

**FACTORS INFLUENCING NON-INTEREST INCOME IN COMMERCIAL  
BANKS IN KENYA**

**By**

**ANN NYOKABI WANG'ONDU**

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**DECLARATION**

This research project is my original work and has not been submitted for a degree in any other University.

**Signature** ..... **Date** .....

**ANN NYOKABI WANG'ONDU**

**REG: D61/72496/2014**

This research project has been submitted for Examination with the approval of the University Supervisor.

**Signature** ..... **Date** .....

**Mr J.M Karanja**

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## ABSTRACT

Bank's operating income is derived from both interest and non-interest income. Increased non-interest income would improve bank earnings, and also change their output mix, variable. There are various factors that affect non-interest income. They include deregulation, technological development, Bank size and banks' productivity. The study sought to establish the perceived effect the factors influencing non-interest income in commercial banks in Kenya. The study was guided by the following theories; arbitrage pricing theory and modern portfolio theory. The study employed a descriptive research design. The target population comprised of all the 43 Commercial Banks that have been operating in Kenya. Secondary data was collected from 2012- 2016 audited annual financial reports for individual banks found on the banks website and at the Central Bank of Kenya website and library. Descriptive statistics were used to quantitatively describe the important features of the variables using frequency, mean, maximum, minimum and standard deviation. Regression was used in determining the relationship between government deregulation, bank productivity, technological changes and bank size and non-interest income of banks. The study concludes that government deregulation, significantly and positively related to non-interest income, deregulation enhances competition in the banking sector which will in turn prompt banks to diversify their products (investment in non- interest income) so as to stabilize income. Bank productivity significantly and negatively related to non-interest income, banks liabilities and assets have some output characteristics that result into non-interest income, technological change is positively and significantly related to non-Interest income, investments in technological changes would increase generation of Non-interest income. Bank size (measured total in asset value) is significantly and positively related to non-interest income Banks with high asset value are expected to have higher returns in non-interest income comparison to highly small financial institutions. In this regard, deregulation process should aim at streamlining institutionalization process for higher Non-interest income generation. However, the regulatory authority should come in and homogenize prices of such activities in order to protect bank clients from being exploited. On productivity, Commercial banks in Kenya should keep standard match between overall productivity and Non-interest income estimates. This will help to ensure that productivity does not overturn banks projection on Non-interest income estimates. Government should focus on policy that encourage introduction of low cost advanced technologies in the banking sector. For example policy that encouraged self-service banking. Commercial banks in Kenya should come up with policy that increases diversification and productivity that would assist banks to shift their dependence on interest income and invest in other non-interest income ventures in the long run. To increase sizes commercial banks should come up with a policy that would assist banks expand their activities into different investment ventures and this can be done through investing in financial markets and selling of mutual funds in the market. Policies on diversification should also be put in place by the government to avoid relying on traditional bank activities. A policy that encourages commercial banks to engage in Non-interest income activities

## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background of the Study**

Bank's operating income is derived from both interest and non-interest income. Interest income being from loans given out and non-interest income is derived from fees and charges from offering other financial services. Interest income is also known as traditional source of income. Most commercial banks rely significantly on traditional source of income. However this source of income has lost important regulatory protection as new competition has emerged from non-bank financial institutions which have significantly reduced interest income earned by commercial banks (Chiorrazo, Milani & Salvini, 2008). Individual bank characteristics, technological development, deregulation and globalization has exposed most commercial banks to intense competition from non-bank financial institution necessitating commercial banks to look for other sources of income other than depending on interest incomes only (DeYoung & Rice, 2010). Therefore most commercial banks have decided to diversify their sources of income mainly to non-interest income so as to maintain their profitability and to ensure their financial stability in the competitive market.

The study is anchored on modern portfolio theory and arbitrage pricing theory. Arbitrage pricing theory is an asset pricing theory that states that the anticipated investment return on financial assets can be modeled to form a linear correlation of different macroeconomic variables (Ross 1976). Modern portfolio theory proposes that majority of investors are usually cautious with their investments and so they take the smallest

possible risk to get a highest possible return, optimizing return on the risk ratio. This theory emphasizes that investors should not base their judgments by only looking at the expected risk and return of an individual stock (Markowitz, 1959). It support investment in various stocks for benefits of diversifications and decrease in the volatility of the entire portfolio.

The consequences of non-interest income for the financial performance of commercial banks in Kenya are not well understood. All else equal, an increase in noninterest income will improve earnings – but an increase in noninterest income seldom occurs without concomitant changes in interest income, variable inputs, fixed inputs, and/or financing structure found out (Kerstein & Kozberg, 2013). As non-interest income trended up during the 1990s, it was generally believed that shifting banks' income away from intermediation-based activities (in which bank income was subject to credit risk and interest rate risk), and toward fee-based financial products and services, would reduce banks' income volatility. Moreover, it was conventionally believed that expansion into new fee-based products and services reduced earnings volatility due to diversification effects. This study, therefore, seeks to add to Kenyan economic literature by investigating the factors influencing non-interest income of commercial banks in Kenya. Precisely, it determines if non-interest income has taken a critical role in controlling profitability of the commercial banks, and if it has assisted in the improvement of the financial health of the commercial banks.

### **1.1.1 Non-Interest Income**

Non-interest income is bank and creditor income derived primarily from fees including deposit and transaction fees, insufficient funds fees, annual fees, monthly account service charges, inactivity fees, cheque and deposit slip fees, and so on. Institutions charge fees that provide non-interest income as a way of generating revenue and ensuring liquidity in the event of increased default rates. Credit card issuers also charge penalty fees, including late fees and over-the-limit fees (Keeton, 2010). Interest is the cost of borrowing money and is considered a form of income. For some companies, interest represents operating income, which is income from normal business operations. The core purpose of this firm's business model is to sell money, so as such, its primary source of income is interest, and its primary asset is cash. These firms are referred to as financial institutions or banks. Banks rely heavily on non-interest income when interest rates are low and tend to use it as a marketing tool when rates are high.

Financial Institutions charge fees that make available non-interest income as a way of creating revenue and ensuring profitability in the event of increased default rates. Bank's non-interest income is the proceeds mainly from service and penalty charges, asset sales and property leasing. Unlike interest income, this income is largely unaffected by economic and financial market cycles and is usually not controlled by law or regulation. The large financial institutions are able to make a substantial amount of monies through non-interest income, especially through service charges on accounts they hold. Non-interest income is among the significant factor influencing bank profitability according to (Bodla & Verma, 2007)

An efficient bank should generate higher amounts of noninterest income. A well-managed bank should set its fees to fully exploit market demand, and will cross-sell additional fee-based products to a larger percentage of its core customer base. Thus, holding product mix and banking strategy constant, the intensity of non-interest income is likely to be a forward-looking signal of a bank's financial success (Keeton, 2010). However due to new development like improvement of technology, competition, existences of interest forbidden society, deregulation then banks should not focus only on interest income activities thus diversification is encouraged. Findings by Mndeme (2015), confirmed that diversification is good for the banking sector profitability.

### **1.1.2 Factors Influencing Non-Interest Income**

There are various factors that affect non-interest income. They include deregulation, technological development, bank size and bank productivity. Financial sector liberalization, deregulation and technological development have eroded commercial banks competitive advantage. According to Brunnermeier (2015) deregulation is the removal or simplification of government rules and regulations that constrain the operation of market forces. Deregulation does not mean elimination of laws against fraud or property rights but eliminating or reducing government control of how business is done, thereby moving toward a more laissez-faire, free market. In recent times, the banking industry has been transformed by sweeping deregulation and rapid technological advances in information flows, communications infrastructure, and financial markets. Deregulation fostered competition between banks, nonbanks, and financial markets

where none existed before. In response to these competitive threats and opportunities, many banks embraced the new technologies that drastically altered their production and distribution strategies and resulted in large increases in noninterest income. In contrast, many other banks have continued to use traditional banking strategies for which noninterest income remains relatively less important (Guyo, 2014).

According to Hahm (2008) advances in information and communications technology (the Internet, Automated teller machines), new intermediation technologies (loan securitizations, credit scoring), and the introduction and expansion of financial instruments and markets (high-yield bonds, commercial paper, financial derivatives) all contribute to non-interest income to the bank. Hahm (2008) noted that deregulation allowed banks to achieve the scale to use these new technologies more efficiently, and the increased competition induced by deregulation provided banks with the incentives to adopt and adapt these new technologies. Many of these new technologies have emphasized noninterest income while de-emphasizing interest income at banks. Banks can extract fee income from customers willing to pay a convenience premium for doing their banking at ATMs or over the Internet. Banks can earn loan origination, loan securitization, and loan servicing fees to offset the interest income that they lost with the disintermediation of consumer lending (Hugo, 2013). Large amounts of noninterest income (from origination, securitization, and servicing fees) generated through technological advances are essential for the profitability of the bank.

