THE EFFECT OF INTEREST RATES ON PROFITABILITY OF DEPOSIT TAKING MICROFINANCE INSTITUTIONS IN KENYA

BY

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DECLARATION

This research project is my original work and has not been presented for examination in any other university.

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This research project has been submitted for examination with my approval as the candidate’s university supervisor.

Signed ……………………….. Date…………………………

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DEDICATION

This study is dedicated to my Husband Euticus and my son Elvis for their continued support and Love. We have come a long way and we are still going far. I love you so much and trust that God being our guide we shall live to see more of his goodness in our lives. Thank you for your thoughtfulness, well wishes and continuous prayers.
ACKNOWLEDGEMENT

First and foremost I give thanks to my God Almighty for giving me good health, peace and financial provision to undertake this course. I look back and proclaim that surely this far he has been my “Ebenezer”.

This research project would have been unachievable were it not for the relentless effort and assistance of my supervisor Mr. Herrick Ondigo. He has guided me with a lot of dedication and friendliness. My own efforts would not have yielded much without his guidance. I also owe a great deal to my moderator Mr. Mirie Mwangi for keeping me on track on this project.

I cannot also forget all my classmates and all my lecturers who took me through the course and made it a success.
ABSTRACT

Microfinance is high on the public policy agenda. It has achieved tremendous success in improving the households of the poor, through the provision of financial services. Such initiatives are largely sponsored by a variety of organizations including World Bank, United nation, national governments and many charitable organizations (NGO’s). Their aim is to help the poor cope with the risk and take advantage of small income communities. The purpose of this study was to establish the effect of interest rates on profitability of Deposit taking Microfinance institutions registered by Central bank. The research design adopted in this research was descriptive survey. The study sought to determine the effect of interest rates on profitability of Deposit taking Microfinance institutions. The target population in this study was all 9 Microfinance institutions registered by Central Bank of Kenya. Data was collected from central bank’s supervisory report and Micrfinanza Report. The data collected was analyzed using SPSS (Statistical Package for Social Scientists). Regression analysis was used to analyze the data and find out whether there existed a relationship between interest rate and the profitability of Deposit taking Microfinance institutions in Kenya. The study found that interest rate affect ROE in Microfinance institutions as it increases the cost of loans charged on the borrowers, regulation on interest rates have far reaching effects on ROE. The study recommends there is need for Central Bank to regulate interest rates as this would help to safeguard borrowers from exploitation by microfinance institutions.
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<table>
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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ANOVA</td>
<td>Analysis of Variance</td>
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<td>CBA</td>
<td>Cost Benefit Analysis</td>
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<td>DTM’s</td>
<td>Deposit Taking Microfinance Institutions</td>
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<tr>
<td>EBIT</td>
<td>Earning Before Interest and Tax</td>
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<td>EPS</td>
<td>Earning Per Share</td>
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<td>MFIs</td>
<td>Microfinance Institutions</td>
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<td>NGOs</td>
<td>Non Governmental organizations</td>
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<td>ROA</td>
<td>Return on Asset</td>
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<td>ROE</td>
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<td>ROI</td>
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CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Lack of access to credit is a major obstacle to economic growth in Africa, where a large majority of households do not have adequate collateral to secure a loan (Demirgue Kunt 2007). These households rely on both informal sector money-lenders where they borrow at unreasonable interest rates or are simply denied access to credit and therefore investment. Microfinance institutions expand the frontier of finance intermediation by providing credit to those who are excluded from formal financial markets.

Microfinance is high on the public policy agenda. It has achieved tremendous success in improving the households of the poor, through the provision of financial services. Such initiatives are largely sponsored by a variety of organizations including World Bank, United nation, national governments and many charitable organizations (NGO’s). Their aim is to help the poor cope with the risk and take advantage of small income communities (Banersee 2009). By alleviating financing constraints, microfinance is able to promote small scale investments from otherwise unrealized market activities while yielding a return on their investment (Hilson 2010). Levels of success however vary across microfinance institutions and depending on some factors, some fail and cease to exist while others grow reach many borrowers.

Thorough innovative lending technology MFI’s are generating high loan repayment rates on non collaterised loans in diverse environments that often exceed 95% (Demirsue Kunt 2007). Translating high repayments rates into profits remains a
challenge to most MFI’s. Although micro-banking is dominated by NGO’s and socially-oriented investors, experts believe only one per cent would ever be achieved (Armendariz 2010).

1.1.1 Interest Rates

Interest rate is the price a borrower pays for the use of money they borrow from a lender or fees paid on borrowed assets (Crowley, 2007). Interest rate can be thought of as rent of money. Interest rates are fundamental to a capitalist society and are normally expressed as a percentage rate over the period of one year. Interest rate as a price of money reflects market information regarding expected change in the purchasing power of money or future inflation, (Ngugi, 2001).

Financial institutions facilitate mobilization of savings, diversification and pooling of risks and allocation of resources. However, since the receipts for deposits and loans are not synchronized, intermediaries like banks incur certain costs (Ngugi, 2001). They charge a price for the intermediation services offered under uncertainty and set the interest rate levels for deposits and loans. The difference between the gross costs of borrowing and the net return on lending defines the intermediary costs such as information costs, default costs and operational costs (Rhyne, 2002).

1.1.2 Profitability

Economists and accountants differ on the proper definition of profit. To the accountant, profit is the excess of revenues over expenses and taxes and is best measured by earnings. To the economist, earnings fails to include an important expense item, the opportunity cost of the equity capital contributed by the shareholders of the firm. A firm earns economic profits only to the extent that its
earnings exceed the returns it might earn on other investments. Thus, earnings will always exceed economic profits, and a firm can be profitable in an economic sense. This conceptual difference has important practical implications. If managers attempt to maximize earnings (or growth of earnings) rather than economic profit, they will invest additional units of equity capital so long as the marginal contribution to earnings is positive. But if they do so, the marginal contribution of the last unit of equity capital will be zero and less than its opportunity cost depending upon how much equity is used.

