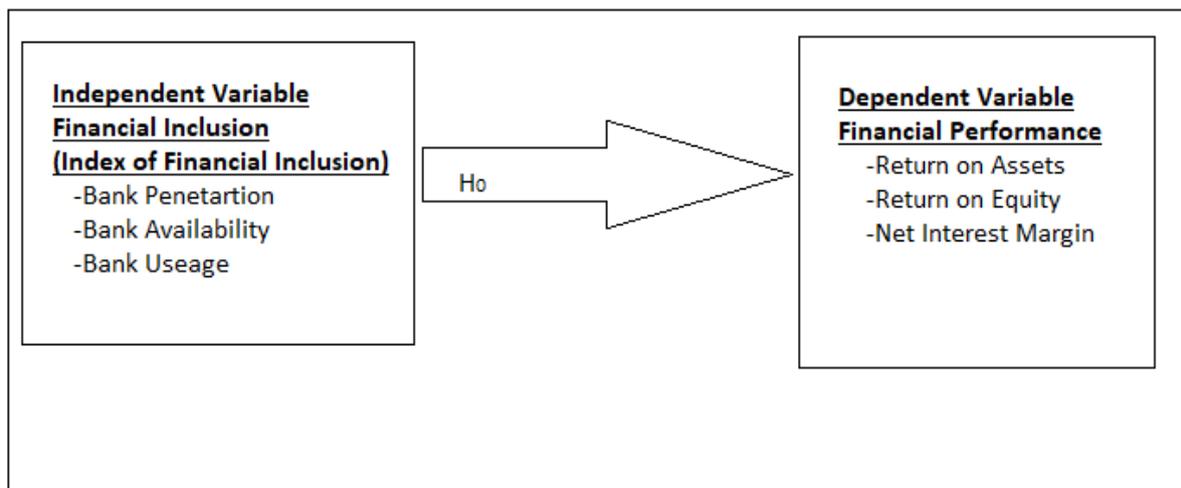


Figure 2: Conceptual Model

It should be noted that it is difficult to alienate bank customers as those previously excluded and those already financially included, thus the study used all bank customers. An observation of the dimensions of financial inclusion can be used to measure the inclusiveness of the system. From figure 1 financial inclusion is presented by three variables namely bank penetration, bank availability and bank usage which will be combined statistically to form the index of financial inclusion. Financial inclusion has a primary influence on financial performance as documented in the reviewed literature. The relationship however can be either positive or negative as

revealed by empirical results (Allen *et al.*, 2012; Kerata, 2007; Johnson *et al.*, 2005). This study attempted to determine the effect of financial inclusion on financial performance of commercial banks as measured by ROA, ROE and NIM in the context of Kenya.

Literature Review

Theoretical Framework

The theories that are relevant to this study are the financial intermediation theory and asymmetric information theory. The financial intermediation theory will be used to investigate on the role of banks in intermediating funds through financial inclusion as a social or profitable venture. The asymmetric information theory will investigate on the effect of financial inclusion policies on the effectiveness of banks to reduce information opaqueness associated with the financial inclusion target customers.

Financial intermediation refers to the process by which financial institutions bring deficit spending units and surplus spending units together. Financial intermediation theories try to explain why surplus funds are first lent to banks who then lend to deficit units, instead of lending directly. According to Diamond and Dybvig (1983) banks are able to effectively monitor borrowers and thus play the role of delegated monitoring. In return they have to be compensated for their role of delegated monitoring and the risk they bear on behalf of the surplus fund owners. If the role of delegated monitoring is performed efficiently then the intermediation process will run smoothly and there will be less or no market frictions and improved financial performance.

Financial intermediation theories emphasize the role of banks in efficient allocation of funds, reduction of market frictions and asymmetric information which is a key feature to successful financial inclusion. This can be extended to mean that generation of reliable information and reduced transaction cost leads to profitable and stable financial institutions. Currently most governments in their bid to achieve financial inclusion are advocating for relaxed know your customers (KYC) policies. This is supported by the notion that lack of documentation and identification resources is a cause of financial exclusion. This has resulted to relaxed screening role and increased credit levels associated with financial inclusion. This can be argued may be associated with reduced bank profitability.

Information asymmetry is a situation where by one party in a debt contract has more or better information than the other. Mishkin (1990) applied the asymmetric information literature by looking at the financial structure on economic activities where differences in information available to different parties in a financial contract exist. He asserted that borrowers have an informational advantage over lenders because borrowers know more about the investment projects they want to undertake than do lenders. This theory suggests that problems of moral hazard and adverse selection arising from information asymmetry between borrower and lender can also account for sharp contractions of credit and lead to reduced profitability.