Kagumya (2011) used the value added approach to describe how bank productivity contributes to non-interest income and which views banks as production units that produce loans and deposits using labor and capital. In this approach, both liabilities and

assets have some output characteristics that result into non-interest income. Nonetheless, only those categories that have substantial value addition are treated as outputs while others are treated as either inputs or intermediate products depending on the individual attributes of each category. Another approach found in the literature is referred to as the user-cost approach. This approach described by Kiweu (2012) uses the simple rule that the net revenue generated by a particular asset or liability item determines whether the financial product is an input or an output. This approach emphasizes the profitability of a bank in relation to various expenditures.

### **1.1.3 Commercial Banks in Kenya**

The banking sector in Kenya is an essential part of the economy and is among the major economy drivers. The banking industry entails Commercial Banks, Non-Bank Financial Institutions, Forex Bureaus and Deposit-taking Microfinance Institutions. In Kenya, the banking sector is governed by Companies Act, the Banking Act, the Central Bank of Kenya Act and the different guidelines issued by the Central Bank of Kenya (CBK, 2014). The Central Bank of Kenya's responsibility among others is to formulate and implement monetary policies in the banking sector. It is also responsible for determining of bank's liquidity, solvency and ensuring that the commercial banks operate efficiently.

The banking industry has grown and as at 31st December 2014, the banking sector comprised of the Central Bank of Kenya, as the regulatory authority, 44 banking institutions (43 commercial banks and 1 mortgage finance company), 8 representative offices of foreign banks, 9 Microfinance Banks, 2 Credit Reference Bureaus, 13

Money Remittance Providers and 87 Foreign Exchange (forex) Bureaus. Out of the 44 banking institutions, 30 were locally owned while 14 were foreign owned (Guyo, 2014).

Tight monetary policy in 2012 due to deteriorating current account balance led to the central bank rate (CBR) increasing to eighteen percent. This led banks to shift their source of income to traditional interest income by increasing their lending rates hence reaping more profits at the expense of non-interest income which declined to almost twenty three percent of the total income in the banking sector. In 2013 the economy slightly stabilized and the CBK relaxed its CBR from eighteen percent to eleven percent which led commercial banks to diversify their sources of income so as to ensure stability in their earnings. This was reflected by a slight increase of non-interest income by one percent in 2013 (CBK, 2014).

## **1.2 Research Problem**

Increased non-interest income would improve bank earnings, and also change their output mix, variable. Banks have to find innovative ways to attract investors and remain in business and one of the ways is to be good to the stakeholders so that they do well (Brunnermeier,2015). Banks with higher non-interest income, that is, noncore activities like investment banking, venture capital and trading activities tend to have a higher contribution to systemic risk than traditional banking whose only activities are deposit taking and lending.

Commercial Banks in Kenya mainly depends on interest, but interest income has declined remarkably due to CBK publication that directed commercial bank reduce interest lending rate, decrease of treasury bond and bills leading to revenue declining at a



higher rate (Gichure, 2015). To curb these challenges, the central bank of Kenya released a legislation that allows commercial banks to contract third party retail networks as agents.

Studies on the concept of non-interest income have been done both locally and internationally. Amediku (2012), studied the impact of income diversification on bank performance of Zenith Bank, Cal Bank and Unibank in Ghana. The study found that bank income sources are diversified significantly in the Ghanaian banking industry and that both interest and non-interest activities significantly impacts positively on bank performance while bank growth in the number of branches significantly impacts negatively on bank performance. Stiroh and Rumble (2006), indicated a worse risk-return trade-off for USA commercial banks venturing into income source diversification. Chiarozza (2008), show that income source diversification increases risk-return trade-off for European banks.

Kagumya (2011), looked at the factors affecting non-interest income in commercial banks in Uganda. Findings reveal that despite the rise in aggregate levels of non-interest income in Uganda, its relative percentage share to total income for the industry was averaging good annually over the period under review. There was a significant effect of globalization and financial performance on overall net non-interest income. Similarly, Atellu (2014), investigated the determinants of non-interest income in Kenya's commercial banks. The main findings are that non-interest income of commercial banks in Kenya is affected by management efficiency, bank's size, technological development and macroeconomic factors. From the studies little has been done on factors influencing non-interest income in commercial banks in Kenya. This study sought to answer the

question; what are the factors influencing non-interest income in commercial banks in Kenya?

### **1.3 Research Objective**

To determine the factors influencing non-interest income in commercial banks in Kenya

### **1.4 Value of the Study**

The findings will also be useful to policy makers and regulators in the banking sector. This study will guide the government on how monetary and fiscal policies influence firm profitability and hence contribute in improvement of policy making. The study will also provide useful insights to CBK the regulator of commercial banks on how non-interest income, regulatory and procedural requirements could impact on the profitability of commercial bank in general as they endeavor to conform. In this way, the study findings will offer useful inputs to advise the review of the policy and legal framework.

To the bank managers, the study will help to diversify their business from traditional interest income to a fee based earning activities like investment banking and insurance services so as to stabilize their lending rates and profitability in the long run. Diversification can greatly reduce default risk because as non-interest income increases, banks will shift from lending activities.

The research will contribute to body of knowledge by documenting the contribution and factors influencing interest and non-interest income to the banks and the profitability in financial institution. Bank manager's income and professional reputations are clearly linked to bank earnings and hence high instability or volatility of earning will fare poorly

on their performance. The information will enable shareholder to know which banks are able to invest and mitigate the uncertainty of future income through diversification and hence maximize the returns.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter presents a review of the related literature on the factors influencing non-interest income as presented by various researchers, scholars, analysts and authors. The chapter also provides the theories underpinning the study.

### **2.2 Theoretical Review**

This section examines the various theories that will be used to inform the study on the factors influencing non-interest income. The study was guided by the following theories; arbitrage pricing theory and modern portfolio theory

#### **2.2.1 Arbitrage Pricing Theory**

Arbitrage pricing theory was created in 1976 by Stephen Ross. The theory describes the price where a mispriced asset is expected to be. It is often viewed as an alternative to the capital asset pricing model (CAPM), since the APT has more flexible assumption requirements. Whereas the CAPM formula requires the market's expected return, APT uses the risky asset's expected return and the risk premium of a number of macroeconomic factors (Burmeister, 2006). Arbitrageurs use the APT model to profit by taking advantage of mispriced securities, which have prices that differ from the theoretical price predicted by the model. By shorting an overpriced security, while concurrently going long in the portfolio the APT calculations were based on, the arbitrageur is in a position to make a theoretically risk-free profit.

Arbitrage pricing theory (APT) is a general theory of asset pricing that holds that the expected return of a financial asset can be modeled as a linear function of various macroeconomic factors or theoretical market indices, where sensitivity to changes in each factor is represented by a factor-specific beta coefficient. The model-derived rate of return will then be used to price the asset correctly the asset price should equal the expected end of period price discounted at the rate implied by the model (Burmeister, 2006). The APT model states that the forecasted rate of return on assets depends on the unpredictable nature of macroeconomic variables which points out that factor risk takes more significance in assets pricing (Holbrook, 2010). APT is comparatively a moderate diverse technique for analyzing the assets prices model. APT model assumes that the stock prices were influenced partially and uncorrelated with most of the macroeconomics variables and these variables are not multi-collinear with each other. APT defines that expected return on stock prices is composed on the capital gain plus the realization of risk premium (macroeconomics variables risk) during the course time, (Walter, 2011).

The theory is relevant to the study because it makes suggestions regarding the manner in which assets should be priced in banking industry markets. Burmeister (2006), argues that the cognitive behavior of irrational investors have pervasive impact on the pricing of assets in capital markets. The theory describes the bank investor decisions in Kenya under the influences of cognitive psychologies. The essence of the theory surrounds a completely diversified optimal risky portfolio called the market portfolio that all investors are assumed to hold in the banking industry, and the only source of risk in an investment is its sensitivity to movements in the market portfolio,

since any firm-specific risk can be diversified away by holding the market portfolio.