In contrast, a manager who maximizes economic profits will add units of equity capital only until the marginal contribution of capital is equal to its opportunity cost and the average return to equity capital will equal or exceed its opportunity cost. As a result, firms that make business decisions without explicitly incorporating the opportunity cost of equity will be insufficient users of equity capital, engaging in investment projects that generate low returns to shareholders.

A study by Ross (1997), estimated that in a year of robust earnings fewer than half of the 1,000 largest industrial and non-financial firms earned returns to cover their opportunity cost of capital. Banks and other firms have begun to address this issue by incorporating an explicit opportunity cost of equity into their decision processes. In particular, a number of banks have incorporated a measure of economic profit in three key areas: strategic decision making, product pricing, and performance evaluation and incentive compensation.
Traditional measures of corporate performance are many but the common measures are: ROI, ROA, ROCE, EBIT, EPS, EAT and CBA.

Earnings before interest and taxation (EBIT), it measures the firms return before accounting for interest and taxation. Return on equity, shows that the firm can earn higher return on shareholder’s equity. A higher ROE also indicates a higher efficiency in spending money. Dividend per share also measures he firm’s profitability as well the market performance represented by the stock market value.

\[
DPS = \frac{\text{Total dividends}}{\text{Number of shares}}
\]

Return on Investment (ROA) measures the ability of the firm to earn a satisfactory return on all assets it employs. This ratio tells us how effective the firm is in terms of generating income to total assets. It is therefore an important measure of the efficiency of management. This ratio is also called return on total assets. Total assets are used in an attempt to measure total investment. A higher ratio is better, because it provides indication of future growth prospects.

\[
ROI = \frac{\text{Net profit}}{\text{Total cost}}
\]

ROE is calculated by taking the net result over shareholder’s equity for each specified year. It represents what return the company is making on the shareholders’ funds invested in the company. ROE assesses leadership’s ability to get the job done.
A business that has a high return on equity is said to be one that is capable of generating cash internally.

\[
ROE = \frac{\text{Trading profit}}{\text{Capital employed}}
\]

ROE along with Return on Assets (ROA) is one of the all favorites and perhaps most widely used overall measure of corporate financial performance (Rappport, 1986). RAO indicates how profitable a company is relative to its total assets. It gives an idea of how the management uses the assets to generate earnings.

\[
ROA = \frac{\text{EBIT}}{\text{Total assets}}
\]

Investors / shareholders consider current earnings, earnings and earnings stability thus they focus their analysis on firm profitability.

Cost Benefit Analysis (CBA) measures large projects with societal benefits that are difficult to quantify. Earnings after tax (EAT) is used in measuring profitability in order to accommodate all the components of cash flow.

1.1.3 The Effect of Interest Rates on Profitability

The interest rate is the price one pays for using borrowed money (loans). In monetary economies, money creates claims because it is an asset, a store of value, as well as a medium of exchange. Therefore, those who lend money expect to be compensated for handling their claims for the period of the loans to those who
borrow money. This interest rate also covers the exposure to credit risk by lenders. Therefore interest rate also covers the exposure to credit risk by lenders. Therefore, interest rate can be defined as the price lenders expect (and borrowers pay) for exchanging claims for greater future claims to goods and services. Interest rates represent the cost of money. (Kimutai, 2003)

Margrida (2000) found that net interest margin reacts positively to operating costs and hence profitability. Gurn and Shanmugen (1999), stated that changing market conditions would have an impact on the market interest rates which would certainly have a direct impact on the market interest rates which would certainly have a direct impact on profitability.

The key determinant of microfinance institution’s success is the ability to understand movement of interest rates and to interpret forecast in interest rates. Among the most difficult situation facing the institution’s is the existence of the uncertainty regarding their inflows which are mainly constituted by customers deposits. These deposits attracts an interest expense to the microfinance institution’s (Baltensperger and Milde, 1976).

The overall aim of a MFI should be to balance its return and risk in a way that maximizes the MFI market value to its owners, Hampel, 1994). Relating this objective to interest rates MFIs should try to earn the highest margin it can in a manner consistent with reasonable stability in the interest margin. Sinkey (1992) notes that the business of banking involves betting on interest rates while Ritter
(1997) suggested that the success or failure of MFIs depend on how well the institution buys and sells money.

1.1.4 Deposit Taking Microfinance Institutions in Kenya

The World Bank defines micro-finance institutions as institutions that engage in relatively small financial transactions using various methodologies to serve low income household, micro-enterprises, small scale farmers and others who lack access to traditional banking services. They engage in micro credit or micro-finance. Micro-finance is banking the unbankables, bringing credit savings and other essential financial services within the reach of millions of people who are too poor to be served by regular banks, in most cases because they are unable to offer sufficient collateral. Micro-finance is based on the premises that the poor have skills which remain unutilized or underutilized. (Yunus, 2003)

Microfinance institutions in Kenya are registered under different Acts of parliament like: The Non-Governmental Organizations Coordination Act; the Building Societies Act; The Trustee Act; The Societies Act; The Cooperative Societies Act; The Company Act; The Banking Act; The Kenya Post Office Savings Bank Act and Micro-finance Act (www.treasury.go.ke). The MFI operation, business establishment, licensing and supervision are regulated by micro-finance Act, 2006 which became operational 2008 (www.centralbank.go.ke)

Lending and deposit rates are important variables for micro finance institution’s in Kenya. If this spread is large it works as an impediment to the expansion and development of finance intermediation. This is because it discourages potential savers due to low returns on deposits and thus limits financing for potential
borrowers. This has the economy wide effect of reducing feasible investment opportunities and thus limiting future growth potentials (Shaw, 1973).

