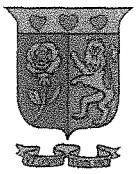

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THE IMPACT OF COMPETITION WITHIN THE MICROFINANCE INDUSTRY AND ITS EFFECTS ON PERFORMANCE OF MICROFINANCE INSITUTIONS

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the Research Project contains no material previously published or written by another person except where due reference is made in the Research Project itself.

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This Research Project has been submitted for examination with my approval as the Supervisor.

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LIST OF ABBREVIATIONS

MFI - Microfinance Institution

ROA - Return on Assets

ROE - Return on Equity

AROA - Adjusted Return on Assets

OSS - Operational Self Sufficiency

SDI - Subsidy Dependant Indicator

NGO - Non-Governmental Organization

MIX-Microfinance Information Exchange

HHI- Herfindahl-Hirschman Index

(fig) - Figure/Table

1 INTRODUCTION

1.1 Background to the Study

Small enterprises and most of the poor population in Sub-Saharan Africa have very little access to deposit and credit facilities together with other financial services provided by formal financial institutions. In Ghana and Tanzania for example only 5 to 6 percent of the population has access to the banking sector (Blavy & Rodolphe, 2012). MFIs emerged in Africa so as to provide both credit and deposit facilities to those who were not served by the financial institutions. That withstanding, a Microfinance Institution can be defined as a special financial entity that has both a social nature and a for-profit nature, whose main objective is to provide financial services to low income earners in the economy. (Begona & Cecilio, 2007)

Competition on the other hand is defined as the rivalry among market sellers-in this case, Microfinance entities-trying to achieve the goals of maximizing profits, market share and sales volumes (McIntosh & Wydick, 2005).The economic concept of market competition is ideally in relation to two polarized extremes, monopolistic markets[1] and perfectly competitive markets. The former has conspicuous characteristics of the market being shared by a large number of small firms, stagnant or non-competitive price fluctuations and restricted entry to markets (Kubo, 2006). The latter on the other hand is plagued by downward price fluctuations, a highly populated market (in relation to sellers) and free entry and exit. Oligopolistic markets[2] tend to have a blend of both monopolistic and free market characteristics.

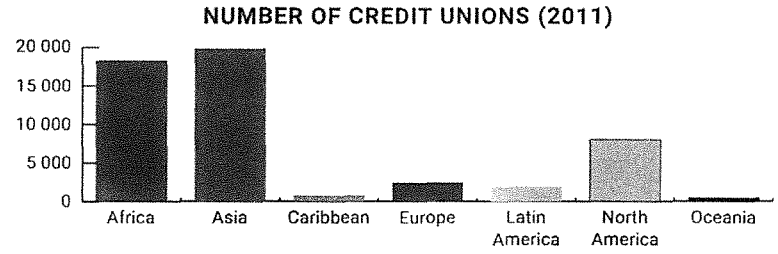
The increase in the use of Microfinance facilities within the East African economy has largely contributed to the deepening of the financial sector thereby increasing the efficiency of the acquisition of funds by borrowers, conversely increasing the market share to lenders themselves. Over the past 10 years it can be noted that several institutions serving the relatively low income bracket within Kenya have

[1] Monopolistic markets have many small firms in the market and one large firm which exercises large control over market resources and market share. Prices are dictated by the controlling firm, which is also favoured by restricted market entry.
[2] Oligopolistic markets differ from monopolistic markets in that the former is dominated by the presence of a small number of relatively large firms. Monopoly is characterized traditionally by one large firm.

developed and penetrated the market causing a divide in the market share. (Morduch, 2005)

The increase in market penetration within Africa has brought about a significant rise in competition within the industry. During the 1990s, the explosive growth saw these institutions lending as local monopolists within segmented regional markets on an international scale. (McIntosh C. , 2005) highlighted that the previously untapped markets have now become saturated with new lenders and institutions, causing the monopolistic positions to fall and many of them are now competing for the same clients. In Kenya for example, both microfinance banks and non-deposit taking microfinance institutions dominate the market with over 30 institutions already carrying out banking transactions as of 2013 (Ayele, 2015).Continuing expansion of MFIs into the deposit taking and loan giving business has now peaked causing large numbers of institutions[3] to be formed as displayed by figure 1 & 2 below, especially in Asia and Africa. (United Nations, 2013)

Figure 3: Credit Union Concentration across Continents



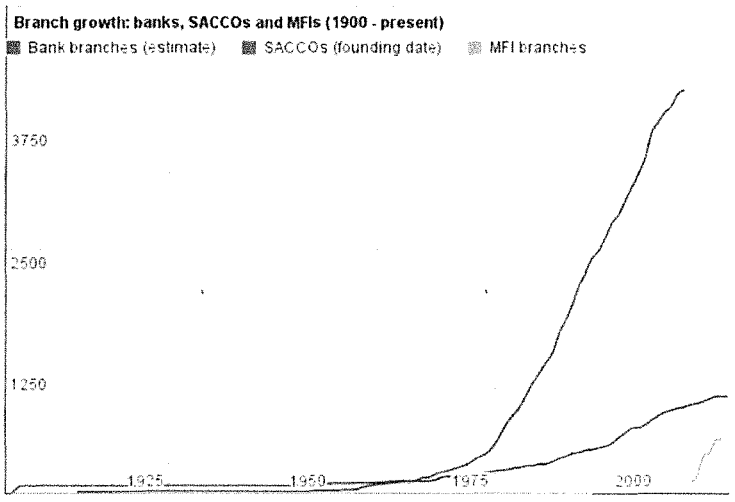
Source : World Council of Credit Unions Statistical Report 2011

Furthermore, commercial banks have also branched into the business of microfinance in order to reap its profitability pushing the competitive stakes in the industry even higher. The competition has in fact become so severe that some MFIs are actually feeling squeezed by commercial banks which have adopted new financial products that innovatively attract members of the low income bracket who are the best clients within the microfinance market (Ryan, 2009). Particularly at stake are the savings deposits from hundreds of thousands of small businessmen, artisans, and women groups, worth an estimated USD 126.2 million.

[3] The report by the United Nations refers to Credit Unions as the subject institutions. Such entities are member owned microfinance cooperatives democratically controlled by its members.

Figure 4 : Growth of Financial Sector Infrastructure in Kenya

Figure 2: Growth of financial sector infrastructure in Kenya - 1900 - 2011



According to Benjamin Nkungi the chief executive of the Association of Microfinance Institutions (AMFI), "Banks are able to identify the very best clients of the MFIs, whom they then proceed to poach."

While East Africa is at an early stage of competition relative to the rest of the world, major urban centres are being saturated with competitive MFIs. Markets for the more wealthy borrowers that were previously dominated by grant-funded, socially motivated lenders are now being contested by private institutions (Kaffu & Mutesasira, 2003).