### **2.2.2 Modern Portfolio Theory**

The Modern Portfolio Theory was founded by Markowitz in 1952. The author proposed that majority of investors are usually cautious with their investments and so they take the smallest possible risk to get a highest possible return, optimizing return on the risk ratio. This theory emphasizes that investors should not base their judgments by only looking at the expected risk and return of an individual stock. It support investment in various stocks for benefits of diversifications and decrease in the volatility of the entire portfolio (Markowitz, 1959).

The theory presents investors with two aspects. One aspect is that history might be repeated, implying the employ of past data in investment decision making. The second aspect is that not all assets fluctuate (Hahn, 2008). The investors should, therefore, stop unity-grouping of assets and assumptions that they portray similar characteristics and so expectations. Among the importance of MPT is that it reduces volatility in the portfolio of particular stocks. Till the inception of MPT, the investors were not able to link stock portfolio to the associated risks. Portfolios were randomly initiated. Hagstrom (2011), asserts that before MPT, suppose the investor expected an increase in the price of a stock, it was added to the portfolio without further thinking. Markowitz (1959), developed the precise procedure that would give different theoretical best portfolios. Assuming an investor lists all collections with same risk levels. While the

risk of the various securities is similar, but with variant returns, choosing best portfolio is simple, one with maximum performance.

The theory is essential in this study as it seeks to guide the researcher on optimization of the correlation between various risks and performance by composing portfolios of assets dictated by their individual returns, risks, and covariance or relationships with other assets. MPT develops a framework where, any anticipated return has different expected outcomes. The theory, therefore, guides the investor on ruling on investment portfolios.

## **2.3 Factors Influencing Non-Interest Income**

### **2.3.1 Government Deregulation**

Deregulation is the removal or simplification of government rules and regulations that constrain the operation of market forces. Deregulation does not mean elimination of laws against fraud or property rights but eliminating or reducing government control of how business is done, thereby moving toward a more laissez-faire, free market. In recent times, the banking industry has been transformed by sweeping deregulation and rapid technological advances in information flows, communications infrastructure, and financial markets. Deregulation fostered competition between banks, nonbanks, and financial markets where none existed before. In response to these competitive threats and opportunities, many banks embraced the new technologies that drastically altered their production and distribution strategies and resulted in large increases in noninterest income. In contrast, many other banks have continued to use traditional

banking strategies for which noninterest income remains relatively less important (Evanoff & Israilevich, 2010).

Banking industry deregulation across the globe removed a whole host of restrictions that had stunted the evolution of the banking industry, constrained the efficiency of financial product markets that brought about new products with a lot of non-interest income, and extended the lives of thousands of poorly run and suboptimal-sized commercial banks (Holbrook, 2010). The phase-out of regulation interest rate ceilings allowed banks to pay market rates of interest to depositors. Banks gradually abandoned bundled pricing of retail deposit products in which they compensated depositors for below-market interest rates by providing a bundle of products free-of-charge in favor of explicit fees for individual retail deposit products (Isik & Hassan, 2009).

Deregulation leads to constraint of the operation of market forces. This in turn stimulates competition in the financial sector leading to efficiency in service delivery. Deregulation in Kenya started in the early nineties and since then, banks have been unbundling deposit price as they compensate depositors for below the market interest rates by giving different types of other services in favor of separate charges for individual retail products (Kiweu, 2012). Using a panel data analysis, De Young and Rice (2007), studied the effect of deregulation on non-interest income of commercial banks in USA. De Young and Rice (2007), used financial performance of a bank relative to its peers over the past three years to proxy for deregulation and found the variable to be statistically significant. The study noted that deregulation enhances competition in the banking sector which will in turn prompt banks to diversify their products so as to stabilize income.



### **2.3.2 Bank Productivity**

Berger and Humphrey (2007), used the value added approach to describe how bank productivity contributes to non-interest income and which views banks as production units that produce loans and deposits using labour and capital. In this approach, both liabilities and assets have some output characteristics that result into non-interest income. Nonetheless, only those categories that have substantial value addition are treated as outputs while others are treated as either inputs or intermediate products depending on the individual attributes of each category. Another approach found in the literature is referred to as the user-cost approach. This approach described by Hancock (1991) uses the simple rule that the net revenue generated by a particular asset or liability item determines whether the financial product is an input or an output. This approach emphasizes the profitability of a bank in relation to various expenditures.

Oral and Yolalan (2010), used this approach to measure the relative profitability efficiency of a set of bank branches using their interest and non-interest incomes as outputs, and interest paid on deposits and expenses incurred by personnel, administration and depreciation generated by the operation of bank premises as inputs. While their details differ, empirically the value added and user-cost approaches tend to suggest similar classification of bank inputs and outputs with the principal exception being the classification of demand deposits as an output in most user-cost studies and as both an input and output when the value added approach is taken (Wheelock & Wilson, 2009).

Productivity change is also associated with bank specific factors such as bank size, bank expense structure, income structure, asset quality, capital adequacy, earning ratios, liquidity ratios and corporate governance structure. According to De Young et al. (1998) the management quality score from regulatory bodies is associated with higher productivity, as is asset quality. The financial market is subject to asymmetric information: when making decisions, one party may know more about a transaction than the other party (Sherene & Bailey, 2010). Asymmetric information creates a problem in two ways. First, through adverse selection that occurs before a transaction is entered into the system. Asymmetric information affects the quality of loan originations yet loans are a critical output of banking institutions.

### **2.3.3 Technological Changes**

Variations in the level of information and communications technology that include automated teller machines (ATM), internet banking and new intermediation technologies in form of loan safety, credit recording together with the introduction and development of financial instruments and markets which include high-yield bonds, commercial paper, financial derivatives all subsidizes non-interest income to banks. Sherene and Bailey (2010), using a panel data of Jamaican commercial banks apply a seemingly unrelated regression (SUR) to analyze the determinants of non-interest income. They used ATM development to proxy technological development and found the coefficient of technology to be positively significant. This means that banks that have improved their technologies generate stronger levels of non-interest income. This finding is supported by previous studies by Holbrook (2010), used ATM development as a proxy for technological

development, DeYoung and Rice (2007), who used both cashless transaction and the dollar amount of mutual fund assets per capita. They found out that technology advance and adoption increases non-interest income at banks by generating new fee income that more than outweighs the losses of fee income related to the reductions in cash balance depositors need to hold in checking and other liquid bank accounts.

On the contrary Shahzad (2012), in a study of Pakistan commercial banks find that the relationship between technology and non-interest income only remains significant in the long run. Shahzad (2012), used ATM per capita as a variable to represent growth in technology in the banking sector. Walter (2011), postulated that in the short run technological advancement tends to yield no significant effect on the net non-interest income. This could be because short run periods involve a heavy cost of investment, while in the long run the banking sector only incurs the cost of maintenance. In Kenya the introduction of mobile and internet banking has seen many banks diversifying their sources of income to non-interest income. Therefore technology also plays a major role in determining non-interest income.

#### **2.3.4 Bank Size**

Bank size is measured by its assets. Commercial banks should make every effort to increase their size by diversifying their products through investing in for instance, in financial market and selling mutual funds in the market. Pennathur and Subrah (2012), using unbalanced panel data of one hundred and seventy two banks in India study the impact of bank ownership structure and size on non-interest income. The study used natural log of bank assets to proxy bank size, and a dummy variable to proxy big,

sporadic growths in bank size. The study reveals that diversification benefits from non-interest income tend to increase with bank's size and small banks with very small portions of non-interest income record some little significant gains (Kiweu, 2012). Comparatively large banks make use of economies of scale in order to dominate the production of consumer loans. In spite of their low unit cost, however, the market for this product is extremely competitive and large banks must complement their revenue stream with non-interest income. As non-interest income increases banks tend to shift from lending activities to more diversified banking activities.

In contrast, Chiarozzaet (2008), using panel data in studying the impact of bank size on non-interest income in USA commercial banks. They used natural log of bank's assets to proxy for bank size and they found the coefficient to be insignificant. Non-interest income tends to diminish as banks increase in size with small banks recording the most significant gains in non-interest income. This is supported by the findings of Craigwell and Maxwell (2006), in their study of commercial banks in Barbados. They used log of assets and a dummy variable reflecting the difference between local and foreign banks to represent the size of banks and this variable was found to be negatively significant. This deviates from the findings of Pennathur and Subrah (2012). Therefore they postulated that banks in Barbados generate less non-income interest per dollar of assets both in small and big banks.