The impact of variations in market interest rates on microfinance institution’s profitability is ambiguous; it largely depends on the degree of responses of assets and liabilities rates. Since both sides of the institution’s balance sheets are affected by market interest rates in a parallel version, the net impact on institution’s profitability can be deduced by tracing the responses of both assets and liabilities as market interest rates changes.

1.2 Research Problem
Interest rate changes have impacted negatively the growth of the economy, (Nyangena, 1991). A part from negating the growth, there are also chances of default on the borrowers due to increase in the interest payable from their loans. Despite the mechanisms and controls put in place by financial operators in measuring credit risk, the level of reduction in profitability continues to grow posing a greater danger of these institutions to grow and offer needed services to ever growing demand for these services.

Over time the monetary policies have undertaken a gradual tightening of the monetary policy to reign in an inflationary pressures and stabilize the exchange rate by raising the central bank rate from 6.25 percent in 2011 to 18 percent in 2013. The upward adjustments of the Central Bank rate prompted the financial institutions to raise interest rates thereby reducing the liquidity in the market. On the global scene, the high international oil prices have affected the Kenya shilling which depreciated.
The general effect of this is a depressed economy and reduction in the real value of disposable income. The researcher therefore hopes to find out the effect of interest rates on profitability of microfinance institutions in Kenya.

Studies by Maitreesh, Timothy (1999) in lending, outlines the economic logic of joint liability lending using simple models that illustrates the way joint liability can mitigate some problems that arise in lending to poor people. The central issue in such credit markets is two folds: the lender does not know much about the borrower asymmetric information and effective, commonly used contractual arrangements for contending with asymmetric information do not work because the borrowers are too poor for the lender to use financial sanctions to achieve repayment of loans.

The impact of macroeconomic variable in Kenya especially interest rates have been a major concern to financial analysts and investors. Nyangena (1991) contends that a large and abrupt increase in general interest rates can have devastating effects on crucial real variables, exerting a depressing pressure on business entities and the economy as a whole.

To the knowledge of the researcher no study on the effect of interest rates on profitability of microfinance institutions has been conducted but so far most researches have focused on the interest rates and non-performing loan of financial institutions for example Ongweso (2005) carried out a study on the relationship between interest rates and non performing loans. The study covered 2000 – 2004. The findings indicated a declining trend of average interest rates ranging from 12% in 2000 to 2.94 in 2004, thus indicating improved macro-economic variables over
the period also the study founds out a positive relationship between the level of interest rate and non-performing loans, whereby an increase in interest rates increased non-performing loans. Since most of the research conducted on interest rates have focused on different perspectives rather than effect of interest rates on profitability of microfinance institutions thus pointing to a research gap. Since there is no research known by the researcher on interest rates and profitability of microfinance institutions, our research question is that; is there an effect of interest rates on profitability on microfinance institutions in Kenya?

1.3 Objective of the Study
To investigate the effect of interest rates on profitability of deposit taking microfinance institutions in Kenya.

1.4 Value of the Study
The government will benefit from the study as it will help it on formulating policies that will enable microfinance institutions access loans at favorable interest rates. Microfinance institutions will find this study helpful as it will make them understand the industry in which they are operating in.

The study will be useful to commercial banks which lend to these microfinance institutions by understanding the effect of interest rates on their clients.

Academicians and scholars will find the study useful as it forms the basis upon which to further studies on effects of interest rates on profitability of microfinance institutions as well as adding to the body of knowledge in finance discipline.
CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction
The chapter summarizes the literature available on effects of interest rates on profitability, interest rates, theories of interest rates and empirical studies that relate to this study.

2.2 Theoretical Review
A number of theories have been put forward to explain this phenomenon which coincides with the issues of importance in the study.

2.2.1 Keynes Liquidity Preference Theory
Keynes (1936) defined his liquidity preference theory as the rate of interest, which is set forth in his general theory of employment, interest and money makes the rate of interest to depend on the present supply of money and the demand schedule for a present claim on money in terms of a deferred claim. Saying that the rate of interest depends on the demand and supply of money (Keynes 1936). In Keynes view the primary way that interest rates affect the level of aggregate output is through this effect on their planned investments spending. Profit seeking organizations make investments in physical as long as they expect to earn more from the physical capital than from the interest cost of a loan to finance investment.

Interest rates play a major role in the investment demand schedule. Keynes advocates that government monetary policy directed at influencing the rate of interest. However he believes that the other factors that influence investment demand schedule is monetary policy.
2.2.2 Loanable Funds Theory

Loanable funds theory entailed analysis of changes interest rate in terms of flaws rather than stocks proponents argued that it should make no difference whether one analyzes the demand and supply of money or demand and supply of loanable funds. Like Keynes loanable funds theorist who include Haberler (1939) and others had moved beyond the dual treatise conception of economics according to which the principles of values and distribution are dealt with in one volume and the principles of money in another. The loanable funds theorist recognize that the monetary factors were important in both short and long run. In loanable funds theory one divides time up into accounting periods during which a flow of loanable funds is supplied and a corresponding flow is demanded.

2.2.3 Market Segmentation Theory

This theory as expounded by Saunders (2010), argues that indicial investors and financial institutions have specific maturity preferences and to get them to hold securities with maturities other than their most preferred requires a higher interest rate – maturity premium. Lasher (2008) asserts that when people are borrowing money they have a definite term in mind that is based on the use they intend to make of the funds. Lenders too would want to commit their funds for a definite period of time at a known yield. This results in a debt market that is segmented by term. Each segment has its own supply and demand picture with dependent set of forces pushing the curve back and forth. That means the market interest rate in each segment is independently determined and not related to the market rate in other segments. Market segmentation theory is based on institutional practices being followed by the financial institutions. (Kinyura, 2011)
2.2.4 Theory of Pricing

Marshall (1990) from a classical economic theory and early neoclassical economics theory point of view, assented that equilibrium market price would be determined by the forces of demand and supply under the perfect market competition model assumption. This position does not have any divergence from the classical value theory. Clarke (1982) defines price as he assigned numerical monetary value of a good, service or asset. If there is excess supply of money in the market, this will exert a down ward pressure on prices, and similarly if there is excess demand for money there will be a built up pressure on the prices.