One of the leading microfinance players-FAULU-which is currently operating in both Kenya and Uganda expresses that it is troubled by the increasing presence of borrowers unknowingly receiving loans from multiple lenders. FAULU reports that such behaviour has become increasingly prevalent as the intensity of MFI activity increases. With the growth of the industry and the saturation of the financial sub sector dealing with MFIs, increase in competition has been reported in many African countries (Savita, 2010)

1.2 Development of Microfinance Institutions

Traditionally, the global banking system has tentatively paid massive attention to the borrowing and lending facilities provided by institutions such as large commercial banks. Such institutions pay close attention to relatively middle income and high net worth individuals with large sources of collateral funding. As a result, lending of funds by such income driven institutions is done with the aim of making profit from earned interest. Economic theory also backs up the practice emphasizing the riskiness of capital outflow by commercial institutions to low income earners in the economy claiming that the inability to repay such loans would lead to insurmountable losses to the financial institution.

On the onset of the 1970s, a professor named Muhammad Yunus, in Bangladesh University, dared to go against the already prime economic law of lending to individuals with substantial amounts of collateral as a 'safety net' for bad debts by offering loans to low net worth individuals although he was unsure of whether the idea would succeed (Morduch, 2005).In Bangladesh, many banks had tried to make loans to the poor but it only ended up with millions of dollars getting squandered by cases of corruption and high levels of reported bad debts.[4]

Today Mohammed Yunus is recognised as a visionary leader who pioneered the onset of lending to the poor by arguing that they are diligent borrowers who would actually pay back the loans taken up. The movement he started conversely spread globally and recently claimed over 65 million customers by the end of 2002 (Morduch, 2005).The supply of funds to the poor consequently increased and led to financial deepening, increased price competition and product differentiation by lenders who now compete for the same microfinance market space.

The financial deepening literature of (Greenwood & Jovanovic, 1989) and (Levine, 1993) appraises competition as the entry of new competitors is expected to improve the repayment performance of borrowers. However, through the establishment of a general equilibrium, various theoretical analyses within the microfinance industry have shown that competition rather has a negative impact on the performance of

[4] High rates of bad debts were driven by external factors such as the decline of the local economy in Bangladesh and large cultural resistance whereby loan repayment was forbidden by Islamic religious leaders.

socially-motivated MFIs (McIntosh & Wydick, 2005). However, given this surprising theoretical analysis, a conclusive agreement is yet to be reached from an empirical perspective.

1.3 Research Problem

With the growth of competition within the microfinance industry, economists have favoured its existence basing their argument on its ability to increase the welfare of consumers by promoting productive efficiency, i.e. lower production costs and lower prices on goods and services. It is also seen to bring about the innovation of new products and technologies (Motta, 2004). By inferring; we therefore expect similar benefits within the microfinance industry. Such competitive conditions could also cause MFIs to either expand into new markets to generate higher earnings and maintain its market domination, implying a rise in outreach.

However, if the increase in competition causes a rise in default rates and consequent fall in profitability, cautious lending will be practised leading to reduced outreach. Furthermore, costly activities such as screening could be taken up to control the rates of default which may work against the generation of productive efficiency (Assefa E. , 2010). Firms may also engage in activities such as increased remuneration to retain employees. As a result, profitability will be affected through the generation of higher costs.

Microfinance has yet to break into finance literature with regards to its relationship to industry competition (Brau & Woller, 2004). More so, competition is becoming an important subject in the microfinance industry and its implications can be immense.

Therefore, it can be observed that there is a lack of precise effect of competitive forces on performance indicators including client outreach, productive efficiency and profitability and studies carried out have not yet produced conclusive results.

1.4 Research Objectives

a) To determine Microfinance competitive levels in East Africa and assess the effect of competition on MFI client outreach.
b) To establish the effect of competition on Microfinance efficiency.

c) Establish a relationship between competition and profitability within the Microfinance sector.

1.5 Research Questions

That withstanding, this study will aim at analyzing the ambiguity of the effects of competitive forces within the Microfinance sector by addressing the following key questions:

a) Whether competition leads to either a negative effect on customer outreach through the use of cautious lending or causes the expansion of MFIs into new markets.
b) If competitive forces either promote efficiency by giving rise to product innovation and cost cutting or conversely lead to an increase in costs through screening.
c) Whether the increase in competitive pressure due to the presence of many lenders leads to a fall in profitability or does it essentially cause higher generation of profits if untapped markets are explored.

2 LITERATURE REVIEW

2.1 Literature on Microfinance Institutional Performance

The concept of performance is seen to have no formal and universal meaning. For decades, and in relation to the financial industry, the term has been otherwise strictly reduced to refer to the financial productivity[5] of firms in question. In present day, performance is seen to possess many perspectives due to the changing nature of organizations. Microfinance institutions are seen to have majorly an impact on social change and therefore are measured in relation to their social impact using non financial parameters (Agarwal & Sinha, 2010).For any business model to be determined as being successful, it has to have a positive financial performance and thus microfinance institutions decide to focus on broadening their activities through the generation of innovative products to suit the market.

The use of social performance to assess the viability of MFIs had its onset only a couple of years ago as compared to the study of financial performance. (Hashemi S. M., 2007). Furthermore, (Foose & Greenberg, 2008) also indicated that different financial institutions (MFIs) have different methods and models tailored to suit their personal preferences on analysis of social performance of such institutions. Though this study will focus on financial performance indicators, it acknowledges the values which MFIs adopt leading to increasing outreach, bettering economic and social conditions of clients and enhancing social responsibility of MFI towards clients, employees and the community (Li, 2010).

The literature on MFIs and their financial performance has been carried out quite extensively over the past 10 years highlighting on the general increase in profitability and client outreach the industry has been exposed to (Mersland, 2009).However, empirical research on how internal market factors such as competitive forces generated by market players and its relation to financial performance of these institutions has not extensively been embarked on (Brau & Woller, 2004).

Seminal works on the influence of market competition on microfinance activity is seen to date back to the year 1999 whereby (Elizabeth & Christen, 1999) highlighted

[5] Financial productivity ideally refers to how an entity can prudently use its assets so as to generate sustainable revenues.

that the years spanning 1989 to 1999 were plagued with acceleration in the creation of commercial microfinance programs[6]. Market forces in the newly liberalized financial markets in Bolivia, Chile, Paraguay and Uganda created an enabling environment for new commercial entrants such as consumer lenders who provided services to the low income earners. Microfinance programs were thus developed to improve services, develop new products to increase customer outreach and harness cost saving technology to promote profitability. The period was one of competitive stimuli to the industry, whereby firms displayed impressive financial performance as they strived to satisfy the untapped niche of low income borrowers.

Sentiments of the positive impact of competition on sectors such as Microfinance were shared by (Greenwood & Jovanovic, 1989) as evidenced by their study on the benefits of financial deepening which appraises competition as the entry of new competitors is expected to improve the repayment performance of borrowers, due to the availability of cheaper interest payments on loans and screening mechanisms that sift out the unworthy borrowers.

During the years 1990 to 1999, immense financial development and inclusion was a main area of focus, resulting in the deepening of financial markets. This conclusively brought about new regimes of capital accumulation and savings mechanisms through areas such as Microfinance. Fuelled by healthy competition, the new breed of socially motivated financial institutions reaped immense profits as they spread their market share. (Levine, 1993).