## **2.4 Empirical Review**

Köhler et.al (2013), analyzed the impact of banks' non-interest income share on risk in the German banking sector for the period between 2002 and 2010. Using linear and

quantiles regression estimators, they found out that the impact of non-interest income on risk depends on the business model of a bank. Their study has two important varying implications. First, they indicate that it might be beneficial for retail-oriented banks to increase their share of non-interest income to become more stable. However, investment-oriented banks, in contrast, become significantly less stable if they increase their non-interest income share. Their results generally imply that banks are more stable if they have a more diversified income structure and depend neither heavily on interest nor on non-interest income.

Similarly, Saunders, Schmid, and Walter (2014), studied the relationship between on-interest income and bank performance, to answer the question: Is Banks' Increased Reliance on Non-Interest Income Bad? The study was based on a sample of 368,006 involving quarterly observations on 10,341 US banks. The study period was the years from 2002-2013. They found that a higher ratio of non-interest income to interest income is associated with a higher profitability across the banking sector and under different market regimes. Banks with a higher fraction of non-traditional income are also shown to have a lower insolvency risk as measured by the Z-score, and recovered faster after the 2007-09 crisis. Their results hold across bank size groups and are robust to the inclusion of bank fixed effects, bank size, and various measures of leverage and asset quality in the regressions.

Locally, Murithi (2013), studied the effect of Revenue Diversification into Non-Interest Income on Financial Performance of Commercial Banks in Kenya. This research adopted an exploratory design where the population of interest was drawn from the five most profitable commercial banks in Kenya; KCB, Equity Bank, Barclays,

Standard Chartered and Cooperative Bank. Stratified random sampling was used to select the sample, taking a sample of 30% from each stratum. The study used both primary data and secondary data. The questionnaires included structured and unstructured questions and was administered through drop and pick method to respondents who were the top, middle and low level managers in the organizations. Data was analyzed using descriptive statistics. The study established that all the banks in the study had diversified into non-interest income.

Similarly, Oniang'oa (2015), studied the effect of non-interest income on profitability of commercial banks in Kenya. To achieve this objective the study used a descriptive survey. The population of the study constituted all the 43 commercial banks in Kenya. The data was gathered from financial statements and records. Data analysis was done using a regression model. The study found that non-interest income was positively related to profitability of commercial banks. The correlation results were found there was a moderate correlation between Non-interest income and profitability of commercial banks.

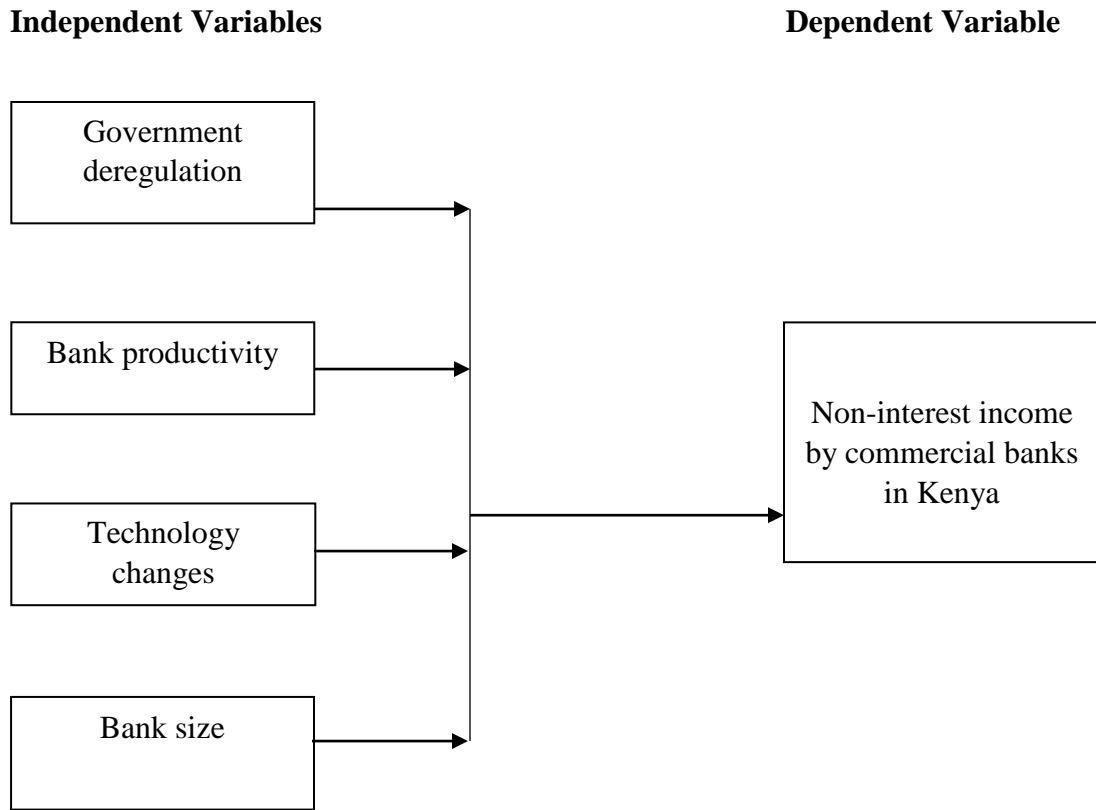
Atellu (2014), investigated the determinants of non-interest income in Kenya's commercial banks. A panel data of 2003-2012 was used in this research paper. The main findings are that non-interest income of commercial banks in Kenya is affected by management efficiency, bank's size, technological development and macroeconomic factors. Bank size and management efficiency is positively and significantly related to non-interest income while ATM development, inflation and growth of gross domestic product are negatively and significantly related to non-interest income. He recommends that commercial banks should make every effort to increase their size by diversifying their products through investing in financial market and selling mutual

funds in the market. To increase their equity to asset ratio banks should issue more shares through rights issue or post incorporation issue so as to diversify their investments towards non-interest income.

On the other hand, Njenga (2014), set out to investigate the determinants of non-interest income in Kenya's commercial banks. He carries out an empirical analysis to determine the impact of bank specific characteristics, technological development and macroeconomic factors on commercial banks non-interest income. A panel data of 2003-2012 is used in this research paper. The main findings are that non-interest income of commercial banks in Kenya is affected by management efficiency, bank's size, technological development and macroeconomic factors. Bank size and management efficiency is positively and significantly related to non-interest income while ATM development, inflation and growth of gross domestic product are negatively and significantly related to non-interest income.

## **2.5 Conceptual Framework**

The conceptual framework in Figure 2.1 demonstrates the relationships that exist between the dependent and independent variables under investigation. The dependent variable is Non-interest income by commercial banks in Kenya. The independent variables that will be investigated to establish their level of influence on the dependent variable are: Government deregulation, Bank productivity, Technological changes and Bank size. And how they influence Non-interest income by commercial banks in Kenya.



**Figure 2.1. Conceptual Framework**

**Source: Author (2017)**

## **2.6 Literature Review Summary**

The literature reviewed show that studies have been done on the concept of non-interest income but the current study has found gaps in variables used, methodology and the theories. Murithi (2013), studied the effect of Revenue Diversification into Non-Interest Income on Financial Performance of Commercial Banks in Kenya. The study focused on



five most profitable commercial banks in Kenya, the study used primary data. On the other hand, Oniang'oa (2015), studied the effect of non-interest income on profitability of commercial banks in Kenya, the study used a descriptive survey and correlation analysis and 43 commercial banks in Kenya. Similarly, Atellu (2014), investigated the determinants of non-interest income in Kenya's commercial banks. The study focused on a period 2003-2012 and used macroeconomic factors as variables. This study will fill in the gaps by using descriptive research design, regression model and ANOVA in the analysis, applying modern portfolio theory and arbitrage pricing theory and using government deregulation, bank productivity, technological changes and bank size as the independent variables and non-interest income as the dependent variable.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter discusses the methodology approach for the study and highlights the research design, target population, data collection instruments and data analysis and presentation.

### **3.2 Research Design**

The study employed a descriptive research design. A descriptive survey enables the researcher to describe the characteristics of the variables of interest. The independent variables include: government deregulation, bank productivity, technological changes and bank size while the dependent variable is the non-interest income. This study was about factors influencing non-interest income in commercial banks in Kenya. It is therefore justified that descriptive design is most suited and justifiably adopted in this study. Descriptive surveys are useful in describing the characteristics of a large population. Additionally, high reliability is easy to obtain by presenting all subjects with a standardized stimulus which ensures that observer subjectivity is greatly eliminated (Mugenda & Mugenda, 2003).

### **3.3 Target Population**

Population refers to the entire group of people, events or things of interest that the researcher wishes to investigate (Kothari, 2004). There are 43 commercial banks in

Kenya (CBK, 2016). The target population comprised of all the 43 Commercial Banks that have been operating in Kenya.