Frederic (1986) while noting that interest rate is the price lender change on borrowed funds, he further contends that the forces of demand and supply in the market would attain the market equilibrium interest rate. This position is in conformity with the classical economic theory. The supply side this money market represents the supply of loanable funds while the demand side will represent the demand of loanable funds. Therefore the interest determination is at equilibrium at the point of intersection of the supply and demand curve.

2.3 Determinants of Profitability of Microfinance Institutions

Profitability is arrived at by taking stock of the net result over shareholder’s equity for each specified year. It points out to the return the company is making on the shareholders’ funds invested in the company. A case of high profitability indicates that a firm is capable of generating cash internally.
2.3.1 Interest Rates

Interest rate is the price a borrower pays for the use of money they borrow from a lender or fees paid on borrowed assets (C. Crowley, 2007). Interest rate can be thought of as rent of money. Interest rates are fundamental to a capitalist society and are normally expressed as a percentage rate over the period of one year. Interest rate as a price of money reflects market information regarding expected change in the purchasing power of money or future inflation, (Ngugi, 2001).

Financial institutions facilitate mobilization of savings, diversification and pooling of risks and allocation of resources. However, since the receipts for deposits and loans are not synchronize, intermediaries like banks incur certain costs (Ngugi, 2001). They change a price for the intermediation services offered under uncertainty and set the interest rate levels for deposits and loans. The difference between the gross costs of borrowing and the net return on lending defines the intermediary costs (information costs, default costs and operational costs), (Rhyne, 2002)

2.3.2 DTMs Demographics.

According to Microfinanza Rating (2013) this factor should be considered while trying to project the deposit taking microfinance institutions expected profits. This encompasses the number of branches as well as the number of active account holders. The demographics around the same are very essential in determining profitability.

2.3.3 Operational Self Sufficiency

This indicates the ability of the microfinance institutions to carry out expansion comfortably within a set aside cost that does not totally hurt the microfinance
institutions operations. Expansion has to be taken with a rational decision which is a step at a time. Immature planning may see the microfinance institutions operating at a loss. Other costs may include staff salaries, staff welfare, procurement costs, office rents and travel costs (2013 Annual Microfinance Report).

2.4 Empirical Review

Existing literature suggest various positions on the relationship between interest rates charged by Microfinance institutions and profitability thereof.

2.4.1 International Evidence

Molyneus and Thornton (1992) have found a weak inverse relationship between liquidity and bank profitability. One possible reason for the conflict in the findings may be different elasticity of demand for loans in varying situations. Devaajargal(2000) in his research found the correlation between performing loans and profitability to be negative and statistically significant. He also found that loans outstanding was one of the factors determining bank profitability, hence banks need to increase their lending.

Demirguc (1995) studied determinants of commercial bank interest margins and profitability; international evidence using bank level data for 80 countries in the years 1988 – 1995. The findings were that differences in interest margins and bank profitability reflect a variety of determinants; bank characteristics, macroeconomic conditions, explicit and implicit bank overall financial structure and underlying legal and institutional indicators.

Rajeev (2005) studied do interest rates matter? Credit demand in the Dhaka slum, using data from safe save, a credit cooperative in the slums of Dhaka, Bangladesh, to examine how sensitive borrowers are to increase in the interest rates on loans. Using
unanticipated between branch variation in the interest rate the findings were that elasticity of loan demand ranging from -0.73 to -1.04 were detected. They also found that less wealth account holders are more sensitive to the interest rate than relatively wealthier borrowers and consequently the bank’s portfolio shifts away from its poorest borrowers when it increases the interest rate.

Sudin (2010) studied the effects of conventional interest rates and rate of profit on funds deposited with Islamic banking system in Malaysia his findings were that both interest rate of deposit accounts of conventional banks and rate of profit declared by Islamic banks have strong relationship with the amount of deposits of Islamic banks. Lately, several related studies have been conducted on interest rates and profitability but not directly related to interest rates and profitability of microfinance institutions. Siddiqui (2012) carried out a study on the impact of interest rate volatility on non-performing loans in Pakistan. The research used weighed average lending interest rate published quarterly by the state bank of Pakistan. The study concluded that rising non-performing loans are significantly but not solely impacted by the volatility in the cost of borrowing

2.4.2 Local Evidence

Mark (1981) studied market interest rates and commercial bank profitability: an empirical investigation by use of regression models, to test if market rate fluctuations have a significant impact on bank profitability. The findings were negative.
Joseph (1989) studied interest rates and profit cycles; a disaggregated approach. His findings were that disaggregated models with interest rate terms perform better than simple autoregressive models in explaining the behaviour of profits.

Ndungu (2003) carried out a study on the determinants of profit of quoted commercial banks in Kenya. His findings revealed that sound asset and liability management were found to have significant influence on profitability. High interest rates were found to have an adverse effect on commercial banks’ profitability in Kenya.

Kibe (2003) concludes that key determinants of success of MFIs include management’s ability to understand movement in interest rates and inflation and to interpret forecast with regard to interest rates concentration of MFIs in a particular location, competition among MFIs in providing a specialized service, the total assets the organization owns and the potential of such assets to contribute to profits, the market share of an institution, the magnitude of wages or the wage inflation rate and the price cost margins in the service being delivered, the managerial efficiency and the primary purpose of the MFI for instance in providing basic needs to the very poor.