2.2 Literature on the Impact of Competition

The beginning of the new century ushered in more empirical studies that focused on the impact of competition on a regional basis, whereby separate markets were analyzed based on their predetermined level of market competition. (McIntosh & Wydick, 2005) highlighted that competition among Microfinance Institutions has increased drastically since the 1990s and the study modelled the behaviour of non-profit lenders showing that their non-standard, client-maximizing objectives cause

[6] Commercial microfinance programs are business models which aim at achieving both social performance and financial performance objectives in the MFI market.

them to cross-subsidize within their pool of borrowers. Increased competition therefore causes such socially motivated institutions to maximize their profits by targeting higher quality borrowers and consequently phasing out the low income earners. If not, such institutions would make substantial losses.

(McIntosh C. , 2005) also carried out research in the wake of increased competitive market forces in Uganda in order to analyze the impact of entry of competing lenders on client behaviour. The study observed that the increase in competition did not negatively affect client outreach but rather promoted clients to stay in transactions with their respective lenders due to increased productive efficiency[7]. However, the study showed that the competitive market brought about a decline in repayment performance[8] harming the profitability rates of the affected institutions. It thus signalled a positive effect on client outreach but a negative effect on profitability.

Looking at the aspect of productive efficiency, economics literature shows that competition actually enhances well functioning markets because earlier on monopolistic microfinance institutions were pegged on to welfare losses due to high monopolistic charges. Further loss is even incurred when the firm uses inefficient technology. This is all caused by the lack of pressure to introduce new innovative products and embrace changing technology. (Motta, 2004).It is therefore assumed to be reasonable that the introduction of competition would lead to new financial product designs and lowered costs.

(Kaffu & Mutesasira, 2003) studied the Ugandan Microfinance market and its competitive implications and unlike other studies on its negative effects on profitability, showed that given the availability of demand or an untapped market space, profitability of MFIs is seen to increase as expansion mechanisms will be employed to cover a wider range of prospective borrowers within the market space. However once the market is saturated and firms begin to poach each other's clients, losses will be borne by firms who ideally loose clients.

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[7] The reduction in operative costs progressively lowered repayment interest rates, thereby promoting customer loyalty.

[8] Loan borrowers took up many loans from different MFIs due to the increased availability of funding. Borrowers then became financially overwhelmed and were unable to repay their loans.

The same sentiments are shared regarding untapped market space but in relation to increased customer outreach and financial viability by (Ayele, 2015) who studied MFIs in Kenya, Uganda and Ethiopia. The study conclusively highlighted that the East African market has currently more than enough prospective Microfinance customers who seek loans and other financial services. That withstanding, institutions have the ability to increase their client outreach and thus generate sufficient income via profits in order to meet their annual operating expenses and debt commitments.

Conclusively, the study by (Assefa E. , 2010) also considers dimensions of Microfinance performance such as customer outreach, loan repayment, institutional efficiency and profitability The results of the study showed that a rise in competition in segmented markets within Africa (the South and the West) is negatively related with the levels of customer outreach and furthermore leads to a rise in default rates. The empirical results also suggest that intense levels of competition lead to deteriorating profitability and efficiency in production.

The above stated literature is thus seen to be relevant to this study as it provides a benchmark for comparison with certain similar elements especially relating to the indicators of financial performance which include profitability, client outreach and productive efficiency which will be used to determine the performance of MFIs. Though the aforementioned workings relate to different geographical backgrounds of the data sets, the scholarly viewpoints and theoretical frameworks supported by the results support the evidence of the rise in competition within the East African region and how such market forces could determine the welfare of its respective institutions.

It is therefore observed that the impact of competition on performance of MFIs could go both ways and lead to either a positive or negative impact on firm performance. That said, empirical studies have to be done to justify its effects. Such studies include those done by (Polanco, 2005) in which he aimed to determine the relationship between increased competition within the MFI industry and firm outreach measured by loan size. The same proxy of measurement of client outreach- total loan size- was used by (McIntosh C. , 2005) .Results indicated that the type of institution regardless of being regulated or not, has no effect on loan size. Second, the age of the institution predicts loan size and thirdly, competition turned out to be

significant, in leading to larger loan sizes and less depth of outreach. His models confirm an old belief in microfinance: there is a trade-off between depth[9] and sustainability. A MFI willing to take on new clients will therefore have to sacrifice the sustainable advantage of larger loan sizes because targeting lower income earners leads to smaller loans sizes.

(Vogelgesang, 2003) also took up the analysis of how competition affects loan repayment performance for Caja Los Andes (an institution which was examined by Sergio Navajas). The analysis indicates competition is related to multiple loan taking and higher levels of borrower indebtedness. The probability of default is also shown to be high with higher levels of indebtedness. However, on a contrary note, he highlighted that the probability of timely repayment is high in areas where there is high competition and high supply of microfinance services, making his results on the overall effect of competition slightly inconclusive.

Empirical studies on the effects of increased competition on profitability were also carried out by (Cull, Demirgüç-Kunt, & Morduch, 2009) also investigated on how MFIs respond to increased competition from commercial banks. Their results showed that in countries dominated by a large presence of commercial banks, MFIs respond by deepening their outreach by extending their markets and lending in smaller amounts. Its effects on profit are thus seen to be weak on condition that MFIs adopt client outreach strategies to work against the domination of the market by commercial banks which are presently penetrating the MFI market through offering differentiated products to low income earners.

2.3 Literature on Measurement of Competition

Though studies based on the effects of competition on market and firm variables are few, those which have embraced the research have measured competition quantitatively through the use of proxies. (Polanco, 2005) used a concentration index which represented a percentage of firm outreach in relation to the market share. High concentration showed a lower level of competition and vice versa.

[9] Depth with regards to client outreach refers to the quality of borrowers the MFI transacts with. Borrowers with a high frequency repayment indicate higher depth.

Another model which has been widely used is the Panzzar Rosse Approach in which the degree of competition in a market is assessed with an index called H statistics, a sum of input price elasticity (i.e. elasticity of firm's total revenue with respect to its factor input prices) (Bikker & Haaf, 2002).The H statistic ranges from 0 to 1 whereby 0 implies perfect competition and 0 is a monopoly equilibrium. This particular model also has its own limitations.

(Kotter, 2008) showed that the H statistic is a summation of all the coefficients and the constant and does not have the capability of evaluating the change of competition over a period of time. In addition, the H statistic only provides the competitive level on an industry level and not on a firm level.

A model that was therefore proposed in place of the Panzer Rosse approach is the Lerner Index. Empirical evidence that has successfully employed the Lerner Index in estimating competitive levels includes (Kubo, 2006) whereby institutions are found to price their products in relation to the marginal cost and the level of competition. High competition inhibits higher pricing while monopolistic powers allow firms to sell their products at a much higher price compared to the marginal cost. (Assefa, Hermes, & Meesters, 2013) implied that competition is often assessed by the extent of market power that firms exercise, i.e. the ability of firms to set market prices above marginal costs. This may however pose a challenge because the price of MFIs may not necessarily reflect the costs incurred due to the occurrence of anomalies such as subsidized institutions. Such institutions have the ability to offer services at a price that is much lower than actual costs.

The Lerner Index has widely been used in the measurement of competition in Microfinance institutions within Africa. This has been seen to yield results that do not take the effects of subsidies on pricing into account. The alternative being the Panzer Ross approach as highlighted by (Kotter, 2008), has the inability to portray competition on a firm specific level. This study will therefore embark on identifying and measuring competition on a firm specific level and acknowledging the power of subsides.