A characteristic of financial inclusion is the entry of new, inexperienced and numerous opaque customers into the formal financial market (Hannig & Jansen, 2010). These new market entrants can increase monitoring cost thus reducing profits. Information asymmetry can lead to a rise in interest rates, and thus an increase in adverse selection as only the worse-quality borrowers are still willing to borrow. One way of reducing this problem is by use of collateral, which might not be available or sufficient due to the low economic ability of the financial inclusion target. Critics of financial inclusion claim that the inexperience and information opaqueness of the financial inclusion target population amplifies the information asymmetry problem and a lemons problem occurs in the debt market because lenders have trouble

determining whether a lender is a good risk thus threatens financial performance and stability. Another lemon problem occurs when it becomes difficult for banks to distinguish whether financial inclusion is a low risk good investment opportunity. It is only through empirical studies that this effect can be clarified.

Bank Performance

Firm performance refers to the economic outcomes of the firm and it reflects organizational effectiveness. There are various indicators of performance which can be categorized as financial and operational; or as accounting or market-based measures. Operational performance measures include both product-market outcomes and internal process outcomes while financial performance refers to the overall financial health over a given period of time. The accounting-based measures are simple proxies of banks' profitability, obtainable from publicly disclosed information whereas economic based metrics are based on economic profit. The traditional accounting-based measures include ROA, ROE and NIM while the economic measure include risk-adjusted return on capital and economic value added which take consider both the risks and opportunity costs of equity when measuring profitability (Ommeren, 2011).

ROE is a financial ratio that refers to how much profit a company earned compared to the total amount of shareholder equity invested and it is not affected by OBS (Ommeren, 2011). According to Ongore and Kusa (2013) a business that has a high ROE is more likely to be one that is capable of generating cash internally. ROE reflects how effectively a bank management is using shareholders' funds. A major drawback of ROE is that it disregards financial leverage and thus profits generated with debt financing distort the ROE measure since these returns are incorporated in the numerator while the sources of funding are not incorporated in the denominator of the ratio (Ommeren, 2011). This makes banks that rely more on debt financing to have a favorable ROE as compared with those with a high equity orientated capital structure. A high ROE is more desirable (Ongore & Kusa, 2013). However, caution should be taken as a high ROE may also reflect low capital adequacy (Ommeren, 2011) or reflect riskier lending practices associated with substantial loan loss provisions (Khrawish, 2011 as cited by Ongore & Kusa, 2013). The European Central Bank (2010 as cited by Ommeren, 2011) state that ROE is a useful measure of banks' profitability during prosperity but appears to be a weak measure of profitability in an environment with substantial higher volatility

NIM is a measure of the difference between the interest income generated by banks and the amount of interest paid out to their lenders relative to the amount of interest earning assets (Ongore & Kusa, 2013) or total assets. It is usually expressed as a percentage of what the financial institution earns on loans in a specific time period and other assets minus the interest paid on borrowed funds divided by the amount of the assets in that time period. NIM can be used to overcome the OBS bias (Ommeren, 2011). NIM measures the gap between the interest income the bank receives on loans and securities and interest cost of its borrowed funds (Ongore & Kusa, 2013). It reflects the cost of bank intermediation service and the efficiency of the bank. The higher the net interest margin, the higher the bank's profit and the more stable the bank is. Thus, it is one of the key measures of bank profitability

Financial Inclusion on Bank Performance

A number of studies have been done on access and usage dimensions of financial inclusion (Beck et al., 2006; Allen et.al, 2012; Burgess & Pandey, 2005; Sarma & Pias, 2011). These studies have revealed commendable growth in the level of access to financial services but have indicated limited growth in usage. Studies on the impact of financial inclusion on the micro

and macro economy are scarce but emerging, and have revealed inconclusive results (Gokhale, 2009; Ghosh, 2008; GCAP, 2012; Adasme, et. al., 2006).

Increased bank activity which can be caused by entrance of new customers through financial inclusion can have a positive effect on bank performance (Allen *et. al.*, 2012; Kerata, 2007) nevertheless the long-term effect can be negative (Bateman & Chang, 2009; Kipesha & Zhang, 2013). In the last two decades studies have shown that commercial banks in Sub-Saharan Africa are more profitable than the rest of the world (Flamini et al., 2009 as cited by Ongore & Kusa, 2013). This is majorly due to investment in risky ventures, huge gap between the demand for bank service and the supply and concentration in government ownership in the industry. Proponents of financial inclusion assert that greater diversification of bank assets as a result of increased lending to smaller firms and individuals leads to increased profitability.

It can be argued that financial inclusion leads to increased banks' activities and in turn increased profitability through entrance of new customers and reduced transaction costs due to economies of scale (Hanning & Jensen, 2010; Allen *et.al*, 2012). There are contrasting views of the inverse relationship between outreach and profitability. Here the argument is that higher outreach means higher transaction cost, due to asymmetry of information on the new financial inclusion target clients and risk of moral hazards which leads to low unsustainable profits. It is argued that MFIs cannot be sustained for long without the funding from donors, federal government, regional government or others.