### **3.4 Data Collection**

Secondary data was collected from 2012- 2016 audited annual financial reports for individual banks found on the banks website and at the Central Bank of Kenya website and library. Annual audited financial reports were used in the study due to ease of availability and the fact that they are reliable.

### **3.5 Data Analysis**

The data collected was analyzed using descriptive. Descriptive statistics is a technique used in presenting and organizing data these include: tabulation, diagrams, graphs and certain numerical procedures all which aim at summarizing the material in a form which display its distinctive features that aid analysis. Descriptive statistics were used to quantitatively describe the important features of the variables using frequency, mean, maximum, minimum and standard deviation.

Multiple regression was used to measure the quantitative data which was analyzed using the SPSS. Regression was used in determining the relationship between government deregulation, bank productivity, technological changes and bank size and non-interest income of banks.

The study applied the following regression model

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu$$

Where Y = Non-interest income

$X_1$  = Government deregulation (total bank capital adequacy /total bank assets)

$X_2$  = Bank productivity (Operating expenses /Total assets.)

$X_3$  = Technological changes (No. of Automated Teller machines)

$X_4$  = Bank size (measured by Assets value)

$\beta_1 - \beta_4$  are the regression co-efficient or change introduced in Y by each independent variable

$\mu$  is the random error term accounting for all other variables that affect Non-interest income but not captured in the model.

The researcher carries out a T-test at 95% confidence level to establish the significance of the independent variable in explaining the changes in the dependent variable.

### **3.6 Test of Significance**

The study used one way ANOVA to test the level of significant of the independent variables on the dependent variable at 95% level of significance, the one way ANOVA was used to test whether there exist any significant difference between the study variable.

## CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION

### 4.1 Introduction

This chapter presents analysis and findings of the research. The objective of this study was to determine the factors influencing non-interest income in commercial banks in Kenya.

### 4.2 Descriptive Statistics

Descriptive Statistics is the analysis of data that helps describe, show or summarize data in a meaningful way such that, for example, patterns might emerge from the data. This study sought to investigate the descriptive statistics of government deregulation, bank productivity, technological changes and bank size.

**Table 4.1: Descriptive Statistics on Government Deregulation**

Year	Minimum	Maximum	Mean	Std deviation
2012	0.4125	0.7520	0.6325	0.231
2013	0.6325	0.7541	0.6785	0.124
2014	0.6251	0.7960	0.7658	0.256
2015	0.7574	0.8865	0.8569	0.154
2016	0.6261	0.9854	0.9251	0.125

Source; Research findings, 2017

From the findings, it can be noted that the year 2016 recorded the highest mean value in government deregulation at 0.9251, while the year 2012 recorded the lowest mean value in government deregulation at 0.6325. In addition, values for standard deviation depict variability in government deregulation during the five-year period with the highest deviation of 0.256 in the year 2014 and the lowest 0.154 in the year 2015.

**Table 4.2: Descriptive Statistics Bank productivity**

<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std deviation</b>
2012	0.0131	0.0337	0.0232	0.011
2013	0.0382	0.0528	0.0488	0.114
2014	0.0537	0.0738	0.06374	0.032
2015	0.0587	0.0685	0.0672	0.014
2016	0.0937	0.0896	0.0834	0.075

Source; Research findings, 2017

From the findings, it can be noted that the year 2016 recorded the highest mean value for bank productivity as shown by a mean of value of 0.0834 while the year 2012 recorded the lowest value for bank productivity at 0.0232. in addition, values for standard deviation depicts variability in bank productivity during the five year period with the highest deviation of 0.114 in the year 2013 and the 0.075 in the year 2016

**Table 4.3: Descriptive Statistics on Technological changes**

<b>Year</b>	<b>Mean</b>	<b>Std deviation</b>
2012	2976.18	0.13
2013	3094.92	0.29
2014	3143.45	0.27
2015	3386.67	0.19
2016	3676.58	0.12

Source; Research findings, 2017

From the findings, it can be noted that the year 2016 recorded the highest mean value for technological changes as shown by 3676.58 while the year 2012 recorded the lowest value for technological changes at 2976.18 in addition, values for standard deviation

depicts variability in technological changes during the five year period with the highest deviation of 0.29 in the year 2013 and the lowest 0.12 in the year 2016.

**Table 4.4: Descriptive Statistics on Bank size**

<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std deviation</b>
2012	6.10	10.24	9.85	0.77
2013	9.00	20.22	11.14	0.68
2014	10.26	14.25	13.21	0.85
2015	11.24	15.22	14.18	0.96
2016	12.01	17.20	16.99	0.44

Source; Research findings, 2017

From the findings, it can be noted that the year 2016 recorded the highest mean value for bank size as shown by a mean of value of 16.99 while the year 2012 recorded the lowest mean value for bank size at 9.85. in addition, values for standard deviation depicts variability in bank size during the five year period with the highest deviation of 0.96 in the year 2015 and the lowest 0.44 in the year 2016.

**Table 4.5: Descriptive Statistics on Non-Interest Income**

<b>Year</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std deviation</b>
2012	0.0341	0.0395	0.0376	0.3250
2013	0.0712	0.0786	0.0751	0.5240
2014	0.0810	0.0884	0.0856	0.6325
2015	0.0823	0.0997	0.0912	0.4710
2016	0.0903	0.0983	0.0974	0.4895

Source; Research findings, 2017

From the findings, it can be noted that the year 2016 recorded the highest mean value in non-interest income as shown by a mean of value of 0.0974 while the year 2012 recorded the lowest mean value for non-interest income at 0.0376. In addition, values for standard deviation depict variability in non-interest income during the five year period with the highest deviation of 0.6325 in the year 2015 and the lowest 0.3250 in the year 2012.

### **4.3 Inferential Statistics**

Inferential statistics is used to try to infer from the sample data what the population might think or to make judgments of the probability that an observed difference between groups is a dependable one or one that might have happened by chance in a study. The study sought to carry out an inferential statistics of government deregulation, bank productivity, technological changes and bank size.

#### **4.3.1 Correlations Analysis**

The Pearson product moment correlation coefficient was used to test the direction and magnitude of the relationship between the dependent and independent variables at 95% confidence level and the results are as presented in the Table below.



**Table 4.6: Correlations Analysis**

		Non-Interest Income (Y)	Government deregulation (X1)	Bank productivity (X2)	Technological changes (X3)	Bank size (X4)
Non-Interest Income (Y)	Pearson Correlation	1	.635**	-.634**	.487**	.743**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	43	43	43	43	43
Government deregulation (X1)	Pearson Correlation	.635**	1	.237*	.174	.288**
	Sig. (2-tailed)	.000		.021	.093	.005
	N	43	43	43	43	43
Bank productivity (X2)	Pearson Correlation	-.634**	.237*	1	.470**	.290**
	Sig. (2-tailed)	.000	.021		.000	.005
	N	43	43	43	43	43
Technological changes (X3)	Pearson Correlation	.487**	.174	.470**	1	.069
	Sig. (2-tailed)	.000	.093	.000		.507
	N	43	43	43	43	43
Bank size (X4)	Pearson Correlation	.743**	.288**	.290**	.069	1
	Sig. (2-tailed)	.000	.005	.005	.507	
	N	43	43	43	43	43

Source; Research findings, 2017

On the correlation of the study variables, the study found that there exists a positive correlation coefficient between non-interest income in commercial banks and Government deregulation, as shown by correlation factor of 0.635. This strong relationship was found to be statistically significant as the significant value was 0.000 which is less than 0.05, These findings contradicts the findings by Omoudo (2003) who found that non-government deregulation is negatively correlated with interest income

The study also found a negative correlation between non-interest income in commercial banks and bank productivity as shown by correlation coefficient of -0.634, the significant

value was 0.000 which is less than 0.05, the study found a positive correlation between non-interest income in commercial banks and Technological changes as shown by correlation coefficient of 0.487. The significant value was 0.000 which is less than 0.05; these findings are in line with the study findings by DeYoung and Rice (2004) that non-interest income (NIIT) is positively correlated to technological changes. The study further found a positive correlation between non-interest income in commercial banks and bank size as shown by correlation coefficient of 0.743. This strong relationship was found to be statistically significant as the significant value was 0.000 which is less than 0.05 these findings are in line with the study findings by Stiroh, (2006) that banks with relatively high non-interest earning assets are less profitable.

