

FACTORS AFFECTING LOAN DELINQUENCY IN MICROFINANCE INSTITUTIONS IN KENYA

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ABSTRACT: *The main goal of every microfinance institution (MFI) is to operate profitably in order to maintain its stability and improve growth and sustainability. However, existence of high levels of loan delinquency problem in microfinance industry negatively affect the level of private investment and constrain the scope of microfinance institution credit to borrowers as MFIs have to compensate for loan delinquency losses. The success of individual MFIs in credit risk management is largely reflected in the proportion of delinquency's loans to gross lending. External and internal economic environments are viewed as critical drivers of loan delinquency occurrence. In this regard, this empirical analysis investigates on external factors, MFIs and self help groups' (SHGs) specific factors, to establish which of these factors significantly affects loan delinquency performance in MFIs in Kenya. The study used primary data. The study target population comprised 49 MFIs registered by Association of Microfinance Institutions of Kenya (AMFIK). A survey research design was used and a census of the 49 MFIs was taken. The data was collected through a self developed structured questionnaire and administered to MFIs loan officers for response. Multiple regression analysis was used to establish relationship between loan delinquency and microfinance institutions, self help groups and external factors in MFIs in Kenya. The estimated regression coefficients and t-values were interpreted. The study found evidence that there exist a positive and significant ($\beta = 9.937$, t-value 5.016) relationship between loan delinquency and microfinance institutions specific factor. In addition self help groups specific factor was found positive and significantly ($\beta = 6.090$, t-value 3.097) related to loan delinquency. Further external factor was found positive and significantly ($\beta = 2.549$, t-value 2.069) related to loan delinquency performance in microfinance institutions in Kenya. These results support Dinos & Ashta (2010) and Saloner (2007) findings. The study concludes that microfinance institutions and self help groups' specific factors and external factors significantly affect loan delinquency performance among microfinance institutions in Kenya. The study recommends that MFIs portfolios management strategies focus more on the internal causes of delinquency which they have more control over and seek practical and achievable solutions to redress delinquency problems.*

JEL classification:G32 - Financing Policy; Financial Risk and Risk Management; Capital and Ownership Structure; Value of Firms; Goodwill

Key words: *Loan delinquency, microfinance institutions, self help groups, external factors, loan portfolio*

1. INTRODUCTION

The major goal of microfinance is the provision of microloans to the low-income and the poor households (Bystrom, 2007). The chance that a microfinance institution (MFI) may not receive its money back from borrowers (plus interest) is the most common and often the most serious vulnerability in a microfinance institution. Since most microloans are unsecured, delinquency can quickly spread from a handful of loans to a significant portion of the portfolio. This contagious effect is exacerbated by the fact that microfinance portfolios often have a high concentration in certain business sectors. Consequently, many clients may be exposed to the same external threats such as livestock disease outbreak and bad weather. These factors create volatility in microloan portfolio quality, heightening importance of controlling credit risk. In this regard, MFIs need a monitoring system that highlights repayment problems clearly and quickly, so that loan officers and their supervisors can focus on delinquency (repayment rate) before it gets out of hand. In lending services, a default is the failure to pay back a loan. A loan is delinquent when a payment is late (CGAP, 1999). A delinquent loan becomes a defaulted loan when the chance of recovery becomes minimal.

Delinquency is measured because it indicates an increased risk of loss, warnings of operational problems, and may help predicting how much of the portfolio will eventually be lost because it never gets repaid. In this regard, this research seeks to study the effects of microfinance institutions (MFIs) and client specific factors and external factors on loan delinquency. The aim is to find out whether these factors have a relationship with loan delinquency level and if so, what is the significance of these factors to delinquency rate. The MFIs specific factors chosen for this study include; MFIs corporate governance, loan processing, and client screening process for loan qualification. Client specific factors include group governance and group members screening process for loan qualification. The external factors under study include; sociopolitical instability, economic downturn, weather conditions and inability to enforce covenant. The study variables are chosen on basis of their popularity in the literature review and their potential relevance to the study.

This study is motivated by the theories of credit risk which highly associate occurrence of delinquency with internal and external factors. In this regard, delinquency in microfinance is driven by 3 possible factors which includes; creditor (MFI), debtor (Self-Help-Group) and external factors. The main objective of the MFIs is not to make microloans to self-help groups (SHGs), but to minimize risk in repayment collection. Thus the true core of business of MFIs is the profitable management of risk. MFIs finance diverse groups in the economy including, micro manufacturers and producers, farmers, builders, and small business entrepreneurs which assist the society to grow, so the MFIs operations grow as well.

The financing MFI bears a degree of credit risk in form of loan losses when certain borrowers fail to repay their loans as agreed. This implies that poor-quality loans can contribute to high delinquency levels which can lead to MFIs failure due to insufficient liquidity. Therefore MFIs need to create loan management packages and management systems that maximize a MFIs' chances of getting the money back.

In microfinance group lending model is one of the best practices in Africa (Schreiner, 2003). The MFIs lends to self help groups (SHGs) which on lends to the group members. This suggests that group governance including self internal regulations and screening process for members for loan qualifications, may affect loan delinquency levels of the lending MFI. MFIs and SHGs operate under the influence of external factors such as macroeconomic factors which are beyond their control. This implies that in absence of quality governance and strategic plans aimed at mitigating adverse effect of external factor on credit risk, may contribute to high levels of delinquent loans.