Financial inclusion can on the contrary be considered as a risky venture and can erode bank profitability as revealed by Johnson *et al.* (2005) in Kenya. The study noted that providing financial services in rural areas of Kenya on a sustainable basis is challenging due to poor communications infrastructure, relatively low population density, low levels of literacy, relatively undiversified economies, low profitability and/or high risk of many economic activities that characterizes the rural environment.

Methodology

The study was descriptive and longitudinal in nature and followed the work of Beck *et. al.*, (2006, 2009); Sarma (2008); and Sarma and Pias (2011); Beck's study identified variables that measure financial inclusion while Sarma's introduced a composite measure of financial inclusion. The banks under study were those that were in operation during the 9-year study period, had complete data set with annual financial statements from 2005- 2013 and had not undergone a merger or acquisition throughout the study period (see appendix 1).

The choice of commercial banks was guided by the fact that Kenya is a bank based and not a market-based economy and thus the banking industry intermediates most of the funds in the economy. Second the disaggregated statistical information for this sector is easily obtainable as all banks file their reports with the CBK (2005-12) which can be accessed from the CBK website. These arguments are in line with Beck *et. al* (2006). Financial inclusion as a policy agenda began in Kenya in 2007 through Vision 2030. A period of before and after deliberate focus on financial inclusion is appropriate thus the choice of years 2004 to 2013.

The study used secondary data which was obtained from three main sources namely; banks annual financial statements which were deposited in the website, bank supervision reports prepared by the CBK and the Banking Survey 2014. The information collected was guided by data collection data sheets. The data was ordinal in nature. The data collected was then transformed into percentages, ratios and indices were applicable to allow for analysis and comparison as in Ongore and Kusa (2013) and Beck *et. al.* (2009).

Descriptive statistics including mean, standard deviation, minimum and maximum were used to compare and analyse the performance of the banks, dimensions of financial inclusion and the index of financial inclusion. Pearson's Product Moment Correlation analysis was used to establish the nature and magnitude of the relationships between the study variables whereas simple linear regression was used to analyze the effect of the independent variable on the dependent variable.

The index of financial inclusion is a measure of inclusiveness of the financial sector of a country. This study used a multidimensional index that captured information on three dimensions of financial inclusion namely banking penetration, availability of banking services and usage of the banking services as developed by Sarma (2010). Penetration of the banking system was proxied by the number of bank accounts per 1000 adult population. Availability dimension was represented by presence of bank branches. ATMs were not included due to lack of sufficient and complete data. This is unlike Sarma's study that used both bank branches and ATMs. Usage dimension was calculated by the volume of private credit plus deposit to the GDP. Adult population was represented by persons aged fifteen years and above.

A dimension index for each of the three dimensions was first computed by the following formula:

$$d_i = w_i \frac{A_i - m_i}{M_i - m_i} \quad (1)$$

Where;

w_i = weight attached to the dimension i , $0 \leq w_i \leq 1$, A_i = Actual value of dimension i , m_i = lower limit for dimension i , given by the observed minimum for dimension I , M_i = upper limit for dimension i

The dimensions were calculated for the 30 banks annually. After calculating the dimension indexes, weights were assigned, with 1 for penetration, 0.25 for the availability and 0.5 for usage indexes respectively. This is in agreement with Sarma's (2010) study which supports giving less weight for the indexes of availability and usage dimensions due to lack of adequate data on some important indicators like internet banking, which reduces the importance of physical bank outlets. A computation of the distance between bank both full exclusion and complete exclusion, for all dimensions was computed as per Sarma and Pias (2011) study.

$$X_1 = \frac{\sqrt{d_1^2 + d_2^2 + \dots + d_n^2}}{\sqrt{(w_1^2 + w_2^2 + \dots + w_n^2)}} \quad (2)$$

$$X_2 = 1 - \frac{\sqrt{(w_1 - d_1)^2 + (w_2 - d_2)^2 + \dots + (w_n - d_n)^2}}{\sqrt{(w_1^2 + w_2^2 + \dots + w_n^2)}} \quad (3)$$

$$IFI = \frac{1}{2} [X_1 + X_2] \quad (4)$$

From the computations IFI lies between 0 and 1 and thus needs to be transformed to allow for normality and have the values lie between – infinite to positive infinite and use in the regression model. A natural log transformation was done. The transformed variable computed is an

increasing function of IFI, and hence it preserves the same ordering as IFI referred in study as lnIFI. This is in line with a study by Sarma & Pias (2011).

Three bank performance measures, ROA, ROE and NIM, as used in Ongore and Kusa (2013) study were adopted in this study. This study acknowledges that profit is the ultimate goal of commercial banks among other goals. The profitability measures were computed annually for each of the thirty banks using the formula in Table 1.