2.4 Conceptual Framework

The scholarly articles quoted in the above literature review contribute in highlighting the effects of competition on firm performance. Theoretically, increase in competition causes a rise in default rates and consequent fall in profitability, cautious lending will also be practised leading to reduced outreach. Furthermore, costly activities such as screening could be taken up to control the rates of default which may work against the generation of productive efficiency. On the other hand, it may lead MFIs to explore new markets to expand their customer base, discover cost saving mechanisms and generate higher profits. The ambiguity of the effect is seen to be prevalent in the above empirical works and this study will seek to clarify the effects within the East African region.

The variables of interest that will thus be used in the study as proxies of financial performance will include the level of client outreach of the MFI within the market, the annual profitability generated by the institutions and the productive efficiency. (Polanco, 2005) based the breadth of client outreach as being measured by the number of active borrowers in the market and (Assefa E. , 2010) used ROA and operating expenses ratio to loan portfolio as measures of profitability and productive efficiency respectively. Competition on the other hand will be measured using the Herfindahl Hirschman Index, taking into account the effect of subsides on an MFI specific view point. The market share of each Microfinance Institution will be analyzed using the level of gross loan portfolio (Polanco, 2005).

Microfinance Institutions are seen to provide their services to clients in a free market whereby monopolistic and perfectly competitive characteristics are seen to influence the profitability, client outreach and efficiency of the institutions. That withstanding, a panel data analysis approach will be used to clarify the effect of this competitive influence after competitive levels are measured. Panel regression analysis will enable the study of both time series and cross sectional data sets while taking into account that the observations are not independently distributed across time, because other unobserved factors may influence the level of competition at different periods of time (Baltagi, 2008)

3. METHODOLOGY

In order achieve the objectives of measuring the impact of competition on client outreach, productive efficiency and profitability an accurate measure of competition will be required in order to quantify the factor. The use of the Herfindahl-Hirschman Index will therefore be employed in order to highlight the extent of monopoly power on a firm specific basis.

The Herfindahl-Hirschman Index, commonly known as the Herfindahl Index is a statistical measure of concentration. As highlighted in (Polanco, 2005) it is a widely used measure of industry concentration whereby levels of competition on a firm specific level can be identified and compared across a wide array of industry players. The study by (Rhodes, 1993) also states that the index has a lot of importance attached to it as an indicator of competition with regards to market concentration. It is both easy to calculate and serves as an efficient screening device for regulators and as a planning tool by bankers.

The use of univariate and multiple regression analysis will then be used to estimate the effects of the competitive forces on the performance variables (client outreach, productive efficiency and profitability).This is because apart from competition, other factors come into play when determining the levels of performance which will be included within the model.

3.1 Data

The data to be used during the analysis will range from 2004 to 2013 whereby immense Microfinance growth has been witnessed within the East African economy (Assefa E. , 2010). It includes financial variables that are to be sourced mainly from the financial statements of specific Microfinance Institutions including operating expenses, number of clients served per year, net profits and cost of sales.

The data will be sourced from the Microfinance Information Exchange which provides a large repository of financial information on Microfinance Institutions, including those located in Kenya, Uganda, Tanzania and Ethiopia.

Since the MIX is an extensive data set which is widely used, reporting by Microfinance Institutions is done on a voluntary basis. In order to ensure quality

and reliability of the data we limit the data to MFIs with 3 diamonds[10] or more in Kenya, while in Uganda, Ethiopia and Tanzania, we take up data sets with less than 3 diamonds on condition that all the relevant information needed for the regression is made available. MFIs with missing variables are consequently dropped out of the analysis.

That withstanding, the table below shows the summary of the dataset differentiated by geographical location. Our final sample contains 33 Microfinance Institutions from Kenya, Uganda, Tanzania and Ethiopia spanning over the period of 10 years (2004 to 2013)

Table 2: Geographical Distribution of MFIs

Region	Number of MFIs	Diamond Rating
Kenya	13	3-4 MFIs
		4-9 MFIs
Uganda	5	1-1MFI 3-2MFI
		2-1MFI 4-1 MFI
Tanzania	5	1-1MFI 4-2 MFIs
		3-2 MFIs
Ethiopia	10	2-4 MFIs
		3-6 MFIs

3.2 Variables of Interest

The variables[11] sourced from the data set within the three regions are seen to represent three pillars of Microfinance performance which include profitability, client outreach and productive efficiency. Profitability is thereby represented by the Return on Assets owing to the fact that it is the most common form of profitability measurement and can easily be used to gauge profits incurred across most, if not all forms of investments (Christen, 1997).

[10] The diamond system used by The MIX indicates data quality and availability. Higher levels of diamonds show a higher level of disclosure, the highest rating being 5 and the lowest being 1.3 diamonds represent published financial information for a particular year while 4 diamonds represent firms with audited financial statements published for the year.
[11] Table 2 in the appendices summarizes the dependant variables selected for the regressions.

Client outreach is then represented by the number of active borrowers as it represents the level of financial inclusion in the market while assessing the outreach of MFIs in relation to market breadth (Polanco, 2005).The productive efficiency is also represented by the operating expenses : average gross loan portfolio ratio and highlights the ratio of costs as compared to revenues generated. (Fries & Taci, 2005) implied that the ratio is the most common and accurate measure of efficiency for a lending institution.

The explanatory variables[12] are seen to include the Herfindahl-Hirschman Index which is a proxy for the level of competition. Its significance and methodology is highlighted in the follow-up sections. Other variables are seen to include size of the MFI, the firm's average yield portfolio and a macroeconomic variable which act as control measures for the model.

The size of the MFI is represented by the total number of assets the firm owns and it quantifies the breadth of the firm's activities. Empirical evidence has shown that it has a positive relationship with the number of active borrowers and furthermore the profitability of firms (Cull, Demirgüç-Kunt, & Morduch, 2009).

The average yield portfolio is tentatively defined as the average interest chargers that borrowers/customers face (Assefa E. , 2010) and it is seen to be positively related to the productive efficiency because it increases the returns generated by the average loan portfolio on Microfinance firms (Cull, Demirgüç-Kunt, & Morduch, 2009).Inflation levels are also taken into consideration as a control variable so as to account for macroeconomic effects (Assefa E. , 2010).

3.3 Data Analysis

3.3.1 The Herfindahl-Hirschman Index

To develop a quantitative proxy to measure the level of competition, we employ the use of the HHI in which market concentration is used to determine the level of monopoly power or perfect competition (Polanco, 2005).

[12] Table 3 also highlights the explanatory variables chosen.

The index was formulated in 1982 by the U.S Department of Justice and based its merger guidelines[13] on the index. As years went by, the index was used to measure other economic variables that had aspects of concentration, including competition (Matthews, 2006).The index is seen to be a measure of industry structure defined as the sum of the squares of the market shares of the firms within the industry, where the market shares are expressed as fractions (Polanco, 2005).It thus ranges from 0 to 1 where 0 indicates a large number of small firms dominating the market (perfect competition) and 1 on the other hand indicates the presence of a single monopolistic entity (Baquero, 2011).The study also employs the following metrics to distinguish between different market forms that exist between 0 and 1 (Polanco, 2005).