The financing of sustainable development of MFIs is clearly deficient when levels of loan delinquency remain high. Despite the fact that MFIs use various techniques of screening borrowers, the level of delinquent loan keeps on increasing. For instance, the stock of delinquent loans in self help groups expanded from 7.17% in 2008 to 28.22% in Kerugoya district in Kenya while for individual borrowers default increased from 2.21% in 2009 to 4.44% end of 2010 (Pamoja, 2010). In Bolivia loan delinquency increased by an average of 4% (i.e. from less than 5% to almost 9%) over 1999-2001 while by 2002 delinquency rose to 17% (Dinos & Ashta, 2010). Internationally MFI portfolio delinquency levels began to deteriorate rapidly, with loans past due over 30 days (portfolio at risk) jumping from a median of 2.2 percent to 4.7 percent in June 2009 (CGAP, 2010). This is a problem that requires the urgent attention of the policy makers and all stakeholders in microfinance industry in Kenya. The huge loan delinquency hinders financial access facilitation to the microfinance client. Loan delinquency may negatively affect the level of private investment; constrain the scope of MFIs credit to borrowers through reduction of MFIs' capital, and accumulation of losses to compensate for loan losses. Indeed, loan delinquencies impoverish the borrower through loan securities seizures, loss of social status and personal integrity, legal fees and penalty charges. Despite the looming evidence of high loan delinquency rate and the adverse effects resulting from delinquencies, little empirical research has been done to explore the factors that affect delinquency in microfinance sector in Kenya. This is why further examination on loan delinquency existence in MFIs is essential to establish to what extent external and microenvironment factors

affects delinquency levels. This study therefore seeks to further investigate the effect of MFIs and SHGs specific factors and external factors on loan delinquency in microfinance sector in Kenya.

2. Development of Microfinance in Kenya

The Kenyan Microfinance industry is one of the oldest and most established in Africa (Mugwanga, 1999). Interest in informal sector in Kenya date back as early as 1970s after the seminal International Labor Organization (ILO) report on employment was issued to Kenya in 1972. The report identified the informal sector as a potentially important contributor to employment and economic growth in Kenya and other developing countries. In the 1970's the main organization providing credit to the informal sector were church based organizations such as National Council of churches of Kenya (NCCCK) and other smaller church based NGOs. These programmes were heavily subsidized and were ad hoc additions to other social outreach programmes offered to the poor. Outreach was extremely limited. In the 1980's other specialized organizations which included KREP, a subsidiary of a U. S. based NGO and Kenya Women Trust (KWFT) began operations. These programmes were heavily subsidized and credit and training approach to assist microenterprises. In the 1990's, interest and knowledge about the microfinance industry had grown substantially and the approach to the industry became more focused and sustainability oriented.

The "minimalist" Grameen approach was adopted by most MFIs and other ancillary activities like training were either stopped completely or spun off into separate programmes. A few specialized product based institutions began to emerge in the sector as many church based organizations died out or collapsed due to lack of funding. The most prominent institutions that emerged were KREP, KWFT, PRIDE, and FAULU and increasingly other institutions like NCCCK and CARE-WEDCO. All these institutions continued to be reliant on donor funds. In 1999, KREP transformed to a commercial bank.

In the 2000's, the microfinance sector witnessed emergence of large number of MFIs with some transforming to commercial banks and deposit taking institutions (DTM). The focus of these institutions gradually shifted from emphases on the very poor to the enterprise poor as demands on these institutions to be become financially sustainable increased. The Microfinance Act 2006 became operational in May 2008. The Act empowered the Central Bank of Kenya (CBK) to license and supervises deposit taking microfinance institutions. By December 2010, the CBK had licensed Faulu Kenya, Kenya Women Finance Trust (KWFT), SMEP, UWEZO and REMU as Deposit Taking Microfinance (DTMs) to conduct nationwide deposit taking microfinance business. As of May 2010, non-deposit-taking microfinance institutions did not fall under the jurisdiction of the

Central Bank's microfinance regulations, and as such they fall under either the SACCO category supervised by the SACCO Societies Regulatory Authority (SASRA), or the informal microfinance category, which is unregulated except for the licensing required of all NGOs in Kenya. The Central Bank is currently consulting with a variety of industry stakeholders to determine the best practices for incorporating non-deposit-taking MFIs into their regulatory framework.

Four of Kenya's major commercial banks have roots in microfinance: two as building societies (Family Bank and Equity Bank) one as an NGO (KREP) and another as a cooperative society (Co-operative Bank). These commercial banks, along with a wide variety of registered microfinance institutions, savings and credit cooperatives, and NGOs, make up Kenya's microfinance industry (See appendix II). As of December 2010, the 54 retail MFIs (excluding commercial banks) registered with the Association of microfinance institutions (AMFI) with over 2 million active loan clients (CBK, 2010). As of year 2010, non-deposit-taking microfinance institutions do not fall under the jurisdiction of the Central Bank's microfinance regulations, and as such they fall under either the SACCO category supervised by the SACCO Societies Regulatory Authority (SASRA), or the informal microfinance category, which is unregulated except for the licensing required of all NGOs in Kenya. The key actors of legislation in microfinance industry in Kenya includes; CBK and SACCO Societies Regulatory Authority (SASRA), The Kenyan banking Act, Microfinance Act 2006, and SACCO Act 2008, Kenya Association of Microfinance Institutions (AMFI Kenya), Kenya Union of Savings and Credit Cooperatives (KUSCCO) and Credit Referencing Bureau Regulation of 2008. Currently Kenya government is developing more strategies in an effort to encourage the growth of the microfinance industry