Ongweso (2005) carried out a study on the relationship between interest rate and non-performing loans in commercial banks in Kenya for the period 2000 – 2004, her findings were that there was a positive relationship between interest rates and non-performing loans whereby an increase in the interest rates resulted in a high non-performing loans. Bett (2006) studied the effects of lending interest rates on
profitability on savings, credit and cooperative societies in Kenya his findings were that lending interest rates of Saccos is positively correlated with profitability.

Kamau (2008) studied determinants of profitability of microfinance institutions in Kenya by a survey method by use of secondary data. Her findings were that profit before tax depended mainly on interest income, interest expense, shareholder funds, loans and advances to customers. Also other determinants of profitability of microfinance institutions include provision for bad and doubtful debts and deposits and balances due from other financial institutions.

2.5 Summary of Literature Review

Most of the researches conducted on interest rates have focused on interest rates and non-performing loans of financial institutions rather than the effect of interest rates on profitability of Microfinance institutions in Kenya. A study was carried in 2005 on relationship between interest rates and non-performing loans. The study was done when interest rates levels were fairly low thus indicating improved macro-economic variables over the period.

In conclusion the above empirical studies point to a gap that needs to be filled in an attempt to tie DTMs profitability to the perspective of interest rate of microfinance institutions in Kenya while ignoring other operational costs, since all the above empirical studies focus was different although they used the variable interest rate to some extent the perspective was different. This creates a gap to be filled by our research.
CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology that was used in this study. Section 3.2 presents research design, section 3.3 presents population of the study, section 3.4 presents data collection method and 3.5 data analysis.

3.2 Research Design

The research design used was descriptive research. Descriptive research is used to obtain information concerning the current status of the phenomena to describe what exists with respect to variables or conditions in a situation. The methods used ranged from the survey which described the status quo, the correlation study which investigated the relationship between variables, to developmental studies which sought to determine changes over time. (Key, 1997)

3.3 Population

The population of the study included the licensed deposit taking microfinance institutions by the Central Bank of Kenya. According to the information available in the Central Bank of Kenya website there were nine (9) licensed microfinance organizations which are deposit taking as at 8th April 2013 (Appendix I) under Microfinance Act, 2006. The study employed a census survey.
3.4 Data Collection

The study used secondary data collected from the financial statements of the microfinance institutions in the sample. The annual report and accounts for the last five years was used, i.e. 2009 – 2013.

3.5 Data Analysis

Data analysis involved preparation of the available data i.e. coding, editing and cleaning of data, which was processed using SPSS software. The coded data was entered into the SPSS program and hence analyzed.

3.5.1 Analytical Model

The data collected was of time series for the last five years (2009 – 2013) hence a linear regression model was the most suitable for estimating the function. The estimating function was as specified below.

\[ P = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + e \]

Where;

\( P \) = profitability as a percentage of ROE

\( \alpha \) = constant which defines profitability without inclusion of independent variable

\( \beta_1 \) = regression coefficient that defines the amount of change in Y for every unit of change in independent variable

\( x_1 \) = interest rates charged on borrowing by customers

\( x_2 \) = No of branches

\( x_3 \) = No of account holders

\( x_4 \) = Operational costs

\( e \) = Error term
3.5.2 Test of Significance

Correlation regression and ANOVA were used to describe, analyze and draw interferences. The researcher tested the hypothesis thereby facilitating conclusion. From the processed secondary data, the study used a non-linear regression model to determine the relationship between interest rates and the profitability of microfinance institutions. Analysis of (ANOVA) was employed to determine the overall fit of the model and therefore testing the hypothesis. The significance of the specific coefficient values of the model was tested using statistics at 95% confidence interval.
CHAPTER FOUR
DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter focuses on the information of the MFIs and the presentations of the secondary data from the central bank over the last five years. The analysis was done based on the research objective.

4.2 Response rate

The whole sample which included 9 Deposit Taking Microfinances had 7 of them responding making a 77.8% response rate which was acceptable to the researcher.

4.3 Demographic information

Data on the DTMs demographic included the number of branches as well as the account holders per respondent.

4.3.1 Number of Branches

Data was sought to establish the number of branches per each DTM with the findings presented in table 4.1.

Table 4.1: DTM branches

<table>
<thead>
<tr>
<th>Branches</th>
<th>Frequency</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-10</td>
<td>4</td>
<td>57.1</td>
</tr>
<tr>
<td>11-20</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>21-30</td>
<td>2</td>
<td>28.6</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Research findings

As presented in table 1, it was observed and established that 4(57.1%) DTMs had 1-10 branches spread in different centers, 1(14.3%) had 11-20 branches while 2(28.6%) DTMs had 21-30 branches. Majority of the DTMs had 1-10 branches a
trend attributed to their period in existence and the CBKs issuance of licenses. Interest rates was pegged on the market coverage and the demographics was used as a basis of understanding the same.

4.3.2 Number of Account Holders
Data was sought to establish the number of account holders per each DTM and the findings presented in table 4.2.

Table 4.2: Number of account holders

<table>
<thead>
<tr>
<th>A/C holders (000,000)</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 4</td>
<td>6</td>
<td>85.7</td>
</tr>
<tr>
<td>4.1 – 8</td>
<td>1</td>
<td>14.3</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Research Findings

The findings in figure 4.2 established that 6(85.7%) of the DTMs had 0-4 million account holders where some had less than 10000 and some as high as 2.8 m customers. 1(14.3%) of the DTMs had 4.1-8m account holders. Majority of the DTMs were still struggling to establish a bigger customer base in the face of expansion programmes to tap into the available geographical space. This trend coincided with the effect elicited by interest rates regime.