Table 4: Measures of Monopoly Power using HHI

HHI Value	Interpretation
Below 0.01	Highly competitive market
Between 0.09 to 0.1	Unconcentrated market
Between 0.1 to 0.18	Moderate market concentration
Above 0.18	High market concentration

The index value is therefore calculated as:

$$HHI = (firm_1 market\ share)^2 + (firm_2 market\ share)^2 + \cdots (firm_N market\ share)^2$$

Where N is the number of MFI firms within the sample. The firm's breadth in market share is identified by the measure of the gross loan portfolio over each annual period from 2004 to 2013 (Polanco, 2005).

3.3.2. Preliminary Data Analysis

Prior to the estimation of the full panel data model, a univariate regression is carried out on the dependant variables and the HHI alone.

$$y_{it} = \alpha_{it} + \beta_{it} H_{it} + \varepsilon_{it}$$

[13] Mergers were screened in the US in relation to their potential effects on the market companies would operate in. The HHI provided a better quantitative solution in assessing these effects and played a crucial role in determining whether mergers would be vetted by the Department of Justice.

Econometric principles dictate that it is not reasonable to perform an analysis on MFI performance as affected by competitive levels alone (Assefa E. , 2010).However, such a regression indicates the robustness[14] of the effect of competition to the inclusion of additional explanatory variables. The inverse relationship between the HHI value and the level of competition is taken into account while interpreting the coefficients.

y_{it} indicates the performance measure for institution i at time t. α_{it} and H_{it} refer to the intercept term and the HHI value for each institution at each point in time respectively. The dummy variable model, applied within the fixed effects context is consequently used (Baltagi, 2008).

3.3.3 Estimating the Effects of Competition

Once the HHI values for each individual MFI is computed at each point in time and the univariate analysis is carried out, we then proceed to determine the impact of competition on the performance variables through the use of a multiple regression analysis, similar to that employed by (Assefa E. , 2010)

The estimating multiple regression equations take the form of:

$$Effect\ on\ Productive\ Efficiency: y_t = \beta_0 + \beta_1 u_{i,t} + \beta_2 H_{i,t} + \beta_3 z_{i,t} + \lambda_i + \varepsilon_{i,t}$$

$$Effect\ on\ Client\ Outreach: y_t = \beta_0 + \beta_1 H_{i,t} + \beta_2 x_{i,t} + \beta_3 z_{i,t} + \lambda_i + \varepsilon_{i,t}$$

$$Effect\ on\ Profitability: y_t = \beta_0 + \beta_1 H_{i,t} + \beta_2 x_{i,t} + \beta_3 z_{i,t} + \lambda_i + \varepsilon_{i,t}$$

whereby y represents the three respective performance measures of productive efficiency, client outreach and profitability. The variables u, x, z and H on the other hand represent the average real portfolio yield, firm's assets, the rate of inflation and the competition levels respectively.

[14] Robustness will indicate if the level of competition significantly affects the level of institutional performance with the other explanatory variables omitted from the equation. It will seek to show if the model still has the ability to perform well even with the assumptions altered.

λ_i is the variable that captures all unobserved time constant factors that affect the dependant variables.

3.3.4 The Hausmann Test

In order to decide as to whether one should use the fixed or random effects approach of panel data, one conducts the Hausmann test. It seeks to check for any correlation between the error component $\varepsilon_{i,t}$ and the repressors. Such correlation is referred to as endogeneity and it leads to spurious regressions. The test therefore differentiates the two approaches by assuming that the random effects model has its unobserved component being uncorrelated with the explanatory variables (Baltagi, 2008).The fixed effects model on the contrary, allows for arbitrary correlation between the unobserved factors and the explanatory variables.

To implement the test, the following null hypothesis is used (Hausmann, 1978):

$$H_0: Random\ Effects\ provides\ consistent\ estimates$$

$$H_a: Random\ Effects\ and\ Fixed\ Effects\ estimates\ diverge$$

The null hypothesis is then rejected if the p-value is less than 0.05.One therefore uses the Fixed Effects model instead of the Random Effects model.

4. RESULTS

4.1 Competition Levels in East Africa

Before empirically determining the effect of competitive levels on the performance factors, this study first determines the level of concentration of institutions based on three geographical regions; Kenya, Uganda & Tanzania and Ethiopia. Based on the availability of data, Uganda and Tanzania were merged so as to gain a level field of comparison, whereby Kenya has 13 firms, Uganda & Tanzania has 10 firms and Ethiopia has 10 firms. The concentration levels together with their interpretations are summarized in tables below.

Table 5: Kenya's Market Concentration

YEARS	HH INDEX	INTERPRETATION
2004	0.264198972	High market concentration
2005	0.321949495	High market concentration
2006	0.293157536	High market concentration
2007	0.439185007	High market concentration
2008	0.500684582	High market concentration
2009	0.543392522	High market concentration
2010	0.5180107	High market concentration
2011	0.530031127	High market concentration
2012	0.503117459	High market concentration
2013	0.456042359	High market concentration

Having calculated the average index for the total of 10 firms which dominate the Kenyan market in terms of gross loan portfolio, it is evident that the concentration value has increased over the 10 years indicating a rise in monopoly power with the leading MFI institution being Equity Bank carrying with the highest gross loan portfolio, the highest principal value of all outstanding client loans. Being the market leader, the firm faces minimal rivalry and retains high competitive advantage.

In the Uganda and Tanzania region, the opposite is seen to occur whereby the MFI market steadily progresses from a state of high concentration to one of moderate concentration whereby monopoly barriers are eliminated in the market as firms gain access to more borrowers and thus have a larger gross loan portfolio . This is seen to

be achieved through the financial deepening occurring in these countries coupled with the absence of monopoly powers.

Table 6: Uganda and Tanzania's Market Concentration

YEARS	HHI	INTERPRETATION
2004	0.20581714	High market concentration
2005	0.19940367	High market concentration
2006	0.218036344	High market concentration
2007	0.196516369	High market concentration
2008	0.18495926	High market concentration
2009	0.166499905	Moderate market concentration
2010	0.160793738	Moderate market concentration
2011	0.153862622	Moderate market concentration
2012	0.152141507	Moderate market concentration
2013	0.157907724	Moderate market concentration

Table 7: Ethiopia's Market Concentration

YEARS	HHI	INTERPRETATION
2004	0.271733223	High market Concentration
2005	0.281271155	High market Concentration
2006	0.246394177	High market Concentration
2007	0.24509893	High market Concentration
2008	0.25961354	High market Concentration
2009	0.230214655	High market Concentration
2010	0.22401976	High market Concentration
2011	0.236865928	High market Concentration
2012	0.231906415	High market Concentration
2013	0.222356101	High market Concentration

Ethiopia recorded the highest level of gross loan portfolio over the period of 10 years with monopoly powers existing throughout the time period. However, it can be observed that the level of market concentration is steadily decreasing over the 10 years and can be forecasted to be liquidated as the market progressively enters into a space of moderate concentration. As the number of borrowers increase, the MFIs are gaining ground and increasing competitive stakes against one another due to the financial deepening occurring within the country. To be specific, the low income earners are gradually being exposed to the financial services realm which was previously meant for the middle to high income earners.