2.1. Loan delinquency

Delinquency refers to loan repayment rate while a loan is delinquent when a payment is late (CGAP, 1999). Delinquency is measured because it indicates an increased risk of loss, warnings of operational problems, and may help predicting how much of the portfolio will eventually be lost because it never gets repaid. There are three broad types of delinquency indicators: Collection rates which measures amounts actually paid against amounts that have fallen due; arrears rates measures overdue amounts against total loan amounts; and portfolio at risk rates which measures the outstanding balance of loans that are not being paid on time against the outstanding balance of total loans (CGAP, 1999). MFIs need a monitoring system that highlights repayment problems clearly

and quickly, so that loan officers and their supervisors can focus on delinquency before it gets out of hand.

MFIs manager should at least monitor portfolio quality ratios on monthly, weekly or daily basis. Managers must be aware of the number and values of loans that have been rescheduled and this segment of the portfolio should be tracked separately. While repayment rate is typically cited as portfolio quality indicator (Craig, 2006), in practice it is not as effective as portfolio at risk because it does not reveal the full degree of vulnerability that an organization faces when a loan repayment is late. Portfolio at risk accounts for both; the loss that an MFI faces today due to late repayment and the potential loss that it faces if no future payments are made on that now delinquent loan. This brings us to the importance of financial ratio analysis in MFIs with a focus on portfolio quality ratios. According to Joana (2000), portfolio quality ratios include; portfolio in arrears: “arrears “ratio considers only the value of the past due payments; portfolio at risk: “at risk “ratio considers the entire outstanding balance of loans that are delinquent by one or more payments

Both the portfolio in arrears and the portfolio at risk ratios help the institution to monitor loan repayment and the risk of default. The portfolio at risk figures is reported for 30, 60, 90 and 120 day delinquency levels in the portfolio report (Joanna, 2006). This aging analysis is critical for a careful monitoring of the portfolio quality and for making an estimate of the provision required for loan losses. Aging of past due amounts also allows fund managers to determine if new policies implemented to control delinquencies are working.

In microfinance, loan loss ratio is a percentage of average outstanding balance for the period refers to the amount of loans written off in the period. All institutions will have some percentage of uncollectible loans, but well-managed institutions make keeping this percentage low their top priority (Beatriz, 2007). Many institutions resist writing off loans because of the belief that some of the loan may still be recuperated. Once a loan has been written off, collection efforts for this loan may continue if it makes economic sense. Loan write-offs are simply a prudent approach to financial management, not a legal acknowledgment that the borrowers no longer are in debt to the institution. Reserve ratio based on the historical default rate, indicates what percentage of the loans outstanding is expected to be unrecoverable. Prudent financial management and full disclosure would imply that this figure should reflect the maximum projected unrecoverable loans. The amounts of the reserve for loan losses (on the balance sheet) and the loan loss provision (on the income statement) should be based on historical information regarding loan defaults (Joanna, 2006). When the reserve is created (or adjusted) on the balance sheet, the loan Loss provision is recognized on the income statement as

an expense in an amount equal to the change in the reserve. Actual loan losses, or write-offs, are netted out of the gross loan outstanding and the reserve (on the balance sheet) and so do not affect the income statement when they occur, unless the amount written off exceeds the reserve (Joanna, 2000).

Some organizations include the loan loss expense in the operating costs. It is helpful to separate the loan loss provision as an indicator of portfolio quality. Ratio analysis is the most effective means of monitoring the pulse of an institution. Of course, numbers don't tell everything about an institution. Managers must continue to talk to clients and staff, paying attention to morale and perceptions, but this information is all the more valuable when supplemented with financial data.

It is widely believed that frequent repayment is one of the most important premises, in addition to group lending, for successful micro-credit programs (Pande & Field, 2008). To make on-time repayments at weekly meetings, borrowers must nurture a sense of thrift and acquire a habit of constant savings, and thus, financial discipline is gradually built within them. weekly meetings provide an opportunity for group members (and loan officers) to check on how other members (or borrowers') are doing in their businesses or whether there is a sign of financial troubles. All of these factors eventually come down to reduced default rates.

Poor people have variety of financial needs and the informal sector has been quicker to respond to such needs than traditional banks by providing tailor made micro savings, remittances, leasing, and insurance services as well. The experience of many countries shows that micro financing can empower individuals and the informal business sector, thought to be uncreditworthy (Anon, 2002). Microfinance therefore can well foster sustainable livelihoods and generate substantial nonfinancial benefits. This mean that microfinance not only proof that borrowers are able to pay their credit, but also that a dynamic cycle of sustainable livelihoods is created within a community, facilitating the collective ability to pay for clean water, to secure electricity and to significantly save time, benefit education and study during evenings, creating health and enabling better economic opportunities and productivity (Peeters, 2003). Such enormous achievement can only be attained through sound financial system with efficient micro lending practices. The role of the sustainable and responsible investment community has been invaluable and will continue to be crucial by critically rewarding sustainability leaders, assessing corporate sustainability risks and opportunities and by continuously pleading for transparency and governance practices. There is a critical need for a more integrated and

sustainable microfinance system, with sound new mechanisms towards enhancing Kenyan micro financing security.