#### 4.3.2 Regression Analysis

In this study, a multiple regression analysis was conducted to test the influence among predictor variables. The research used statistical package for social sciences (SPSS V 21.0) to code, enter and compute the measurements of the multiple regressions.

#### Model Summary

The model summary are presented in the Table below

**Table 4.7: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.966 <sup>a</sup>	.933	.930	.58576

Source; Research findings, 2017

The study used coefficient of determination to evaluate the model fit. The adjusted R<sup>2</sup>, also called the coefficient of multiple determinations, is the percent of the variance in the dependent explained uniquely or jointly by the independent variables. The model had an

average adjusted coefficient of determination ( $R^2$ ) of 0.930 and which implied that 93% of the variations in the study found a positive correlation between non-interest income in commercial banks are explained by the independent variables under study (government deregulation, bank productivity, technological changes and bank size).

### 4.3.3 Analysis of Variance

The study further tested the significance of the model by use of ANOVA technique. The findings are tabulated in table below.

**Table 4.8: Summary of One-Way ANOVA Results**

<b>Model</b>	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Regression	35.876	4.000	8.969	12.071	.000 <sup>b</sup>
Residual	28.234	38.000	.743		
Total	64.110	42.000			

Source; Research findings, 2017

(Critical value = 2.49)

From the ANOVA statics, the study established the regression model had a significance level of 0.1% which is an indication that the data was ideal for making a conclusion on the population parameters as the value of significance (p-value) was less than 5%. The calculated value was greater than the critical value ( $12.071 > 2.83$ ) an indication that ownership structure, leverage, and bank size all have a significant effects on non-interest income in commercial banks. The significance value was less than 0.05 indicating that the model was significant.

### 4.3.4 Coefficients

In addition, the study used the coefficient table to determine the study model. The findings are presented in the table below.

**Table 4.9: Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-1.256	.311		-4.039	.002
Government Deregulation	.756	.125	.735	6.048	.001
Bank Productivity	-.524	.107	.497	4.897	.025
Technological Changes	.614	.119	.606	5.160	.015
Bank Size	.451	.096	.391	4.698	.001

Source; Research findings, 2017

As per the SPSS generated output as presented in table above, the equation becomes:

$$Y = 1.256 + 0.756X_1 + (-0.525 X_2) + 0.614 X_3 + 0.451 X_4$$

From the regression model obtained above, a unit change in government deregulation while holding the other factors constant would lead to an increase in non-interest income in commercial banks by a factor of 0.756, a unit increase in bank productivity while holding the other factors constant would lead to a decrease in non-interest income in commercial banks by a factor of - 0.525. a unit change in technological changes while holding the other factors constant would lead to an increase in non-interest income in commercial banks by a factor of 0.614. a unit change in bank size while holding the other factors constant would lead to an increase in non-interest income in commercial banks by a factor of 0.451. The findings above conform to findings by March (2011), that government deregulation is directly related to bank's diversification process. The

findings concur with Franks and Curswoth, (2003) who found out t technological changes is positively related to with non-interest income generation in financial institutions

The analysis was undertaken at 5% significance level. The criteria for comparing whether the predictor variables were significant in the model was through comparing the obtained probability value and  $\alpha = 0.05$ . If the probability value was less than  $\alpha$ , then the predictor variable was significant otherwise it wasn't. All the predictor variables were significant in the model as their probability values were less than  $\alpha = 0.05$

#### **4.4 Interpretations of the Findings**

##### **4.4.1 Government Deregulation**

Results obtained show that, Government deregulation has a significant influence on generation of Non-interest income. The findings also revealed a strong positive correlation between Government deregulation and generation of Non-interest income (Pearson correlation = 0.635, P value =0.000) Test regression results further predict that a unit increase in Government deregulation would increase generation of Non-interest income by a factor of (Beta coefficient value = 0.756, Significant value =0.001). These findings contradicts the findings by Omoudo (2003) who found that non-government deregulation is negatively correlated with interest income

The study also revealed that deregulation enhances competition in the banking sector which will in turn prompt banks to diversify their products so as to stabilize income. Banks have not met the ever increasing consumer needs and there has been a very small change in implementation activities that increase non-interest income. Banks with high levels of capital have a greater capacity to absorb asset losses from nontraditional

activities. If this argument holds, then a positive relationship between Non-interest income and Cap Ratio is expected. However, if more highly leveraged banks are more involved in nontraditional activities, moral-hazard behavior could be dominating and a negative relationship between Non-interest income and Cap Ratio becomes imminent. These findings concurs the findings by Craigwell and Maxwell (2006) who found that improvement on deregulation in the banking sector consequently improves non- interest income.

#### **4.4.2 Bank Productivity**

Results obtained show that, bank productivity has a significant influence on generation of Non-interest income. The findings also revealed a negative correlation between bank productivity and generation of Non-interest income (Pearson correlation = - 0.634, P value =0.00) Test regression results further predict that a unit increase in bank productivity would reduce generation of Non-interest income by a factor of (Beta coefficient value = - 0.524, Significant value =0.025). These findings are in line with the study findings by Stiroh, (2006) banks with relatively high non-interest earning assets are less profitable and banks that rely largely on deposits for their funding are also less profitable.

The study also revealed that as non-interest income increases banks tend to shift from lending activities to more diversified banking activities, higher ratio of non- interest income to interest income is associated with a higher productivity across the banking sector, Banks that rely mostly on activities that generate noninterest income do not earn higher average equity returns, increased focus on noninterest income generating activities

is associated with declines bank productivity Non-interest income tends to diminish as banks increase in size with small banks recording the most significant gains in non - interest income. These findings are in line with the study findings by Huizinga (2010) the study also revealed that non-interest generating activities may increase the overall risk of banks via income volatility.

#### **4.4.3 Technological Changes**

Results obtained show that, Technological changes have a significant influence on generation of Non-interest income; however the study noted that the willingness for a bank to undertake more non-interest earning activities is driven by technological advancement. The findings also revealed a positive correlation between technological changes and generation of Non-interest income (Pearson correlation = 0.487, P value = 0.00) Test regression results further predict that a unit increase in technological changes would increase generation of Non-interest income by a factor of (Beta coefficient value = 0.614, Significant value =0.015). These findings are in line with the study findings by DeYoung and Rice (2004) that non-interest income (NIIT) is positively correlated to technological changes. The findings further confirm with Shahzad (2012) findings that technological advancement tends to have a positive association with non-interest income.

Other contravening results obtained show that non-interest income business requires the bank to invest more resources, including technology, On the contrary, as to traditional activities generating net interest income, the only cost of an additional loan is the bank's interest expenses. Therefore, the growth of non-interest income probably leads to an increase of the bank's total operational costs and the cost per unit of production, thus

decreasing the efficiency level of the bank. In response to increasing competitive threats and opportunities, Kenyan banks have embraced new technologies which have drastically altered their production and distribution strategies which ultimately have resulted in large increases in non-interest income. These findings are in line with the study findings by Ankrah, (2012) The use of technology in the delivery of banking services is becoming increasingly prevalent as it is being employed to reduce costs and eliminate uncertainties

#### **4.4.4 Bank Size**

Results obtained show that, bank Size is a significant determinant of generation of Non-interest income in commercial banks in Kenya. The findings also revealed a strong positive correlation between bank size and generation of Non-interest income (Pearson correlation = 0.743, P value = 0.000) Test regression results further predict that a unit increase in bank size would increase generation of Non-interest income by a factor of (Beta coefficient value = 0.451, Significant value =) 0.001. These findings are in line with the study findings by Hartzell and Starks (2003), that the return on assets ratios indicate that bank size has a positive impact on generation of Non-interest income.

Large banks can take risky and more expensive projects that small banks could not take because of better risk management strategies and diversification opportunities. Therefore in our findings we suggest that banks will have to exercise a dual objective of managerial firm size expansion and efficient risk management strategies to increase their non-interest income. It could also imply that banks that raise high non-interest income in Kenya are large in size as compared to medium and small size banks. The findings further echo the conventional wisdom that nontraditional activities are dominated by bigger banks as



smaller banks appear to specialize in areas which are most likely to yield them assured income.