4.2 Panel Data Analysis

4.2.1 Univariate Analysis

In context of the univariate model, the following results were observed regarding the three geographical regions and the different performance measures.

Table 8: Univariate Analysis in Kenya

DESCRIPTIVE STATISTICS	RETURN ON ASSETS		NUMBER OF ACTIVE BORROWERS		OPERATING EXPENSE:AVERAGE LOAN PORFOLIO RATIO	
	Model	Variable(HHI)	Model	Variable (HHI)	Model	Variable (HHI)
P-Value	0.0000	0.430	0.0000	0.000	0.0000	0.360
R-squared	0.4523		0.7257		0.4412	
HHI Coefficient		-0.4146917		-498010.1		-1.301485

As observed from the results, the P-values of the models across all three performance measures are seen to satisfy the 1% level of significance. The R-squared levels are also relatively high especially on the models showing the relationship between number of active borrowers (client outreach), productive efficiency and the level of competition respectively. This shows that the percentage movements of the performance measures can adequately be explained by movements in the level of competition. The coefficients also highlight that the level of client outreach and productive efficiency are negatively affected by an increase in competition in Kenya because the HHI value and the level of competition have a negative relationship. On the other hand, the return on assets is positively affected by an increase in competition. The statistical significance of the competitive proxy in a univariate analysis is however seen to be insignificant when analysing the return on assets and the operating expense: average loan portfolio ratio. It is only significant when analyzing its relationship with the level of client outreach at 1% level of significance.

Table 9: Univariate Analysis in Uganda and Tanzania

DESCRIPTIVE STATISTICS	RETURN ON ASSETS		NUMBER OF ACTIVE BORROWERS		OPERATING EXPENSE:AVERAGE LOAN PORFOLIO RATIO	
	Model	Variable(HHI)	Model	Variable (HHI)	Model	Variable (HHI)
P-Value	0.0000	0.355	0.0000	0.000	0.0000	0.147
R-squared	0.4346		0.7708		0.7540	
HHI Coefficient		-0.495173		245624.5		0.0863649

In the Uganda and Tanzania region, all models again satisfy the level of statistical significance at 1% level of significance. The R-squared is also seen to be relatively high across all three models, highlighting that changes in performance measures can indeed be explained by changes in the changes in competitive levels. Looking into the HHI variable, all the three performance measures in Uganda and Tanzania are indeed positively influenced by an increase in competition. However, only competition in relation to client outreach is statistically significant at 1% significance level (its p value is lower than 0.01).

Table 10: Univariate Analysis in Ethiopia

DESCRIPTIVE STATISTICS	RETURN ON ASSETS		NUMBER OF ACTIVE BORROWERS		OPERATING EXPENSE:AVERAGE LOAN PORFOLIO RATIO	
	Model	Variable(HHI)	Model	Variable (HHI)	Model	Variable (HHI)
P-Value	0.0000	0.0000	0.0000	0.0000	0.0000	0.049
R-squared	0.4912		0.9185		0.7795	
HHI Coefficient		-0.4614077		-2409854		0.4238087

In Ethiopia, competition is seen to have a positive effect on the profitability of firms and the level of client outreach in the univariate approach. It is alternatively seen to negatively affect the productive efficiency. Furthermore, competition is statistically significant at 1% level of significance in relation to profitability and client outreach while maintaining a 5% level of significance in relation to productive efficiency. The R-squared of all three models are seen to be of satisfactory levels.

4.2.2 Multivariate Analysis

4.2.2.1 Hausmann Test Results

The results of the Hausmann tests are recorded in tables 11, 12 and 13 whereby the test was conducted on the panel data sets based on geographical locations. The test was based on a 5% level of significance and results showed that all the regressive equations for the Kenyan regions are to be used in the context of Fixed Effects. In the Uganda & Tanzania region, the equation used to determine the productive

efficiency is regressed using Random Effects while in Ethiopia all regressions were done using Random Effects.

4.2.2.2 Multivariate Analysis Results

Before indicting the results of the respective regressions, a summary of all the data sets is made and observed in figures 3, 4 and 5 for all the three geographical regions. The results therefore reported the following output for each of the regions. All results are analyzed using the 5% level of significance.

Table 14: Multivariate Analysis results in Kenya

DEPENDANT VARIABLE	NATURE OF EFFECTS	HHI COEFFICIENT	P-VALUE
Profitability	Fixed	-0.0561282	0.309
Client Outreach	Fixed	108157.5	0.001
Productive Efficiency	Fixed	0.0701682	0.234

The results indicate that at a 5% level of significance, the competitive levels within the Microfinance industry are seen to influence the level of client outreach (market breadth) of market players. This is in line with both the univariate analysis and previous empirical literature whereby a rise in competitive levels leads to lower levels of client outreach in terms of active borrowers because firms may choose to exercise selective lending due to the rise in default rates by borrowers (Assefa E. , 2010).The productive efficiency is also observed to be negatively affected by a rise in competition but the result is statistically insignificant. The same applies to the rise in profitability as competition increases; the result is statistically insignificant in the Kenyan market.

Table 15: Multivariate Analysis Results in Uganda & Tanzania

DEPENDANT VARIABLE	NATURE OF EFFECTS	HHI COEFFICIENT	P-VALUE
Profitability	Fixed	-0.3665773	0.567
Client Outreach	Fixed	-318526.7	0.003
Productive Efficiency	Random	-1.083049	0.455

Similar to the results on the region's univariate analysis, it is seen that the only performance measure that is affected by competition levels- taking statistical significance into account- is the level of client outreach. In contrast to the Kenyan market, this region displays that an increase in competition, signified by the HHI leads to an increase in client outreach (market breadth).This highlights that as monopolistic barriers are surpassed, the market players are ready to lend more to prospective borrowers due to lower default rates. As such, borrowers in this region are theoretically backed by the fact that they are seen to be more credit worthy, leading to increased lending. Profitability and productive efficiency are however both seen to be statistically insignificant at the 5% level of significance.

Table 16: Multivariate Analysis Results in Ethiopia

DEPENDANT VARIABLE	NATURE OF EFFECTS	HHI COEFFICIENT	P-VALUE
Profitability	Random	-0.5177233	0.0000
Client Outreach	Random	-682915.2	0.001
Productive Efficiency	Random	0.483417	0.014

In the Ethiopia region, all three performance measures are seen to possess statistical significance. This implies that competition does indeed have effects within the Microfinance industry with respect to profitability, client outreach and productive efficiency. Profitability and client outreach are observed to be positively influenced by higher levels of competition while productive efficiency decays as perfect markets thrive. This can be owed to the principle that as market players gain access

to more borrowers with low default rates, they are able to lend more and thus generate higher profits in the Ethiopian region. However, the increase in profitability and market breadth comes at a cost of increased operating expenses (efficiency) due to aspects such as increased screening costs and lack of development of cost saving mechanisms (Assefa E. , 2010).

5 CONCLUSION

The number of financially excluded individuals within the East African market is still remarkably high, however Microfinance Institutions have indeed enjoyed growth and have been established in large numbers over the past decade in order to serve a larger number of individuals within the economy who simultaneously fall in lower income brackets.