2.2. External factors affecting loan delinquency

The upheaval that hit mainstream financial markets and the reverberations that continue to be felt across the globe from the resulting economic crisis impacted MFIs and their clients. The early stages of the downturn saw MFIs experience significant liquidity shortages, but as the capital markets recovered, concerns turned from funding to asset quality (CGAP, 2010). This scenario points to links between external factors and loan delinquency. The relationship between the macroeconomic environment and loan quality has been investigated in the literature linking the phase of the business cycle with lending institutions stability. For instance Fofack (2005) studied causal analyses and macroeconomic implication on loan default in Sub-Saharan countries. Fofack (2005) used Pseudo panel- based prediction models to test real exchange rate appreciation, net interest margins and real interest rate.

Fofack results showed that, macroeconomic stability and economic growth are associated with a declining level of default; whereas adverse macroeconomic shocks coupled with higher cost of capital and lower interest margins are associated with a rising scope of nonperforming loans. This research study deviates from Fofack study in that, only economic downturn is taken as a macroeconomic factors and this study focuses exclusively on microfinance institutions operating in Kenyan economic environment. Waweru & Kalani (2009) studied commercial banking crises in Kenya. They found that some of the causes of non- performing loans in Kenyan banks were national economic downturn, reduced consumer, buying ability and legal issues. This current study appreciate that the nonperforming loan and loan delinquency concepts are similar. However this study differs significantly from Waweru & Kalani (2009) in terms of area of study, and study methodology. These researchers covered commercial banks in Kenya while this current study focuses on microfinance institutions in Kenya. The banking and microfinance sectors operate under different regulatory authorities.

The study of Dinos & Ashta, (2010) on financial crisis: Lessons from microfinance argued, that microfinance is essentially informal and typically directed to entrepreneurial activities that are not linked to the global economy (with the exception of cash crops and tourism-related micro-businesses), which suggests that the impact of global economic events should not be significant. Further they stated that the microfinance sector at large is continuing to experience growth where

mainstream providers of financial services were retrenching in the context of the international crisis. This study seek to find whether such an argument is valid in MFIs operating in Kenyan business economic environment.

2.3. MFIs and Self help Groups (SHGs)) specific factors

The policy used by an MFI to define delinquent loans directly influences the portfolio quality ratios and the determinant of the MFI's level of risk. If an MFI defines past due (over due and delinquent) only after the loan term has ended, the portfolio quality ratios will mean little (CGAP, 2010). The date that a loan term ends has no relevance to the amount of time a loan is overdue. What matters is the amount of time that has passed since the borrower stopped making payments. Delinquency loans play a critical role in an MFI's expenses, cash flow, revenue and profitability. In developing a delinquency management system, strategies such as institutional culture, client orientation, staff and client incentives, delinquency penalties and enforcing contracts can be designed to balance the carrots (incentives) and sticks (penalties) (Craig, 2006). The loan process and procedures, governance and loan monitoring policies of a MFI have far reaching effects on delinquency performance.

Group lending model is one of the best practices in microfinance especially in Africa (Latifee, 2006). A group consists of two or more individuals. Any MFI that aims to increase outreach and achieve sustainability may have to do it through mass numbers, which is possible through groups. In many African societies, many poor people are already members of a group; either in the church or within their immediate community. Groups consist of individuals who have something in common; they come from the same community, they worship in the same church, they are the same age group or they simply work in the same market. Understanding the reasons for continued existence of such groups would help lending MFIs develop long lasting groups, which translates to long life client base. This would enhance client creditworthiness assessments, which has direct link to delinquency.

Group solidarity and self-regulation which includes group constitution would be expected to facilitate loan repayment among group members. Therefore group formation process may have a direct effect on loan delinquency among group members.

Saloner (2007) researched on the effect of Institutional Characteristics on default rate in developing world. The results showed that a focus on women as borrowers, on institutional incorporation into the community, and on client-led programming all lead to lower default rates and thus greater success. Pollio (2010) examined microfinance default rates in Ghana. He found that repayment is

affected mainly by the number of dependents in the household, years in business, use of proceeds, loan status, and frequency of loan monitoring.

Field & Pande (2008) studied repayment frequency and default in Micro-Finance in India. They found no significant effect of type of repayment schedule on client delinquency or default. Their findings suggested that, among micro-finance clients who were willing to borrow at either weekly or monthly repayment schedules, a more flexible schedule could significantly lower transaction costs without increasing client default. Field and Pande study paid scant attention to factors that influence default rate which is the main focus of this current study.