Table 1: Operationalization of Variables

Variable	Indicator	Measurement
Financial Inclusion (Independent Variable)	Bank availability(d1)	Index of Financial Inclusion (IFI)
	Bank usage (d2)	$IFI = \frac{1}{2} [X_1 + X_2]$
	Bank penetration(d3)	
Bank performance (Dependent Variable)	Financial performance	ROA= $\frac{\text{Profit after Tax}}{\text{Total Assets}} * 100$
		ROE = $\frac{\text{ProfitafterTax}}{\text{TotalShareholders'Funds}} * 100$
		NIM = $\frac{\text{Net Interest Income}}{\text{Total Assets}} * 100$

To determine the effect of financial inclusion on financial performance of commercial banks in Kenya a simple regression analysis was employed.

$$\text{The model was as follows: } FP_{i,t} = \alpha_1 + \beta_1 \ln IFI_{i,t} + \epsilon_1$$

Where:

$FP_{i,t}$ is financial performance for the bank i at time t represented by ROA, ROE and NIM, α_1 is the constant, β_1 is the regression coefficient, $\ln IFI$ is the natural log of Index of financial inclusion for bank i , at time t , ϵ is the error term

Results and Discussion

Bank Financial Performance

Table 2 reveals that financial performance of commercial banks in Kenya from 2005-2013 had a mean of 3.14, 20.51 and 6.36 respectively for ROA, ROE and NIM. In 2005 the average bank performance was 2.18, 15.58 and 6.06 as expressed by ROA, ROE and NIM respectively. In 2006 and 2007 the above figures changed to 2.49 to 3.34, 18.43 to 21.09 and 6.17 to 6.09 respectively. In 2008 financial performance declined to 2.89, 19.75 and 6.40 respectively for ROA, ROE and NIM. This improvement was not consistent but rather erratic with a steep drop in 2011 in ROA and ROE at 3.57 and 23.54 respectively. In 2012 ROA and ROE dropped further to 3.37, and 20.7 respectively.

These findings are consistent with and Ongore and Kusa (2013). The ratio of average ROA is higher than the 2.0 average in Sub Saharan Africa. This can be explained by the nature of the banks represented in the study been commercial in nature and probably representing the profitable banks when compared to the mean of the banking sector as a whole.

Table 2: Bank Performance

		YEAR									Mean
		2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
ROA	Mean	2.177	2.493	3.344	2.931	2.885	3.985	3.565	3.370	3.517	3.141
	Std. Dev	2.184	1.888	2.160	2.281	1.997	1.794	1.794	2.477	2.080	2.122
ROE	Mean	15.581	18.43	21.08	19.750	18.16	25.89	23.54	20.70	21.483	20.515
	Std. Dev	12.153	13.24	11.67	15.033	16.44	13.82	11.61	13.24	13.192	13.571
NIM	Mean	6.059	6.170	6.087	6.403	6.400	6.319	6.388	6.577	6.840	6.360
	Std. Dev	2.272	2.130	1.883	2.040	2.328	2.903	2.293	3.110	2.273	2.364

Indicators of Dimensions of Financial Inclusion

Table 3 on Indicators of Dimensions of IFI presents descriptive statistics of the financial inclusion dimensions for the years 2005-2013. Statistics pertaining to each dimension of the index are presented in a separate panel for all the years. Descriptive statistics reported here are: minimum, maximum, mean, standard deviation. The study revealed as indicated in table 3 that the number of bank branches per 100,000 adults on average very low, less 1 account per 100,000 adults throughout the study period. However, the bank with the highest number of bank branches had 1 in 2011 to 2014 as compared to a low of .086 in 2005. The drop in rate of increase in growth in bank branches 200-2013 can be accounted for by use of new delivery channels like agency, online and telephone banking. The number of deposit accounts per 1000 adult population varied throughout the study period with a steady marginal increase from a mean of .016 to .04526 in 2009 and 2013 respectively the maximum number of deposit accounts per 1000 adults was .25 in 2013.

The number of deposit accounts per 1000 adult population varied throughout the study period with a steady marginal increase from a mean of .016 to .04526 in 2009 and 2013 respectively the maximum number of deposit accounts per 1000 adults was .25 in 2013. On an average, the number of deposit accounts per 1000 adults in Kenya is low. Finally, on average data on the volume of credit and deposit as a percentage of the GDP was less than 1% through the study period.