4.4 Descriptive Statistics
This summarizes the population characteristic between profitability with interest rates. The results on the differences in means of all the financial variables were considered i.e interest rates, number of branches, number of account holders and operational costs.
4.4.1 Trend for DTMs percentage profits in Kenya (2010-2012)

The researcher sought to establish the percentage profits that the DTMs made. The findings were presented in figure 4.1.

Figure 4.1: DTMs percentage profits

Source: Research Findings

From the findings the result in figure 4.1, there was a sharp decline in 2010 and then it took a sharp rise in the year 2011 and in 2012 there was a decline.

4.4.2 Trend of Operational Costs for DTM’s in Kenya(2010-2012)

Data was sought to establish the trend of operational costs with the findings presented in figure 4.2.
From the findings in figure 4.2 it was observed that the operation costs in the DTMs were high in the year 2010 where profits were relatively low, the cost went down in 2011 where the profitability shot upwards and the operation costs in 2012 went up forcing the profits to dip.

**4.4.3: Trend of Interest Rates for DTMs in Kenya (2010-2013)**

Data was sought to establish the interest rates charged by the DTMs. The findings were presented in figure 4.3.
From the findings it was observed that there was a steady rise in the interest rates from the year 2010 and a decline in the year 2013.

Table 4.3 Summary of Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>effect of interest rates</td>
<td>7</td>
<td>1</td>
<td>7</td>
<td>3.29</td>
<td>2.215</td>
</tr>
<tr>
<td>how many branches per DTM</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>1.71</td>
<td>.951</td>
</tr>
<tr>
<td>no. of account holders</td>
<td>7</td>
<td>1</td>
<td>7</td>
<td>4.00</td>
<td>2.160</td>
</tr>
<tr>
<td>effects of Oss</td>
<td>7</td>
<td>1</td>
<td>7</td>
<td>3.71</td>
<td>2.628</td>
</tr>
</tbody>
</table>

Source: Research findings

This summarizes the population characteristics between profitability with interest rate spread. The result of tests on the difference in means of all variables were
considered i.e interest rate, number of branches per DTM, number of DTMs’ account holders and operational costs. Their means, maximum, Minimum, and standard deviations were considered. The results show tests on the difference in means of all variables of profitability model considered i.e interest rate showed an average mean of 3.29 and standard deviation of 2.215, no of branches showed a mean of 1.71 and standard deviation of .951, number of account holders showed a mean of 4.00 and a standard deviation of 2.160 and operational costs showed a mean of 3.71 and a standard deviation of 2.628. The positive values imply that the variables under the model are significant in determining the profitability of microfinance institutions in Kenya.

4.5 Inferential Statistics

Inferential statistics was used to assess strength of the relationship between profitability and interest rate, number of branches, number of account holders and operational costs.

Table 4.4: Model summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Squared</th>
<th>Adjusted R Squared</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>.995a</td>
<td>.990</td>
<td>.969</td>
<td>.379</td>
<td>.990 48.354</td>
</tr>
</tbody>
</table>

Source: Research findings

a. Predictors: (Constant), effects of Oss, effect of interest rates, no. of account holders, how many branches per DTM
R is the root of \( R^2 \) and is the correlation between the observed and predicted values of dependent variable implying that there is an association of 0.995 between interest rates affecting profitability which also includes number of DTM branches, number of account holders as well as operational self sufficiency.

\( R^2 \) is the proportion of the variance in the dependent variable performance that was explained by variations in the independent variable. This implied a 99% of variation or correlation between variables in general.

Adjusted \( R^2 \) is the coefficient of determination which indicates how profitability varies with variations in interest rates; DTMs account holders as well as number of branches per DTM. From the table above, the value of adjusted \( R^2 \) is 0.969 implying a variation of 96.9% on profitability with variation which was statistically significant with P-Value of 0.02.

Table 4.5: ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>27.713</td>
<td>4</td>
<td>6.928</td>
<td>48.354</td>
<td>.020*</td>
</tr>
<tr>
<td>Residual</td>
<td>.287</td>
<td>2</td>
<td>.143</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>28.000</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Research findings

a. Predictors: (Constant), effects of Oss, effect of interest rates, no. of account holders, how many branches per DTM
b. Dependent Variable: revenues collected in 5 years

The significance in the above table is 0.02. The above value can therefore be interpreted as there is a strong linear relationship between the profitability and
interest rates, number of account holders, number of branches and operational costs. Therefore the hypothesis that all independent variables in the model have no effect on profitability of DTMs is rejected.

**Table 4.6: Regression Coefficients**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.715</td>
<td>.362</td>
<td></td>
<td>4.735</td>
</tr>
<tr>
<td>effect of interest rates</td>
<td>-.127</td>
<td>.188</td>
<td>-.130</td>
<td>-.675</td>
</tr>
<tr>
<td>how many branches per DTM</td>
<td>.207</td>
<td>.474</td>
<td>.091</td>
<td>.436</td>
</tr>
<tr>
<td>no. of account holders</td>
<td>-.491</td>
<td>.166</td>
<td>-.491</td>
<td>-2.965</td>
</tr>
<tr>
<td>effects of Oss</td>
<td>1.161</td>
<td>.130</td>
<td>1.412</td>
<td>8.938</td>
</tr>
</tbody>
</table>

Source: Research findings

a. Dependent Variable: revenues collected in 5 years

Predictors: (Constant) branches per DTM, account holders, effect of interest rates and operational self sufficiency.

Dependent: Profits

As per the generated table above, the equation $Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon$ becomes:

$Y = 1.715 + \beta_1X_1 + 0.207X_2 + -0.491X_3 + 1.161X_4$

Specifically, the results indicate that increased profitability is defined by the ratio of interest rates demographics of DTMs and operational costs.