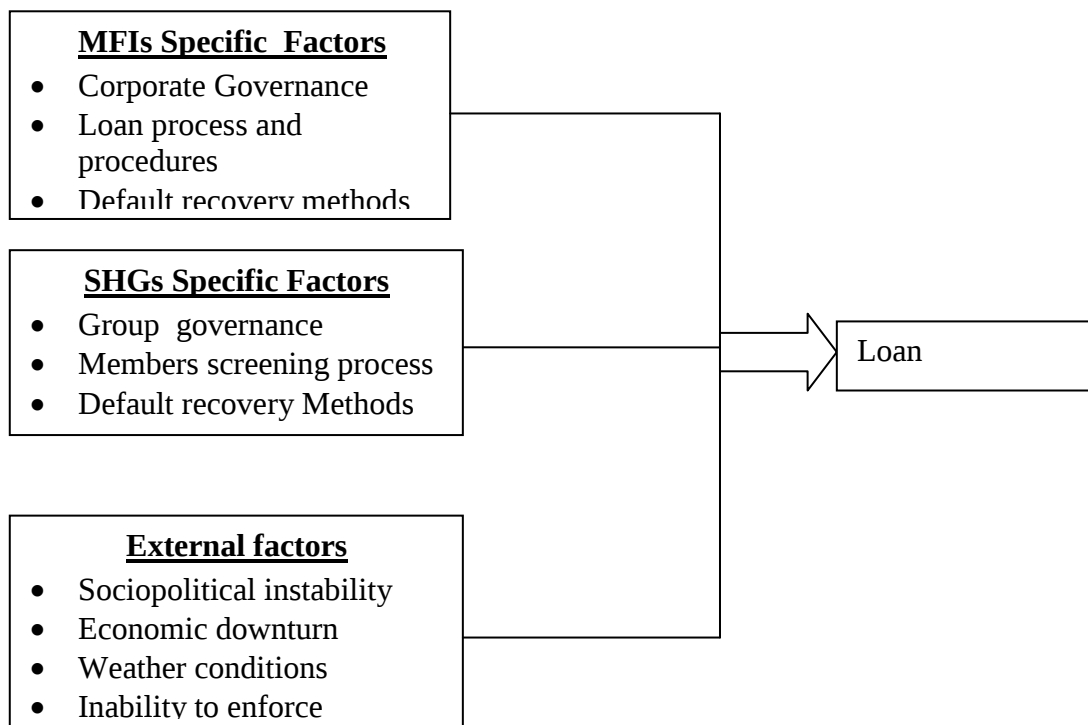
Srinivasan (2007) researched on measuring delinquency and default in microfinance institutions in India. The study found that the “mature” (i.e. the rate after say an year of operations of an MFI) collection rate was a good measure for estimating default. In addition, the on-time collection rate was useful for estimating delinquency and only the primitive collection ratio, based on tracking each period’s loan disbursement identified shock in loan repayment. Srinivasan measured delinquency while this current study investigates factors influencing default rate.

CGAP (2009) report on the delinquency crisis in southern Karnataka cited some of the causes of loan delinquency as; clients borrowing excessively from multiple lenders and then finding themselves unable to pay off their loans, poor client tracking systems; a downturn in the silk industry; poor collection practices and domestic problems. A few similar variables are examined by this study to find their relevance in loan delinquency in MFIs in Kenyan business environment. Schreiner (2003) studied cost-effectiveness analysis of the Grameen Bank of Bangladesh. He found that joint liability reduces risk as members have knowledge of individual character and can screen potential borrowers. Through peer pressure members mentor each other and can coax comrades out of arrears or even to repay their debts for them. This study examines peer pressure variable to find out whether joint liability concept applied by SHGs has effects on loan delinquency in MFIs in Kenya.

2.4. Conceptualization

The concept model of this study is to analyze factors that affect loan delinquency in MFIs in Kenya. From literature review, various empirical studies cite probable causes of loan delinquency as linked to external factor and MFIs specific factors. This study focuses on the external, MFIs and SHGs variables to carry an empirical study to investigate on the probability of these variables contributing to loan delinquency in MFIs in Kenya. From the conceptualisation of the study variables, conceptual framework for this study is shown in figure 2.1.

Figure 1: Operational Framework



Independent variables

Dependent variable

2.5. Variables description and measurement

This study analysis focuses on a number of MFIs and SHGs specific factors and external factors. Specific factors are considered to be within the direct control of the MFIs and SHGs management. External factors are described as those considered to be outside the direct control of the MFIs and SHGs management. The MFIs specific variable is measured by corporate governance, loan processing procedures and loan recovery methods, based on 5 likert scale as indicated in the research instrument. The parameters used to measure self help group variable include group governance and member screening process based on 5 likert scale as indicated in the research instrument.

Governance is the system of people and processes that keep an organization on track and through which it makes major decisions. MFIs and SHGs should provides practical guidance for stakeholders in governance relating to loan processes and procedures for better loan portfolio performance. Members are eligible for loans on fulfillment of all lending MFIs and group rules, self-regulations and requirements. Effective lending process and procedures have far reaching effect on loan delinquency levels. If client does not honour promises to pay, appropriate default recovery method procedures would have direct link to delinquency levels. SHG members screening process by both loan officer and group members enhance assessment of credit worthiness of the borrower.

This affects repayment capabilities of the borrower hence default levels. SHG members screening process by both loan officer and group members enhance assessment of credit worthiness of the borrower. This affects repayment capabilities of the borrower hence default levels.

For this study, the external factors variable is measured by sociopolitical instability, economic downturn, weather conditions and inability to enforce covenant also based on 5 likert scale as indicated in the research instrument. Sociopolitical upheavals can cause loss of assets and investment used as loan securities and source of income for loan repayment. As a result borrowers' repayment capability may be affected. During economic downturn, some loans which were appraised and sanctioned on the assumption of vibrancy economic growth may be adversely affected while marginal lendings may become worse. State of economy therefore may contributed to loan default levels. The law courts proceedings are one of the methods used to the realization of securities by MFIs when failures in loan performances require the courts intervention. Any inability to promptly recover loans affects the liquidity of banks and raises the costs that apply to the loan (CBK, 2007).