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter presents summary of the study findings, conclusion and recommendations. The chapter is presented in line with the objective of the study which was to establish the factors influencing non-interest income in commercial banks in Kenya

### **5.2 Summary of Findings**

From the findings, the research established that Government deregulation has a significant influence on generation of Non-interest income. The findings also revealed a strong positive correlation between Government deregulation and generation of Non-interest income (Pearson correlation = 0.635, P value =0.000) Test regression results further predict that a unit increase in Government deregulation would increase generation of Non-interest income by a factor of (Beta coefficient value = 0.756, Significant value =0.001). These findings contradict the findings by Omoudo (2003) who found that non-government deregulation is negatively correlated with interest income. The study also revealed that deregulation enhances competition in the banking sector which will in turn prompt banks to diversify their products so as to stabilize income. Banks have not met the ever increasing consumer needs and there has been a very small change in implementation activities that increase non-interest income. Banks with high levels of capital have a greater capacity to absorb asset losses from nontraditional activities. If this argument holds, then a positive relationship between Non-interest income and Cap Ratio is expected. However, if more highly leveraged banks are more involved in nontraditional activities, moral-hazard behavior could be dominating and a

negative relationship between Non-interest income and Cap Ratio becomes imminent. These findings concurs the findings by Craigwell and Maxwell (2006) who found that improvement on deregulation in the banking sector consequently improves non- interest income.

Results obtained show that, bank productivity has a significant influence on generation of Non-interest income. The findings also revealed a negative correlation between bank productivity and generation of Non-interest income (Pearson correlation = - 0.634, P value =0.00) Test regression results further predict that a unit increase in bank productivity would reduce generation of Non-interest income by a factor of (Beta coefficient value = - 0.524, Significant value =0.025). These findings are in line with the study findings by Stiroh, (2006) banks with relatively high non-interest earning assets are less profitable and banks that rely largely on deposits for their funding are also less profitable.

The study also revealed that as non-interest income increases banks tend to shift from lending activities to more diversified banking activities, higher ratio of non- interest income to interest income is associated with a higher productivity across the banking sector, Banks that rely mostly on activities that generate noninterest income do not earn higher average equity returns, increased focus on noninterest income generating activities is associated with declines bank productivity Non-interest income tends to diminish as banks increase in size with small banks recording the most significant gains in non - interest income. These findings are in line with the study findings by Huizinga (2010) the

study also revealed that non-interest generating activities may increase the overall risk of banks via income volatility.

From the findings, the research revealed that technological changes have a significant influence on generation of Non-interest income; however the study noted that the willingness for a bank to undertake more non-interest earning activities is driven by technological advancement. The findings also revealed a positive correlation between technological changes and generation of Non-interest income (Pearson correlation = 0.487, P value = 0.00) Test regression results further predict that a unit increase in technological changes would increase generation of Non-interest income by a factor of (Beta coefficient value = 0.614, Significant value =0.015). These findings are in line with the study findings by DeYoung and Rice (2004) that non-interest income (NIIT) is positively correlated to technological changes. The findings further confirm with Shahzad (2012) findings that technological advancement tends to have a positive association with non-interest income.

Other contravening results obtained show that non-interest income business requires the bank to invest more resources, including technology, On the contrary, as to traditional activities generating net interest income, the only cost of an additional loan is the bank's interest expenses. Therefore, the growth of non-interest income probably leads to an increase of the bank's total operational costs and the cost per unit of production, thus decreasing the efficiency level of the bank. In response to increasing competitive threats and opportunities, Kenyan banks have embraced new technologies which have drastically altered their production and distribution strategies which ultimately have resulted in large increases in non-interest income. These findings are in line with the study findings by

Ankrah, (2012) The use of technology in the delivery of banking services is becoming increasingly prevalent as it is being employed to reduce costs and eliminate uncertainties

Results obtained show that, bank Size is a significant determinant of generation of Non-interest income in commercial banks in Kenya. The findings also revealed a strong positive correlation between bank size and generation of Non-interest income (Pearson correlation = 0.743, P value = 0.000) Test regression results further predict that a unit increase in bank size would increase generation of Non-interest income by a factor of (Beta coefficient value = 0.451, Significant value =) 0.001. These findings are in line with the study findings by Hartzell and Starks (2003), that the return on assets ratios indicate that bank size has a positive impact on generation of Non-interest income.

Large banks can take risky and more expensive projects that small banks could not take because of better risk management strategies and diversification opportunities. Therefore in our findings we suggest that banks will have to exercise a dual objective of managerial firm size expansion and efficient risk management strategies to increase their non-interest income. It could also imply that banks that raise high non-interest income in Kenya are large in size as compared to medium and small size banks. The findings further echo the conventional wisdom that nontraditional activities are dominated by bigger banks as smaller banks appear to specialize in areas which are most likely to yield them assured income

### **5.3 Conclusions**

Based on the result of the study, the study concludes that government deregulation, significantly and positively related to non-interest income. Further Government

deregulation in Kenya banking sector would consequently improve the generation of Non-interest income. Deregulation enhances competition in the banking sector which will in turn prompt banks to diversify their products (investment in non- interest income) so as to stabilize income.

The study concludes that bank productivity significantly and negatively related to non-interest income, a unit increase in bank productivity while holding the other factors constant would lead to a decrease in non-interest income in commercial banks by a factor of - 0.525, and that both banks liabilities and assets have some output characteristics that result into non-interest income.

The study also concludes that technological change is positively and significantly related to non-Interest income. Further investments in technological changes would increase generation of Non-interest income, however care must be exercised before investing technological changes since the move requires huge financial resources which may leads to an increase of the bank's total operational costs and the cost per unit of production if not well estimated

The study concludes that bank size (measured total in asset value) is significantly and positively related to non-interest income. Large banks can take risky and more expensive projects that small banks could not take because of better risk management strategies and diversification opportunities. Banks with high asset value are expected to have higher returns in non-interest income comparison to highly small financial institutions.

#### **5.4 Limitations**

One of the limitations experienced was that the series of data used was too short (2011 - 2016) to establish clearly the long run and short run dynamics. Future studies need to establish determinants using a longer series and investigate if and why there may be changes in estimated parameters.

Due to finance and time constraints, the research was limited to only commercial banks in Kenya. Therefore, to generalize the results for a larger group, the study should have involved a larger area of study, may be in other sectors of the economy or in other areas of the country.

There was the challenge of accessing past bank record due to poor record keeping hence there was scant information that could be accessed in terms of published financial statements, however the researcher used other relevant documentation to collect the required information despite the fact that it took longer than anticipated.

#### **5.5 Recommendations**

Based on our conclusion the following recommendations are made:

Overall results point to the role of Government deregulation on Non-interest income generation by bank in Kenya. Government deregulation acts as a major factor that determines institutionalization of Non-interest income generation process banking industry. In this regard, deregulation process should aim at streamlining institutionalization and process for higher Non-interest income generation. However, the regulatory authority should come in and homogenize prices of such activities in order to protect bank clients from being exploited.

On productivity, Commercial banks in Kenya should keep standard match between overall productivity and Non-interest income estimates. This will help to ensure that productivity does not overturn banks projection on Non-interest income estimates.

A significant and positive relationship between technological development and non-interest incomes is established in our estimation. Government should focus on policy that encourage introduction of low cost advanced technologies in the banking sector. For example policy that encouraged self-service banking.

Commercial banks in Kenya should come up with policy that increases diversification and productivity that would assist banks to shift their dependence on interest income and invest in other non-interest income ventures in the long run.

To increase sizes commercial banks should come up with a policy that would assist banks expand their activities into different investment ventures and this can be done through investing in financial markets and selling of mutual funds in the market.

Policies on diversification should also be put in place by the government to avoid relying on traditional bank activities. A policy that encourages commercial banks to engage in Non-interest income activities

### **5.6 Suggestion for Further Studies**

This study sought to assess the factors influencing non-interest income in commercial banks in Kenya, the study the independent variables understudy (government deregulation, bank productivity, technological changes and bank size) accounted for 93% of the variations in non-interest income. The study recommends that other variables



accounting for the remaining 7% need to be identified and their impact assessed as well. This study had a limitation of inconsistencies in performance of banks over the five years. Future Studies carried out should address this by assessing the same over a much wider period.