Table 3: Indicators of Dimensions of IFI

Number of bank branches per 100,000 adults (Availability dimension)									
1.1.1	2005	2006	2007	2008	2009	2010	2011	2012	2013
Mean	0.009	0.013	0.019	0.026	0.033	0.041	0.051	0.055	0.056
Std. Dev	0.021	0.032	0.055	0.086	0.108	0.140	0.176	0.186	0.189
Minimum	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Maximum	0.086	0.157	0.289	0.463	0.579	0.746	0.939	0.981	1.000
Number of deposit accounts per 1000 adults (Penetration dimension)									
Mean	0.016	0.019	0.024	0.032	0.035	0.037	0.040	0.044	0.045
Std. Dev	0.025	0.027	0.036	0.052	0.052	0.054	0.057	0.063	0.064
Minimum	0.000	0.000	0.000	0.000	0.000	0.002	0.004	0.003	0.003
Maximum	0.116	0.115	0.180	0.216	0.206	0.205	0.227	0.245	0.250
Total credit & Deposits/GDP (%) (Usage dimension)									
Mean	0.063	0.063	0.064	0.070	0.073	0.081	0.081	0.084	0.088
Std. Dev	0.110	0.106	0.102	0.111	0.111	0.116	0.115	0.116	0.119
Minimum	0.001	0.000	0.000	0.001	0.001	0.000	0.001	0.000	0.000
Maximum	0.475	0.453	0.460	0.500	0.450	0.388	0.378	0.375	0.372

Commercial Banks' Level of Financial Inclusion

As depicted in Table 4 on Commercial Banks level of Financial Inclusion, the findings show the degree of financial inclusion in Kenya over the 9-year study period. The level of financial inclusion for all the commercial banks has been increasing steadily though marginally since 2005 to 2013. Levels of bank financial inclusion were analysed and classified following Sarma and Pias (2011) five level categorization; where levels of IFI greater than 0.75 up to the maximum level of 1.00 indicate high financial inclusion; levels greater than 0.50 and less than 0.75 represent high medium financial inclusion and levels greater than 0.25 and less than 0.50 indicate medium financial inclusion. Lower medium financial inclusion is represented by levels greater than 0.10 and less than 0.25 and finally low financial inclusion is represented by values between 0.00 and less than 0.10. The study revealed that the level of IFI was at 0.0443 in 2005, .0474, .0533 and .0628 in 2006, 2007 and 2008 respectively. In 2009, 2010, 2011, 2012 and 2013 the levels increased to .0695, .0796, .0872, .0923 and .0951 respectively. This indicated a consistent growth in the level of financial inclusion throughout the study period to 0.0951 in 2013. From the IFI values it can be concluded that the level of financial inclusion in Kenya is low as per Sarma and Pias (2011) categorization. Further analysis of the highest values of IFI per year as contributed by individual banks revealed that the level was high with an IFI of .8702, .9009 .9222 in 2011, 2012 and 2013 respectively. During the same period of 2011, 2012 and 2013 the minimum values of IFI were .0040, .0040, .0038 respectively.

The categorization of the levels of bank FI follows Sarma (2011) categorization where $0.75 < IFI < 1.00$ implies high financial inclusion; $0.50 < IFI < 0.75$, high medium financial inclusion; $0.25 < IFI < 0.50$ – medium financial inclusion; $0.10 < IFI < 0.25$ – lower medium financial inclusion and $0.00 < IFI < 0.10$ – low financial inclusion.

Table 4: Commercial Banks' Level of Financial Inclusion

YEAR	Mean	Std. Deviation	Minimum	Maximum
2005	.0443	.0709	.0015	.2974
2006	.0474	.0723	.0024	.2872
2007	.0533	.0818	.0026	.3088
2008	.0628	.1078	.0034	.4654
2009	.0695	.1234	.0027	.5739
2010	.0796	.1490	.0035	.7284
2011	.0872	.1734	.0040	.8702
2012	.0923	.1811	.0040	.9009
2013	.0951	.1842	.0038	.9222

The study revealed that the level of IFI at 0.04429 in 2005 was low and in 2013 at 0.095093 was still in the lower financial inclusion category. In a study by Sarma and Pias (2012) the level of financial inclusion in Kenya was 0.097, 0.11, 0.128, 0.148 and 0.172 from 2005 to 2009 respectively. A possible cause of the difference in the results emanates from the inclusion of all commercial banks and other deposit-takers including Microfinance Institution which are in the lead in financial inclusion in Kenya in their study. From the difference in the levels of IFI it can be concluded that commercial banks are still lagging behind in financial inclusion when compared to other financial institutions.

Tests of Hypothesis and Discussion

Diagnostic Tests

Tests of assumptions applied in regression models were conducted. The Kolmogorov-Smirnov and Shapiro-Wilk were used to tests for normality. The results reveal that of the variables in the study, only ROA had a p-value greater than .05 implying normal distribution. Q-Q plots were extracted to give a visual impression of the dependent variables' distribution and the observed values of the study variables were normally distributed. It should be noted that the Kolmogorov-Smirnov and Shapiro-Wilk are very sensitive to outliers and that could be a possible explanation of the significant results generated for ROA.