The loan delinquency measurement for this study is proxied by loan delinquency indicators in SHGs which includes; lateness in SHGs meetings, irregular loan repayment, poor group leadership, group conflicts, refusal to participate in group activities, late loan disbursement and poor record keeping in microfinance institutions in kenya. Routinely lateness or absenteeism of clients from meetings demonstrate weak commitment to the institution and have the potential of defaulting on their loans. When a client begins submitting loan repayment installments irregularly, or makes incomplete payments, that acts as a warning sign of potential delinquency. Also, weak group leadership can contribute to delinquency as group officials may not have will to follow-up on their delinquent colleagues. Group conflict points to weak group cohesion leading to compromising the peer pressure mechanism, which is the primary mechanism that field staff relies on for follow-up at the group level. Group records that are not well kept could be hiding delinquency or the onset of delinquency.

3. Research Methodology

The study adopted a causal-effect research design aimed at establishing the effects of selected external and MFIs specific factors on loan delinquency in MFIs in Kenya. The study is a descriptive survey. The study population comprises all 49 MFIs registered by AMFI-Kenya. A census of the 49 MFIs is taken. The data was collected using survey questionnaire predominantly structured with closed- ended questions, matrix questions (with likert scale of 5) and contingency questions, The

questionnaires were administered to loan officers of MFIs under the study. The questionnaire standardized Cronbach's alpha was established above 0.60 [MFIs factor 0.65, external factor 0.64 SHGs factor 0.78, (see appendix III)] predicting the reliability of the data collected. According to Nunnally (1967), an alpha value of 0.6 is sufficient.

The study first runs individual regression models for MFIs, SHGs and External factors to test the relationship between loan delinquency and the three entity variables. The study employed basic variable selection criterion (forward stepwise and backward stepwise) similar to Altman (2000), to test MFIs, SHGs and External variables significance using e-views software version 3.1. The significant variables were selected to run full model to test effects of MFIs, SHGs, and external factors on loan delinquency in MFIs in Kenya. The estimated regression coefficients and p-values were interpreted.

3.1 Model specification

To determine the effect of MFIs, SHGs and external factors on loan delinquency, multiple regression analysis specified by the following model was used.

$$LD = \beta_0 + \beta_1(X_1) + \beta_2(X_2) + \beta_3(X_3) + \varepsilon$$

Whereby;

LD=Loan Delinquency

X₁ = MFIs specific factors

X₂ = Self help Groups (SHGs) specific factors

X₃ = External factors (EF)

B₀ is the Y intercept,

β₁...to β₃ are the coefficients of the variables

ε = error term

4. Modeling Selected variables

Using total scores from the research instrument, a multiple regression analysis was conducted to test the effects of MFIs, SHGs and external factors on loan delinquency in MFIs in Kenya. The study first runs individual regression models for MFIs, SHGs and External factors to test the relationship between loan delinquency and the three entity variables. Using the individual model results the study

employed basic variable selection criterion (forward stepwise and backward stepwise) similar to Altman (2000), to test MFIs, SHGs and External variables significance.

4.1 MFI variables results

Table 4.1 shows MFIs variables regression results. The results revealed that management information system (MIS) was positive and significantly (t-value 4.344) related to loan delinquency. This suggests that loan delinquency is dependent on MIS performance in MFIs in Kenya. A good MIS is critical for controlling loan delinquency. It should be able to track missed installment payments and the loan officers responsible for their collection so that appropriate actions to collect the payment can be instituted immediately. Management information system should provide accurate and timely reports to management on the performance and status of the microfinance loan portfolio. Lack of MIS or inefficiency of the systems may lead to inaccurate and/or late information leading to erroneous decision making on loan delinquency performance. As a result, opportunities for loan default are created.

Further outreach and promotion materials activities carried out after training MFIs field officers was positive and significantly (t-value 3.23) related to loan delinquency performance in MFIs in Kenya. This suggests that as the institutions strive to become sustainable, the MFIs stretch the sustainability concepts beyond the normal expectations and as a result the institutions marginalize the staff development process. This may result in recruitment and maintenance of inefficient staff hence increases in loan delinquency.

Finally, Table 4.1 results indicate that microfinance institutions that take the responsibility (rather than the client) of business and loan appraisal of the clients was positive and significantly (t-value 2.679) related to loan delinquency performance. This stresses the importance of MFIs management employing aggressive strategies on loan appraisal at loan application stage and continuous follow up on borrowers for timely loan repayment.

Table 4.1 MFIs variable analysis results

Dependent Variable: Loan Delinquency

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
MIS	10.89871	2.508688	4.344387	0.0001
OUTREACH	20.17410	6.245486	3.230189	0.0028

APPRAISAL	10.01608	3.737525	2.679871	0.0114
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4.2 Loan recovery methods used by MFIs results

Table 4.2 results depict that local authority enforcement for loan recovery was positive and significantly (t- value 2.950) related to loan delinquency performance. This implies that positive participation of local authorities in loan recovery strategies in MFIs mitigate loan delinquency levels in MFIs in Kenya. Further the results depicts that peer pressure was positive and significantly (t-value 2.928) related to loan delinquency performance. This suggests that loan delinquency is dependent peer pressure variable performance. This may be contributed by joint liability aspect which reduces risk as members have knowledge of individual character and can screen potential borrowers. Through peer pressure members mentor each other and can coax comrades out of arrears or even to repay their debts for them. The results also suggest that law court cases procedures in Kenya may be a hindrance to loan default recovery by MFIs. These results suggest that the most effective methods used by MFIs and SHGs to recover loan arrears are peer pressure, notice to borrowers by lending MFIs and local authority intervention methods.