The rise in the establishment of Microfinance firms within the East African region has thereby brought about the occurrence of competition among firms and within the industry as they strive to claim a stake in the untapped market share. This begs the question of whether the competition, which is a by product of the increased establishment of Microfinance institutions has any considerable and relevant effects on the lenders themselves. This paper therefore strives to delve into the matter examining both competition and its characteristic effects on the performance of such institutions.

Quantitative measures of competition are henceforth made using the Herfindhal-Hirschman Index which highlights market concentration and has been used in quantifying competition within the banking sector for many years. The measures show that Kenya is still plagued with monopolistic market structures while Uganda, Tanzania and Ethiopia on the other hand are in the process of overcoming the barriers to entry and if the trend continues well into the future, they will venture into a relatively competitive market structure.

As a follow up, the paper proceeds to examine how these market structures affect the performance of the firms over the span of ten years from 2004 to 2013.Considering the dimensions of performance as in terms of profitability, client outreach and productive efficiency, it is observed that the high monopoly powers across the years in Kenya would have a significant effect on the level of client outreach whereby it decreased the level of outreach (this could be due to factors such as high default rates discouraging lending).Furthermore, the monopolistic market structure has no significant effect on the profitability and productive efficiency of firms.

In Uganda and Tanzania, the competitive levels were seen to be steadily increasing as 2013 drew closer and this had a significant effect on the client outreach as well. Contrary to the results in Kenya, the increase in competition has a positive effect on client outreach, with the other performance variables having insignificant effects. Lastly, Ethiopia also displayed an increase in competition over the span of 10 years and this had a significant impact on all three performance measures. Profitability and client outreach are seen to increase with the rise in competition while productive efficiency is negatively affected. This can be attributed to the lack of cost savings mechanisms and lack of adequate technological levels that reduce operating expenses as the clientele levels increase.

The results appear gloomy and pessimistic for Microfinance players in the Ugandan, Tanzanian and Kenyan markets and this calls for institutional measures that will ensure that the negative effects of competition are minimized. This can be ensured by enhancing information sharing between lenders so as to curb the information asymmetry that fuels default rates. Furthermore, the negative effect of competition on productive efficiency could be addressed by firms embracing innovation and technology in order to reduce their fiscal operating expenses.

BIBLIOGRAPHY

Agarwal, P., & Sinha, S. (2010). Financial Performance of Microfinance Institutions of India. *Delhi Business Review* .

Assefa, E. (2010). Competition and Performance of Microfinance Institutions.

Assefa, E., Hermes, N., & Meesters, A. (2013). Competition and Performance of Microfinance Institutions. *Applied Financial Economics* , 767-782.

Ayele, G. T. (2015). Microfinance Institutions in Ethiopia,Kenya and Uganda. *African Development Review* , 117,118.

Baltagi, B. (2008). *Econometric Analysis of Panel Data.* John Wiley & Sons.

Baquero, G. (2011). Competition, Loan Rates and Information Dispersion in Microcredit Markets. *Journal of Banking and Finance* , 15.

Baumol, W., & Bradford, D. (1970). Optimal Departures From Marginal Cost Pricing. *American Economic Association* , 265-283.

Beatriz Armendariz, J. M. (2004). *Microfinance:Where do we stand?*

Begona, N., & Cecilio, M. (2007). Microfinance Institutions and Efficiency. *Journal of Monetary Economics* , 134.

Bikker, J., & Haaf, K. (2002). Competition, concentration and their relationship: An empirical analysis of the banking industry. *Journal of Economics and Finance* .

Blavy, & Rodolphe. (2012). *Microfinance in Africa:Experience and Lessons from selected African Countries.* International Monetary Fund.

Blavy, B. (2004). Microfinance in Africa: Experience and Lessons from Selected African Countries. International Monetary Fund.

Brau, J., & Woller, G. (2004). Microfinance:A Comprehensive Review of Existing Literature. *Econstor* .

Brune, A. (2009). *An empirical study on the impact of Microfinance Institutions on Development.* Zurich: University of Zurich.

Christen, R. (1997). *Banking Services for the Poor:Managing for financial success.*

Cull, R., Demirgüç-Kunt, A., & Morduch, J. (2009). Microfinance meets market. *The Journal of Economic Perspectives* , 167-192.

Dale Adams, J. V. (1984). Microenterprise credit programs: Déja vu.

Dean S. Karlan, J. Z. (2008). Credit Elasticities in Less-Developed Economies: Implications for Microfinance. *The American Economic Review* .

Elizabeth, R., & Christen, R. (1999). *Microfinance Enters the Marketplace.* USAID.

Foose, L., & Greenberg, A. (2008). *The Double Bottomline:Evaluating social Performance in Microfinance Insttutions.* Microbanking Bulletin.

Fries, S., & Taci, A. (2005). Cost efficiency of banks in transition: Evidence from 289 banks in 15 post-communist countries. *Journal of Banking & Finance* , 55-81.

Greenwood, J., & Jovanovic, B. (1989). Financial development, growth, and the distribution of income. *National Bureau of Economic Research.*

Guevara, F. d. (2005). Market Power in European Banking Sectors. *Journal of Financial Services Research* .

Hashemi, S. (2003). *Is Microfinance an Effective Strategy to Reach the Millennium Development Goals?* The United Nations.

Hashemi, S. M. (2007). *Measuring social performance in Microfinance Institutions.* CGAP.

Hausmann, J. A. (1978). Specification tests in Econometrics. *Journal of the Econometric Society* .

Hermes, N. (2009). Financial Development and Efficiency of Microfinance Institutions. *Social Sciences Research Network* .

Hermes, N., & Lensink, R. (2009). Financial Development and the Efficiency of Microfinance Institutions. *Social Science Research Network* .

Hogarth, R. (2009, February 11). *MicroCapital.* Retrieved July 1, 2015, from Microcapital: http://www.microcapital.org/microcapital-story-increase-competition-for-kenyan-low-income-financial-market-between-microfin

Hulme, D., & Mosley, P. (1996). *Finance against Poverty:Volume 2.* Psychology Press.

Jonnathan Conning, G. V. (2003). Lending technologies, competition and consolidation in the market for microfinance in Bolivia. *Journal of International Development* .

Kabeer, N. (n.d.). Is Microfinance a 'Magic Bullet' for Women Empowerment?

Kaffu, E., & Mutesasira, L. (2003). The Competitive Environment in Uganda:Implications of Microfinance Institiutions. *Microsave* , page (vi).

Kenneth, E. (2011). The Lerner Index of Monopoly Power:Origins and Uses. *American Economic Review* , 558.

Kotter, J. (2008). *Corporate Culture and Performance.* Simon and Schuster.

KPMG. (2014). *Sector Report:Agriculture in Africa.* Nairobi: KPMG Kenya .

Kubo, K. (2006). The Degree of Competition in the Thai Banking Industry Before and After the East Asian Crisis. *Institute of South East Asian Studies* , 325 - 338.

Lafourcade, e. a. (2005). Overview and the Outreach and Financial Performance of Microfinance Institutions in Africa.

Ledgerwood, J. (1999). *Susutainable Banking with the Poor:Microfinance Handbook.* The World Bank.