The application of linear regression assumes linearity between the dependent and the independent variables. ANOVA was used in examining these relationships and the results established that the data set did not violate the assumption of linearity as p-values of ROA, ROE, NIM and LnIFI were .958, .169 and which is greater than .05 implying that the relationship between the dependent and independent variables is linear.

This study sought to establish the influence of financial inclusion on commercial banks performance using a simple regression analysis. The tests were done at 5% significance level ($\alpha = 0.05$). The evaluation focused on the hypotheses that there is no significant relationship between financial inclusion and financial performance of commercial banks in Kenya represented by ROA, ROE and NIM.

The study tested the assumption that variance mean is zero and constant variance using the Glesjer test and the results revealed that the sig. value was greater than 0.05 meaning no heteroscedasticity problem. The correlation between the profitability variables was -.837, .113 and -.007 for ROA ROE and NIM. Correlation between the variables were all below the maximum threshold of 0.9, hence it was concluded that there was absence of colinearity.

Test of Hypothesis and Interpretation of Findings

Table 6 on effect of financial inclusion on ROA depicts that IFI explain 16.9 % variation in ROA, the relationship is fairly strong and positive ($r=.411$). From the ANOVA results the overall model was statistically significant with a $p < 0.05$ ($p=.000$; $F=54.393$). The study fails to accept the null hypothesis H1a that financial inclusion does not have a significant effect on ROA and conclude that IFI has a significantly effect on ROA.

Table 5: Effect of Financial Inclusion on ROA

Model	R	R Square	Adjusted R ²	SEE		
1	.411a	0.169	0.166	1.9384		
ANOVA						
	Sum of Squares	df	Mean Square	F	Sig.	
Regression	204.369	1	204.37	54.393	.000b	
Residual	1006.954	268	3.757			
Total	1211.324	269				
Coefficients						
1.1.2	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
(Constant)	5.454	0.335			16.277	0
lnIFI	0.62	0.084	0.411		7.375	0

a. Dependent Variable: ROA

b. Predictors: (Constant), lnIFI

The results on Table 6 on effect of financial inclusion on ROE indicated that there is a positive correlation between IFI and ROE ($r=.526$) and IFI explains 27.6 % ($R^2=.276$) variation in ROE. The model is statistically significant with $p < .05$ ($p=.000$; $F= 102.304$) thus failing to reject sub-hypothesis that financial inclusion does not have a significant effect on ROE.

Table 6: Effect of Financial Inclusion on ROE

Model	R	R Square	Adjusted R ²	SEE		
2	.526a	0.276	0.274	11.5663		
ANOVA						
	Sum of Squares	df	Mean Square	F	Sig.	
Regression	13686.176	1	13686.176	102.304	.000b	
Residual	35852.838	268	133.779			
Total	49539.013	269				
Coefficients						
	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
(Constant)	39.443	1.999			19.728	0
lnIFI	5.076	0.502	0.526		10.115	0

a. Dependent Variable: ROE

b. Predictors: (Constant), lnIFI

SEE=Standard Error of Estimate

The results in table 7 on the effect of financial inclusion on NIM revealed a weak positive relationship is ($r = .189$). R^2 was .036 meaning that the IFI explain only 3.6 % of the variation in NIM. The regression model is statistically significant with $p < .05$ ($p=.002$; $F= 9.906$) thus

the study fails to reject sub-hypothesis H1c that financial inclusion does not have a significant effect on NIM.

Table 7: Effect of Financial Inclusion on NIM

	R	R Square	Adjusted R²	SEE	
Model 3	.189a	0.036	0.032	2.32613	
ANOVA					
	Sum of Squares	Df	Mean Square	F	Sig.
Regression	53.6	1	53.6	9.906	.002b
Residual	1450.117	268	5.411		
Total	1503.717	269			
Coefficients					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	7.545	0.402		18.765	0
lnIFI	0.318	0.101	0.189	3.147	0.002

a. Dependent Variable: NIM

b. Predictors: (Constant), lnIFI

The finding of this study agrees with the argument that financial inclusion leads to increased profitability and are consistent with the findings of Kerata (2007) and Allen *et al.* (2012) but are inconsistent with those of Kipsha and Zhang (2013).

Conclusion and Recommendations

Conclusion

Results on performance of commercial banks in Kenya from 2005-2013 was average and positive. The ratio of average ROA at 3.14 was higher than the 2.00 average in Sub Saharan Africa. The level of inclusiveness of the 30 banks is varied as depicted by the maximum and minimum values. This can be interpreted to mean that not all banks are pursuing financial inclusion with the same aggressiveness. Analysis on the annual rate of growth of IFI revealed a decline in growth rate in 2009 which can be explained by a number of factors such as the effects of the postelection violence of 2007/2008 which led to a drop-in bank lending and repayment of loan and general decline in the country's GDP. The introduction and adoption of internet banking and agency banking in 2010 could have led to other channels of bank delivery not factored in the study.