**4.6 Interpretation of the Findings**

According to the regression equation established taking all other factors into account at zero (interest rate regimes, number of branches per DTM, number of DTMs’ account holders and and operational costs) profitability measured by ROE will be
1.715. The data finding analyzed show that taking all other independent variables at zero (0) a unit increase in interest rate will lead to -0.127 decrease in ROE; a unit increase in number of branches will lead to a 0.207 increase in ROE; a unit increase in the number of account holders will lead to a 0.491 decrease in ROE where more staff will be needed as well as increased rent costs from new branches which will be opened to cater for increased clientele; and a unit increase in operational will lead to a 1.161 increase in ROE essentially from opening up of branches in upcountry areas where costs of renting and general expenses are lower compared to exorbitant urban rates.

The correlation between the observed and predicted values of dependent variable implied an association of 0.995 between interest rates affecting profitability which also included number of DTM branches, number of account holders as well as operational self sufficiency.

Thus the proportion of the variance in the dependent variable performance \( R^2 \) was explained by variations in the independent variable. It implied a 99% of variation or correlation between variables in general.

Adjusted \( R^2 \) is the coefficient determination indicated how profitability varied with variations in interest rates; DTMs account holders, operational costs as well as the number of branches per DTM. From the table above, the value of adjusted \( R^2 \) was 0.969 implying a variation of 96.9% on profitability with variation which was statistically significant with P-Value of 0.02.

Specifically, the results indicate that increased profitability is defined by the ratio of interest rates demographics of DTMs, operational costs as well as regulation of Interest rates.
CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction
This chapter summarizes the findings of the study that relates to the research questions set out at the beginning of the study. The chapter also presents conclusions and recommendations of the study.

5.2 Summary
In data analysis and presentation of results both descriptive and inferential statistics were employed specifically using correlation, regression and ANOVA to establish the significance /fitness of the model and also to establish the link between profitability of DTMs with interest rate regimes. The results of tests on the differences in means of all the contributory variables were considered i.e. interest rates, DTM branches, operating self-sufficiency, as well as account holders per DTM.

Their means, maximum, minimum and standard deviation were considered. The results showed tests on the differences in means of all variables of the profitability model considered i.e. interest rates charged showed an average percentage mean of 3.29 and standard deviation of 2.215, number of branches per DTM showed a mean of 1.71 percent and standard deviation of 0.951, account holders per DTM showed a percentage mean of 4.00 and standard deviation of 2.160 while operation self sufficiency showed a percentage mean of 3.71 and a standard deviation of 2.628. The positive values imply that the variables under the model are significant in determining profitability of DTMs in Kenya.
The findings showed the correlations between the independent variables considered in the regressions: interest rates, DTM branches, DTMs’ account holders as well as operating self-sufficiency as independent variables in the model and ROE as a measure of financial profitability of DTMs in Kenya. The significance of the coefficients was calculated at the level of 95%. The study findings indicate that the variables are statistically significant to influencing profitability of DTMs as indicated by the regression table of coefficients. This implies that the interest rates, demographics and operational costs are relied upon to make conclusions about the level of profitability of DTMs.

The correlation between the observed and predicted values of dependent variable implied an association of 0.995 between interest rates affecting profitability which also included number of DTM branches, number of account holders as well as operational self sufficiency.

Thus the proportion of the variance in the dependent variable performance $R^2$ was explained by variations in the independent variable. It implied a 99% of variation or correlation between variables in general.

The Standardized Beta Coefficients gave a measure of the contribution of each variable to the model. A large value indicates that a unit change in this predictor variable has a large effect on the criterion variable. The $t$ and Sig (p) values give a rough indication of the impact of each predictor variable – a big absolute $t$ value and small p value suggests that a predictor variable is having a large impact on the criterion variable.
5.3 Conclusion
The results showed tests on the differences in means of all variables of the profitability model considered. The positive values implied that the variables under the model are significant in determining the profitability of DTM’s in Kenya. The study concludes that DTMs use their branches as a way of increasing the customer base and also as a policy towards increasing profitability, enhancement of effectiveness of the DTMs and improvement of competitiveness in the market.

The study also concludes that expansion of DTMs leads to improvement of firm performance by increasing their profits, but increasing the operational costs which are ultimately poised to hurt the DTMs. The study concludes that DTMs rate of expansion is a choice only informed by individual players depending on financial capabilities as well as their objectives.

The study further concludes that the interest rates regime have a real effect on the profitability of DTMs and should be streamlined to provide a competitive edge. Finally, the study concludes that DTMs suffer from the existing CBK policies and rates which should however be revised to create economic fairness.

5.4 Recommendations for policy
The study found that interest rate is the most significant factor influencing profitability of DTM’s in Kenya. The study therefore recommends that central bank should put in place measures of monitoring interest rate and also help mitigate moral hazards incidental to profitability of DTM’s
The study also recommends that when DTM's wish to consolidate gains in profits, they should consider factors such as availability of set kitty for expansion, travel costs buffer kitty to cushion against unpredictable costs, salary adjustment plans as well as renting costs buffers. Competition from commercial firms and other financial players therefore should be mitigated to arbitrate interest rates and make profits.

Inefficiencies in the intermediation process is a characteristic of a repressed financial system. This is because in a control policy regime selective credit policies involve substantial administrative costs, and interest rates ceilings fail to reflect the true cost of Capital. Such a policy regime constrains the growth of the financial system in terms of diversity of institutions and financial assets and encourages non-price competition which should be well addressed by DTM’s management in conjunction with central bank.

5.5 Limitations of the study

This study focused on licensed DTM's that are licensed by CBK; however, there are thousands of small microfinance institutions in Kenya. Another limitation is that some DTM's were licensed just shortly before the inception of this study making data unavailable for the purpose of the study owing to their short time in operation.

Further the researcher was limited by the access to information from the Central Bank of Kenya since central bank considered some information sensitive and confidential.
5.6 Recommendations for further research.