## REFERENCES

- Aduda, J. O., Patrick, K. & Ndwiga, J.M (2013).The relationship between agency banking and financial performance of commercial banks in Kenya. *Journal of Finance and Investment Analysis*, 2(4), 97-117
- Amediku, M. (2012).The impact of income diversification on bank performance of Zenith Bank, Cal Bank and Unibank in Ghana
- Atellu, A. R. (2012). *Determinants of non-interest income in Kenya's commercial banks* (Doctoral dissertation, School of Economics, University of Nairobi)
- Brunnermeier, V. C. (2015). Income Diversification and Bank Performance: Evidence from Italian Banks. *Journal of Financial Services Research* 33, pp 181–203.
- Burmeister, E.D. (2006). "The arbitrage pricing theory and macroeconomic factor measures". *Financial Review*. 21 (1): 1–20.
- Chiarozzaet, A., (2008). The determinants of bank interest rate margins: an international study. *Journal of international money and finance*, 19(6), 813-832
- Chiorrazo, V., Milani, C. & Salvini, F. (2008).Income Diversification and Bank Performance: Evidence from Italian Bank. *Journal of Financial Services Research*, Vol 33, No.1,pp. 181-203.
- Cooper, D.R. & Schindler, P.S. (2006). *Business Research Methods*: New York, McGraw Hill.
- Craigwell, R., & Maxwell, C. (2006). Non-interest income and financial performance at commercial banks in Barbados, *Savings and Development*, 309-328

- Creswell, J.W. & Clark, V.P. (2007). *Designing and conducting mixed methods research*. Thousand Oaks: Sage Publications Inc
- De Young, R., & Roland, K. (2010). Product mix and earnings volatility at commercial banks: evidence from a degree of total leverage model. *Journal of Financial Intermediation*, Vol. 10, No 1, pp. 54-84
- DeYoung, R. & Rice, T. (2007). Non-interest income and financial performance at U.S.A commercial banks. *The Financial Review*, Vol. 39, No. 1 pp. 456-478.
- Gichure, S. K. (2015). *The relationship between non interest income and financial performance of commercial banks in kenya* (Doctoral dissertation).
- Guyo, I. G., (2014). An empirical study of factors influencing financial performance of Islamic versus conventional banks in Kenya. published MBA project, University of Nairobi.
- Hagstrom, R.G. (2001). *The Essential Buffet: Timeless Principles for the New Economy*. John Wiley & Sons, New York.
- Hahn, J. (2008). Non-interest income diversification of commercial banks in OECD countries, *Journal of International Economic Studies*, Vol. 12, No. 1, pp. 1-30.
- Holbrook, M. B. (2010). The nature of customer's value: An axiology of service in consumption experience. In R. T. Rust, & R. L. Oliver (Eds.), *Service quality: New directions in theory and practice* (pp. 21–71). Thousand Oaks, CA: Sage Publications

- Hugo, W. (2013). The effects of income source diversification on financial performance of Commercial Banks in Kenya.
- Isik, I. & Hassan, M.K. (2009). “Efficiency, ownership and market structure, corporate control and governance in the Turkish banking industry”, *Journal of Business Finance & Accounting*, Vol. 30 Nos 9-10, pp. 1363-421
- Kagumya, P. K. (2011). *Factors affecting non-interest income in commercial banks in Uganda: A case of commercial banks in Uganda* (Doctoral dissertation, Makerere University).
- Kalluru, S. & Bhat, K. (2009). Determinants of Cost Efficiency of Commercial banks in India, *ICFAI Journal of Bank Management*, 8(2), 32-50
- Kamau, A. W. (2009). Efficiency in the Banking Sector: An Empirical Investigation of Commercial Banks in Kenya. Unpublished MBA project. University of Nairobi
- Keeton, W. R. (2010). Are mergers responsible for the surge in new bank charters? Federal Reserve Bank of Kansas City, *Economic Review*, Vol. 1, No. 4, pp. 21-41.
- Kerstein, J. & Kozberg, A. (2013). Using accounting proxies of proprietary FDIC ratings to predict bank failures and enforcement actions during the recent financial Crisis. *Journal of Accounting, Auditing & Finance*, 28(2),128-151.
- Kiganda, E.O. (2014). Effect of macroeconomic factors on commercial banks profitability in Kenya: Case of equity bank limited. *Journal of Economics and Sustainable Development*, 5(2), 46-56.

- Kiweu, M. J. (2012). Income diversification in the banking sector and earnings volatility: evidence from Kenyan commercial banks. *Working paper series 2*, Kenya Bankers Association
- Köhler, M. (2014). Does non-interest income make banks more risky? Retail-versus investment-oriented banks. *Review of Financial Economics*, 23(4), 182-193.
- Kothari, C. R. (2004). *Research Methodology: Methods and Techniques* 2<sup>nd</sup> ed. Washira Prakshan
- Markowitz, H.M. (1959). *Portfolio Selection: Efficient Diversification of Investment*. John Wiley & Sons, New York.
- Mndeme, R.K. (2015). Impact of Non-Interest Income on Banking Performance In Tanzania. *International Journal of Economics, Commerce and Management*, Vol. 23(4), 182-193.
- Mugenda, O. & Mugenda, A. (2003). *Research Methods: Quantitative and Qualitative Approaches*; Act Press: Nairobi
- Murithi, J. G. (2013). Effects of Revenue Diversification into Non-Interest Income on Financial Performance of Commercial Banks in Kenya: A Case of Five Most Profitable Banks in Kenya, *Unpublished MBA project*, University of Nairobi
- Njenga, E. (2014). *Determinants of non-interest income in Kenya's commercial banks*. Unpublished MBA project, Kenyatta University
- Oloo, O. (2009). The Banking Survey 2009. *Think Business: Nairobi*.

- Oniango, R. (2015). *Effect of non-interest income on profitability of commercial banks in Kenya* (Doctoral dissertation, University of Nairobi)
- Pennathur, A. K., & Subrahmanyam, V. (2012). Income diversification and risk: Does ownership matter? An empirical examination of Indian banks. *Journal of Banking & Finance*, 36(8), 2203-2215
- Ross, S.A., (1976).The Arbitrage Theory of Capital Asset Pricing, *Journal of Economic Theory*, Vol (13), 341-360
- Saunders, A., Schmid, M. M. & Walter, I.(2014). Non-Interest Income and Bank Performance: Is Banks' Increased Reliance on Non-Interest Income Bad? *Social science research network*.
- Shahzad, A. (2012). Impact of technology on interest rate: evidence from the banking sector of Pakistan. *Journal of actual problems in Economics*,vol. 2, No. 4, pp. 53-57.
- Sherene, A. & Bailey, T. (2010). Non-interest income, financial performance & the macro economy: Evidence on Jamaican panel data. *Working paper, series 4*.Central Bank of Barbados
- Stiroh, K. J. (2010). Do Community Banks Benefit from Diversification? *Journal of Financial Economics*, 25(2/3), 135
- Walter, B.Z. (2011). *The price advantage*; 2ndedition, business book summaries

Wheelock, D.C. & Wilson, P.W. (2009). “Explaining bank failures: deposit insurance regulation and efficiency”, *Review of Economics and Statistics*, Vol. 77 No. 4, pp. 689-700.

## APPENDIX I: LIST OF COMMERCIAL BANKS IN KENYA

Classification	Description	Commercial Banks
Tier I	Comprises of banks with a balance sheet of more than Kenya Shillings 40 billion	<ol style="list-style-type: none"> <li>1. Citibank</li> <li>2. Equity Bank</li> <li>3. Standard Chartered Bank</li> <li>4. Barclays Bank of Kenya</li> <li>5. NIC Bank</li> <li>6. Kenya Commercial Bank</li> <li>7. National Bank of Kenya</li> <li>8. Diamond Trust Bank</li> <li>9. Co-operative Bank of Kenya</li> <li>10. CFC Stanbic Bank</li> </ol>
Tier II	Comprises of banks with a balance sheet of less than Kenya Shillings 40 billion but more than Kenya Shillings 10 billion	<ol style="list-style-type: none"> <li>11. I&amp;M Bank</li> <li>12. Bank of India</li> <li>13. Bank of Baroda</li> <li>14. Family Bank</li> <li>15. Prime Bank</li> <li>16. Commercial Bank of Africa</li> <li>17. Bank of Africa</li> <li>18. Consolidated Bank</li> <li>19. Chase Bank</li> <li>20. Fina Bank</li> <li>21. EcoBank</li> </ol>



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		22. HFCK
Tier III	Comprises of banks with a balance sheet of less than Kenya Shillings 10 billion	23. Habib A.G. Zurich 24. Victoria Commercial Bank 25. Credit Bank 26. Habib Bank (K) Ltd 27. Oriental Commercial Bank 28. K-Rep Bank 29. Imperial Bank 30. ABC Bank 31. Development Bank of Kenya 32. Middle East Bank 33. Equatorial Commercial Bank 34. Trans-National Bank 35. Dubai Bank 36. Fidelity Commercial Bank 37. City Finance Bank 38. Paramount Universal Bank 39. Giro Commercial Bank 40. Guardian Bank 41. Southern Credit Bank 42. Gulf African Bank 43. First Community Bank

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**Source: The Banking Survey by CBK 2016**