Financial inclusion has a significant effect on financial performance of commercial banks in Kenya as measured by ROA, ROE and NIM. This can be interpreted to mean that reaching out to those previously excluded and offering banking service to all who are interested has a positive influence on financial performance of commercial banks in Kenya. The findings revealed that a greater percentage of the increase NIM was not caused by financial inclusion. This can be concluded that banks unlike MFI and other nonbank financial institutions charge a lower interest rate and can be best suited to offer credit to the masses when compared to MFIs and other nonbank financial institutions which charge high interest rates.

Limitations of the Study and Recommendations

The study suffered from two main limitations. The first limitation of the study was on sole use of traditional delivery channels when determining bank penetration. The banking industry is experiencing a complete revolution in its delivery channels. Traditional channels like physical

branch outlets are being replaced by virtual branches, mobile banking, agency banking and internet banking. This study focused on the traditional outlet of branches and was unable to get information on the number of ATMs per bank for all the nine years of study. ATMs are currently interoperable and are co-shared through the Kenswitch. Kenswitch is run by a consortium of banks under the National Payments Systems Modernization and Reform Process of the Central Bank of Kenya. Kenswitch enables participating financial institutions to share payment infrastructure such Automated Teller Machines (ATMs) and Point of Sale (POS) terminals so as to avoid the duplication of scarce resources. This makes the findings of the study did not reflect the real level of financial inclusion in Kenya especially in terms of penetration. The second limitation to the study was its focus was on commercial banks in Kenya and not MFIs and other nonbank financial institutions. Thus the generalization of the findings may not capture the real situation in Kenya. Following these limitations, the authors recommend the following:

Based on the study findings that financial inclusion has a significant effect on financial performance of commercial banks in Kenya as measured by ROA, ROE and NIM, banks should pursue financial inclusion as it does not erode profitability. This supports the argument that financial inclusion can be pursued as a profitable venture and not merely a social undertaking.

The level of profitability can be enhanced by maintaining the screening process to a level that does not exclude the majority but still reduces information asymmetry. Banks should also find way of improving the level of financial inclusion by expanding on dimensions of penetration by using channels easily used by all and coming up with product that are readily accepted to increase usage.

The study also noted a lower increase in NIM indicating that financial inclusion had a lower positive relationship with increased interest costs. The study recommends that banks should not increase their interest rate but maintain it at a reasonable market friendly rate.

References

- Adasme, O., Majnoni, G., & Uribe, M. (2006). *Access and Risk: Friends or Foes? Lessons from Chile*. Policy Research Working Paper 4003, World Bank, Washington, DC.
- Aduda, J. & Kalunda, E., (2012). Financial inclusion and financial sector stability with reference to Kenya. *Journal of Applied Finance & Banking*, 2(6), 2012, 95-120.
- Allen F., Carletti, E., Cull, R., Qian, J., Senbet, L. & Valenzuela, P. (2012). Improving Access to Banking: Evidence from Kenya. Policy Research Working Paper Series 6593. The World Bank.
- Bateman, M. & Chang H. (2009). *The Microfinance Illusion, Working Paper. University of Juraj Dobrila Pula, Croatia, and University of Cambridge, UK*.
- Beck, T., Demirguc-Kunt, A., & Peria, M. (2006). Reaching Out: Access to and Use of Banking Services across Countries. *Journal of Financial Economics*, 85(1) 234-266.
- Beck, T., Hesse, H., Kick, T. & Westernhagen, N. (2009). *Bank Ownership and Stability: Evidence from Germany*.
- Beck T, Cull R, Fuchs M, Getenga J, Gatere P, Randa J, Trandafir M. (2010) Banking Sector Stability, Efficiency, and Outreach in Kenya.
- Burgess R. & Pandey R. (2005). Do Rural Banks Matter? Evidence from the Indian Social Banking Experiment, *The American Economic Review*, Vol 95, No.3 (June 2005) pp 780-795. <http://www.jstor.org/stable/4132740> .Accessed: 19/02/2012