Ledgerwood, J. (2006). *Transforming Microfinance Institutions.* World Bank Publications.

Levine, R. G. (1993). Finance Entrepreneurship and Growth. *Journal of Monetary Economics* .

Li, D. P. (2010). *Measuring Social Performance of Microfinance Institutions in Peru.* University of Zurich: Centre for Microfinance.

Matthews, K. (2006). Market Structures and Competitive Market Conditions in the Arab GCC Banking System. *Journal of Banking and Finance* , 3491.

McIntosh, C. (2005). How Rising Competition among Microfinance Institutions Affects Incumbent Lenders. *The Economic Journal* , 987.

McIntosh, C., & Wydick, B. (2005). Competition and Microfinance. *Journal of Development Economics* .

Mersland, R. &. (2009). Performance and Goverance in Microfinance Institutions. *Journal of Banking and Finance* , 671.

Morduch, J. (2000). Microfinance Beyond Group Lending. *Economics of transition* .

Morduch, J. (2005). *The Economics of Microfinance.* London: MIT Press.

Morduch, J. (2000). The Microfinance Schism.

Motta, M. (2004). *Competition Policy:Theory and Practice.* Cambridge University Press.

Navajas, S., & Conning, J. (2003). Lending technologies, competition and consolidation in the market for microfinance in Bolivia. *Journal of International Development* .

Ndi Gwasi, M. N. (2013). COMPETITION AND PERFORMANCE OF MICROFINANCE INSTITUTIONS IN CAMEROON. *International Journal of Research in social sciences* .

Polanco, O. (2005). Commercializing Microfinance and Deepening Outreach:Emperical Evidence form LAtin America. *Journal of Microfinance* .

Rhodes, S. A. (1993). *The Herfindahl-Hirschman Index.* New York: The Federal Reserve.

Rosenberg, R. (2010). Does Microcredit really help the poor. *Focus Note 59* , 1-8.

Ryan, H. (2009, February 11). *Microcapital.* Retrieved July 1, 2015, from Microcapital: http://www.microcapital.org/microcapital-story-increase-competition-for-kenyan-low-income-financial-market-between-microfi

Sascha. (2009). Markets, marketing and Developing Countries.

Savita, S. (2010). Regulating Microfinance: A Suggested Framework. *Economic and Political Weekly* , Vol. 5 No. 1.

Sharma, M., & Zeller, M. (1997). Repayment performance in group-based credit programs in Bangladesh: An empirical analysis. *World development* , 1731-1742.

The Mix Microfinance. (2010). Retrieved July 1, 2015, from The Mix Microfinance: www.themix.org

United Nations. (2013). *Microfinance in Africa:Overview and Suggestions for Action by Stakeholders.* The United Nations.

Vega, G. (1998). Microfinance: Broader Achievements and New Challenges.

Vogelgesang, U. (2003). Microfinance in Times of Crisis: The Effects of Competition, Rising Indebtedness, and Economic Crisis on Repayment Behavior. *World Development Journal* .

Zeller, M., Sharma, M., Henry, C., & Lapenu, C. (2006). An operational method for assessing the poverty outreach performance of development policies and projects: Results of case studies in Africa, Asia, and Latin America. *Journal of World Development* , 446-460.

6. APPENDICES

Table 2: Dependant Variables on Multiple Regression Models

Variable	Explanation	Measurement	Reference
Client Outreach	A measure of the level of financial inclusion within the region under study.	The number of active borrowers is used as a relevant proxy.	(Polanco, 2005)
Productive efficiency	This shows the ratio of costs as compared to revenues generated	Use of the operating expenses ratio (operating expenses to average loan portfolio)	(Fries & Taci, 2005)
Profitability	This refers to the total amount of returns the firm generates from its activities	Return on Assets of the MFI	(Christen, 1997)

Table 11: Hausmann Test results for Kenyan Data set

MODEL	P VALUE	FIXED/RANDOM EFFECTS
Profitability against competition	0.0000	Fixed Effects
Client Outreach against competition	0.0000	Fixed Effects
Productive Efficiency against competition	0.0002	Fixed Effects

Table 3: Explanatory Variables in Multiple Regression Analysis

Variable	Explanation	Measurement	Reference
Herfindhal-Hirschman Index	This is the value generated by the HH index and is a quantitative value of the level of competition	Use of value generated by Lerner Index equation	(Polanco, 2005)
Size of MFI	Is a measure that quantifies the breadth of the MFI's activities	Total assets	(Cull, Demirgüç-Kunt, & Morduch, 2009)
Average Real portfolio yield		Interest payments that customers pay	(Cull, Demirgüç-Kunt, & Morduch, 2009)
Macroeconomic variable	Regarded as a control variable	Inflation	(Assefa E. , 2010)

Table 12: Hausmann Test results for Uganda & Tanzania Data set

MODEL	P VALUE	FIXED/RANDOM EFFECTS
Profitability against competition	0.0000	Fixed Effects
Client Outreach against competition	0.0000	Fixed Effects
Productive Efficiency against competition	0.9869	Random Effects

Table13: Hausmann Test results for Ethiopia Data set

MODEL	P VALUE	FIXED/RANDOM EFFECTS
Profitability against competition	0.1624	Random Effects
Client Outreach against competition	0.1624	Random Effects
Productive Efficiency against competition	0.1311	Random Effects

Figure 3: Summary of Kenyan Data

Variable	Obs	Mean	Std. Dev.	Min	Max
activeborr~s	130	77336.7	144231.5	14	720234
opexpenser~o	130	.2656623	.1283097	.0392	.7642
returnonas~s	130	.0047392	.0763657	-.2374	.5998
hhi	130	.436977	.0999437	.264199	.5433925
totalassets	130	1.56e+08	4.34e+08	123677	3.02e+09
avgrealyield	130	.1336377	.0882994	-.1211	.5147
inflation	130	.113	.0583713	.04	.26
mfiid	130	7	3.756132	1	13

Figure 4: Summary of Uganda & Tanzania Data

Variable	Obs	Mean	Std. Dev.	Min	Max
activeborr~s	100	34417.06	37035.65	2250	129104
operatinge~o	100	.56722	.4124034	0	2.7836
returnonas~s	100	-.060057	.153994	-.8507	.0943
hhi	100	.1795938	.0231027	.1521415	.2180363
mfiid	100	5.5	2.886751	1	10
totalassets	100	1.44e+07	1.50e+07	296826	9.19e+07
averagerea~d	100	.377426	.1034751	.0886	.6691
inflation	100	.11205	.0792544	-.017	.313

Figure 5: Summary of Ethiopian Data set

Variable	Obs	Mean	Std. Dev.	Min	Max
activeborr~s	100	197087.8	219499.7	5571	820283
operatinge~o	100	.108474	.0854908	.0193	.4271
returnonas~s	100	.047753	.0320236	-.0467	.1032
hhi	100	.2449474	.019214	.2223561	.2812712
totalassets	100	5.20e+07	7.12e+07	732569	3.03e+08
averagerea~d	100	.078776	.1039903	-.2308	.4186
inflation	100	.1566	.1071421	.014	.335
mfiid	100	5.5	2.886751	1	10