Finally, Table 4.2 results reveal positive and significant (t-value 2.715) relationship between loan delinquency and demand notice for loan repayment by lending MFI to borrowing clients. This suggests that MFIs borrowers respond positively to the lenders notices and may fear the consequences of defaulting.

Table 4.2 Loan recovery methods analysis results

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
LOCAL	5.614018	1.902646	2.950637	0.0058
PEER	6.524425	2.227794	2.928648	0.0061
NOTICE	5.326917	1.961929	2.715142	0.0105

The study found no evidence that there exist any significant relationship between loan delinquency and other MFIs factors under study.

4.3 Self help Groups (SHGs) variable results

These factors are considered to be within the direct control of the SHGs management. The analysis of YES and NO responses from research instrument gave results depicted in table 4.3. The results

portray that group internal constitution operations was positive and significantly (t- value 12.711) related to loan delinquency level. Democracy practice in group governance was found positive and significantly (t- values 2.288) related to loan delinquency performance. The group operating rules (internal constitution) are established through brainstorming session with all members. The idea is to develop ground rules that are owned by the members for easier implementation. Democracy in group leadership is facilitated through internal constitution compliance. Effective implementation of group constitution and democracy practice therefore contributes positively in mitigating loan delinquency levels.

Table4.3 Group constitution and democracy results

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
CONSTITUTION	50.41346	3.965850	12.71189	0.0000
DEMOCRACY	3.988701	1.742581	2.288962	0.0284

4.4 Factors influencing loan delinquency in SHGs results

Table 4.4 portray that age of business was negative and significantly (t-values 145.507) related to loan delinquency levels. This suggests that loan delinquency performance is dependent on age of business. Diversion of funds was also found positive and significantly (t-values 354.25) related to loan delinquency levels. These results evidence that loan delinquency performance depends on borrowers using the borrowed fund for the purpose intended for and avoidance of diversion of funds to unplanned for activities. This may enhance steady cash flow from the invested funds for loan repayment hence decrease in loan delinquency levels. The results further indicate tenancy problems were negative and significant (p-values -65.419) to loan delinquency. Tenancy problem may be contributed by loan borrowers changing frequently their areas of residence making it difficult for loan officers to follow up loan repayment. The results suggest that any negative development of tenancy variable increase loan delinquency levels in Kenya. Conversely, group solidarity was positive and significantly (t-value -8.465) related to loan delinquency levels. The results suggest that the group formation process which includes receiving individual applications as an expression of the willingness to join the group; assessment of individuals based on their character and behavior and registration of members is essential. Coupled with good group leadership, group solidarity is enhanced as common bond is established; hence decrease in loan delinquency levels. Therefore loan delinquency is dependent on group solidarity.

Table 4.4 Influence on loan delinquency

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
AGE	-1.718258	0.011809	-145.5079	0.0044
DIVERSION	4.636141	0.013087	354.2525	0.0018
TENANCY	-0.337345	0.005157	-65.41925	0.0097
SOLIDARITY	-0.033468	0.003954	-8.465326	0.0749

The study found no statistical significance between loan delinquency and other SHGs factors under study.

4.5 External factors results

External factors are described as those considered to be outside the direct control of the MFIs and SHGs management. Table 4.5 results depict that economic downturn (t-value 7.702) and weather conditions (t-value 4.495) relating to defaults contributes positively and significantly to loan delinquent levels in MFIs in Kenya. These results suggest that any negative development of the two variables increases loan delinquency levels in MFIs in Kenya.

Table 4.5 External factors results

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
ECON	10.34388	1.342859	7.702879	0.0000
WEATH	8.629341	1.919541	4.495524	0.0001

The study found no statistical significance between loan delinquency and other external factors under study.

4.6 Multiple regression results

A multiple regression analysis was conducted to find out the effect of MFIs, SHGs and external factors on loan delinquency in MFIs in Kenya. Management information system (MIS) was used as a proxy for MFI factors, peer pressure for self help groups (SHGs) and economic downturn was used

as a proxy for external factors. The variables were selected on the basis of their significance as modeled in section 4 of this study. The results are presented in table 4.6

Table 4.6 Multiple regression results

Dependent Variable: Loan Delinquency

Method: Least Squares

Table 4.7 Regression results of effects of X on Y

Variable	Coefficien t	Std. Error	t-Statistic	Prob.
C	13.03692	9.577753	1.361167	0.1830
MIS (MFI Factor)	9.937288	1.980772	5.016877	0.0000
PEER (SHG Factor)	6.090383	1.966459	3.097132	0.0040
ECON (Ext. factor)	2.549503	1.231732	2.069851	0.0466
R-squared	0.522286	Mean dependent var	60.79722	
Adjusted R-squared	0.477501	S.D. dependent var	12.38922	
S.E. of regression	8.955442	Akaike info criterion	7.326839	
Sum squared resid	2566.398	Schwarz criterion	7.502785	
Log likelihood	-127.8831	F-statistic	11.66190	
Durbin-Watson stat	1.775340	Prob(F-statistic)	0.000025	