- Carneiro, F.L. (2011). Is There Evidence of a Trade-off Between Financial Stability and Efficiency of Financial Intermediation? Preliminary insights from the global financial crisis of 2007-2009. *Weather head Center for International Affairs Harvard University*.
- Central Bank of Kenya. (2005-12). *Bank Supervision Annual Report*. Nairobi: CBK.
- Chibba, M., (2009). Financial inclusion, poverty reduction and the millennium development goals, *European Journal of Development Research*, 21(2), 213-230.
- Consultative Group to Assist the Poor (CGAP) (2012). Report on Financial Inclusion and The Linkages to Stability, Integrity and Protection: Insights from the South African Experience.
- Demirgüç-Kunt, A., & Klapper, L., (2012). *Measuring Financial Inclusion: The Global Findex Database*. Policy Research Working Paper 6025, World Bank, Washington, DC.
- Diamond, D. & Dybvig, P., (1983). Bank runs, deposit insurance, and liquidity. *Journal of Political Economy* 91 (June), 401–419.
- Dupas, P., & Robinson, R., (2009). “Savings Constraints and Microenterprise Development: Evidence from a Field Experiment in Kenya.” Working Paper 14693. Cambridge, Mass.: National Bureau of Economic Research.
- Gokhale, K. (2009). A global surge in tiny loans spurs credit bubble in a slum. *Wall Street Journal Online*. August 13. <http://online.wsj.com/article/SB125012112518027581.html>. Accessed on 15.10.2012.
- Ghosh, S. (2008). Financial Inclusion and Financial Fragility: an Empirical Note. *Munich Personal RePEc Archive*. Online at <http://mpira.ub.uni-muenchen.de/24252/>. Accessed on 5.06.2012.
- Hannig, A. & Jansen, S. (2010). Financial Inclusion and Financial Stability: Current Policy Issues. Asian Development Bank Institute, Tokyo. Working Paper 259.
- Johnson S, Malkamaki M & Wanjau K (2005). Tackling The ‘Frontiers’ of Microfinance In Kenya: The Role for Decentralized Services.
- Kempson, E., & Whyley, C., (1999). Kept out or opted out? Understanding and combating financial exclusion, Policy Press.
- Kerandi, O., Nyaoga, B., Bosire, M. & Nyambega, E. (2014). A Survey of Performance Improvement through Benchmarking in Commercial Banks in Kenya: The Managers’ Perception and Experience. *International Journal of Business and Economics Research*, 3(1), 6-14.
- Kereta, B. (2007). Outreach and Financial Performance Analysis of Microfinance Institutions in Ethiopia. African Economic Conference, Addis Ababa, Ethiopia.
- Kumar, C., & Mishra, S. (nd). Banking Outreach and Household level Access: Analyzing Financial Inclusion in India. M.Phil. thesis: Indira Gandhi Institute of Development Research (IGIDR), Mumbai.
- Kipasha, E.F. & Zhang, X. (2013). “Sustainability, Profitability and Outreach Tradeoffs: Evidences from Microfinance Institutions in East Africa”. *European Journal of Business and Management*. 5(8).
- Mishkin, F., S. (1990). *Asymmetric Information and Financial Crises: A Historical Perspective*. National Bureau of Economic Research, Working Paper No. 3400.
- Ommeren, S. (2011). Banks’ Profitability: An Examination of The Determinants of Banks’ Profitability in The European Banking Sector. Unpublished Master’s Thesis, Erasmus University Rotterdam, Nederland.
- Ongore V.O & Kusa G. B. (2013). Determinants of Financial Performance of Commercial Banks in Kenya, *International Journal of Economics and Financial Issues*, 3(1) 237-252.

- Pollard, J. (1996). "Banking at The Margins: A Geography of Financial Exclusion In Los Angeles" *Environment and Planning A* 28 1209-123 2
- Sahrawat, R. (2010). *Financial Inclusion from Obligation to Opportunity*. Tata Consultancy Service Ltd.
- Sarma, M. (2010). *Index of Financial Inclusion, Discussion Papers in Economics* November, 2010, Discussion Paper 10-05.
- Sarma, M. & Pias, J. (2011). Financial Inclusion and Development: A Cross Country Analysis, *Journal of International Development*, 23: 613-628.

Appendix: List of Commercial Banks in Kenya in the Study

1. African Banking Corporation Ltd
2. Bank of Baroda (K) Ltd
3. Bank of India
4. Barclays Bank of Kenya Ltd
5. Chase Bank (K) Ltd
6. Citibank N.A. Kenya
7. Consolidated Bank of Kenya Ltd
8. Co-operative Bank of Kenya Ltd
9. Credit Bank Ltd
10. Development Bank of Kenya Ltd
11. Diamond Trust Bank Kenya Ltd
12. Dubai Bank Kenya Ltd
13. Fidelity Commercial Bank Ltd
14. Fina Bank Ltd
15. Giro Commercial Bank Ltd
16. Guardian Bank Ltd
17. Habib Bank A.G. Zurich
18. Habib Bank Ltd
19. Imperial Bank Ltd
20. I & M Bank Ltd
21. K-Rep Bank Ltd
22. Middle East Bank (K) Ltd
23. National Bank of Kenya Ltd
24. NIC Bank Ltd
25. Oriental Commercial Bank Ltd
26. Paramount Universal Bank Ltd
27. Standard Chartered Bank K Ltd
28. Trans-National Bank Ltd
29. Victoria Commercial Bank Ltd
30. Equity Bank Ltd