This study determined that there was an effect of interest rates in DTMs profitability. The study recommends that there is need for further studies to carry out similar study for a longer period.

The study also recommends that studies should be carried out to establish the impact of Central Bank’s policy on the sustainability of DTMs. The study further recommends that further research should be carried out to establish the effect of operational costs per DTMs to the projected profitability.
REFERENCES


Bett, J.K. 92006). Effects of lending interest rates on profitability of savings, credit and cooperative societies in Kenya. UON MBA project unpublished.


APPENDIX I

QUESTIONAIRES FOR DTMs

How many number of branches are there per DTM

(a) 1-10
(b) 11-20
(c) 21-30

How many account holders does each DTM have?

(a) 0-4
(b) 4.1-8

Are the DTMs making profits?

…………………………………………………………………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………

What trend was shown by the operational costs?

…………………………………………………………………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………

What is the trend of interest rates margin?

…………………………………………………………………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………
…………………………………………………………………………………………
APPENDIX II

MFIs REGISTERED BY CENTRAL BANK

Faulu Kenya DTM Limited
Postal Address: P. O. Box 60240 – 00200, Nairobi
Telephone: +254-20- 3877290 -3/7, 38721883/4
Fax: +254-20-3867504, 3874875
Email: info@faulukenya.com, customercare@faulukenya.com
Website: www.faulukenya.com
Physical Address: Faulu Kenya House, Ngong Lane -Off Ngong Road
Date Licenced: 21st May 2009
Branches: 27

Kenya Women Finance Trust DTM Limited
Postal Address: P. O. Box 4179-00506, Nairobi
Telephone: +254-20- 2470272-5, 2715334/5, 2755340/42
Pilot Line: 070 - 3067000
Email: info@kwftdtm.com
Website: www.kwftdtm.com
Physical Address: Akira House, Kiambere Road, Upper Hill,
Date Licenced: 31st March 2010
Branches: 24

SMEP Deposit Taking Microfinance Limited
Postal Address: P. O. Box 64063-00620 Nairobi
Telephone: 020-3572799 / 26733127 / 3870162 / 3861972 / 2055761
Fax: +254-20-3870191
Email: info@smeptm.co.ke info@smeptm.co.ke info@smeptm.co.ke
Website: www.smeptm.co.ke
Physical Address: SMEP Building - Kirichwa Road, Off Argwings Kodhek Road
**Date Licensed:** 14th December 2010
Branches: 6
Remu DTM Limited
Postal Address: P. O. Box 20833-00100 Nairobi
Telephone: 2214483/2215384/2215387/8/9, 0733-554555
Email: info@remultd.co.ke
Physical Address: Finance House, 14th Floor, Loita Street
Date Licensed: 31st December 2010
Branches: 3

Rafiki Deposit Taking Microfinance
Postal Address: 12755-00400 Nairobi
Telephone: 020-216 6401
Cell - phone: 0719 804 370/0734 000 323
Email: info@rafiki.co.ke
Website: www.rafiki.co.ke
Physical Address: 2nd Floor, El-roi Plaza, Tom Mboya Street
Date Licensed: 14th June 2011
Branches: 3

UWEZO Deposit Taking Microfinance Limited
Postal Address: 1654-00100 Nairobi
Telephone: 2212917 / 9
Email: info@uwezodtm.com
Website: www.uwezodtm.com
Physical Address: Park Plaza Building, Ground Floor, Moktar Daddah Street
Date Licensed: 08 November 2010
Branches: 2

Century Deposit Taking Microfinance Limited
Postal Address: P. O. Box 38319 – 00623, Nairobi
Telephone: +254-20-2664282, 20 6768326, 0722 168721, 0733 155652
Email: info@century.co.ke
Physical Address: KK Plaza 1st Floor, New Pumwani Road, Gikomba
Date Licensed: 17th September 2012
Branches: 1
SUMAC DTM Limited
Postal Address: P. O. Box 11687-00100, Nairobi
Telephone: (254) 20 2212587, 20 2210440
Fax: (254) 2210430
Email: info@sumacdtm.co.ke
Website: www.sumacdtm.co.ke
Physical Address: Consolidated Bank House 2nd Floor, Koinange Street
Date Licensed: 29th October 2012
Branches: 1

U&I Deposit Taking Microfinance Limited
Postal Address: P.O. Box 15825 – 00100, Nairobi
Telephone: (254) 020 2367288, Mobile: 0713 112 791
Fax: (254) 2210430
Email: info@uni-microfinance.co.ke
Website: http://uni-microfinance.co.ke/uni-microfinance/
Physical Address: Asili Complex Building 1st Floor, River Road
Date Licensed: 8th April 2013
Branches: 2
## APPENDIX III

Returns on Equity and Operations Self sufficiency

<table>
<thead>
<tr>
<th>INSTITUTION</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DTMs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROE (%)</td>
<td>OSS (%)</td>
<td>ROE (%)</td>
<td>OSS (%)</td>
</tr>
<tr>
<td>FAULU</td>
<td>-24.5</td>
<td>87.7</td>
<td>2.0</td>
</tr>
<tr>
<td>KWFT</td>
<td>16.7</td>
<td>111.8</td>
<td>13.1</td>
</tr>
<tr>
<td>SUMAC</td>
<td>5.6</td>
<td>130.4</td>
<td>5.5</td>
</tr>
<tr>
<td>SMEP</td>
<td>1.6</td>
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</tr>
<tr>
<td>RAFIKI</td>
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<td>-</td>
<td>11.4</td>
</tr>
<tr>
<td>REMU</td>
<td>-</td>
<td>-</td>
<td>13.6</td>
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<tr>
<td><strong>CENTURY</strong></td>
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<tr>
<td><strong>DTM</strong></td>
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