The final regression model was expressed as;

$$LD = 13.03692 + 9.937288 * MFI + 6.090383 * SHG + 2.549503 * EF$$

Table 4.6 shows a strong positive relationship between the three variables. Specifically table 4.13 reveals that MFI factors are positive and significantly (t-value 5.016) related to loan delinquency performance in microfinance institutions in Kenya. The estimated regression coefficient ($\beta = 9.937288$) for MFI variable implies that an improvement in microfinance institutions specific factors by one unit leads to a corresponding 9.937288 decline in loan delinquency in MFIs in Kenya. In addition, table 4.6 analysis of the data reveals a positive and significant (t-values 3.097) relationship between SHG factor and loan delinquency. This suggests that, a unit increase in SHGs specific factors ($\beta = 6.090383$) leads to a corresponding 6.090383 decline in loan delinquency in MFIs in Kenya. Conversely, the regression analysis results indicate that external factors are positive and significantly (t-values 2.069) related to loan delinquency performance. This depicts that, a unit increase in external factors ($\beta = 2.549$) leads to a corresponding 2.549 decline in loan delinquency in microfinance institutions in Kenya. Finally, the coefficient of determination, $\bar{R}^2 = 0.477$ shown in Table 4.6 means that only about 48% of the loan delinquency variable can be explained by the MFIs, SHGs and external variables. This implies that the independent variables (MFIs, SHGs and EF) have major effect on loan delinquency. Overall MFIs factors contribute to loan delinquency performance

at a higher magnitude ($\beta = 9.937$) followed by self help group factors ($\beta = 6.090$) while external factors contribute least ($\beta = 2.549$) to loan delinquency levels.

4.7 Discussion of results

The regression results reveal a strong positive significant relationship (t-value 5.016) between loan delinquencies and MFIs specific factors in Kenya. This suggests that loan delinquency performance is dependent on quality management on the factors which are within the direct control of the MFIs management. These results support CGAP (2009) findings that inefficient management of internal factors in MFIs contribute to loan delinquency performance in MFIs. In addition, the results support Dino sand Ashta (2010) who found that overstretched MFI systems and controls; and erosion of MFI lending discipline contribute to increased defaults.

Further, the regression results reveals a positive and significant (t-value 3.097) relationship between SHG factor and loan delinquency. This suggests that loan delinquency performance is dependent on SHGs' good governance and management on loan portfolios. These results concur with Saloner (2007) and Dinos & Ashta (2010) findings that on client-led programming and solidarity lending mechanisms all lead to lower default rates and thus greater success in MFIs performance. Similarly Schreiner (2003) found that joint liability reduces risk as members have knowledge of individual character and can screen potential borrowers. Through peer pressure members mentor each other and can coax comrades out of arrears or even to repay their debts for them. Age of business was negative and significantly (t-values -145.507) related to loan delinquency levels. The results support Karimi & Maru, (2003) who states that clearly defined client group as a target market with at least one year experience that have lived and worked in the community for at least 3 years' may be a preferable target market. To avoid lending to start-up businesses may be a good strategy. The rate of failure among start-up businesses is high and 9 out of 10 new businesses fail (Karimi & Maru, 2003). The lending MFIs should therefore consider this factor when lending.

Finally, the regression results shows that external factors are positive and significantly (t-value 2.069) related to loan delinquency performance in microfinance institutions in Kenya. The results reveal that external factors contribute the least to towards loan delinquency performance among MFIs in Kenya. This can be attributed to the fact that MFIs are basically informal and their entrepreneurial activities may not be necessarily affected immensely by external factors. Also few MFIs in kenya are involved in agricultural activities whose performance is greatly linked to external factors. These results concur with Njeru (2011) and Waweru (2009) who found that economic

downturn contributes to nonperforming loans occurrence in commercial banks in Kenya due to reduced credit economic power to pay debts. Further the results supports findings of Dinos & Ashta (2010) who argued that microfinance is essentially informal and typically directed to entrepreneurial activities that are not linked to the global economy (with the exception of cash crops and tourism-related micro-businesses), which suggests that the impact of external events should not affect loan performance at greater magnitude compared with internal factors which are within MFIs and SHGs management control.

5. Conclusions and Policy Recommendations

From the data analyzed, the study established negative and significant relationships between MIF, SHGs and loan delinquency factors while external factors were found positively and significantly related to loan delinquency among MFIs in Kenya. Overall MFIs factors contribute to loan delinquency performance at a higher magnitude ($\beta= 9.937$) followed by self help group factors ($\beta= 6.090$) while external factors contribute least ($\beta= 2.549$) to loan delinquency levels. Therefore, MFI, SHGs and external factors jointly contribute only about 48 % to the total loan delinquency among microfinance institutions in Kenya.

From the findings most cases of loan delinquency are caused by microfinance institutions and self help groups' management failure to efficiently manage specific factors which are considered to be within the direct control of the MFIs and SHGs management. The external factors described as those considered being outside the direct control of the MFIs and SHGs management seems to contribute little to the levels of delinquent loans. Therefore, for effective management of delinquency, it is critical for MFIs to understand and focus more on the internal causes of delinquency which they have more control over and seek practical and achievable solutions to redress these problems.

Based on the findings of the study the following recommendations were made:-Microfinance institutions regulators, credit referencing bureau and MFIs policy makers have to be wary about increasing loan delinquency in the industry and put in place appropriate management strategies to mitigate portfolio risks. In addition MFIs management should regularly review credit risk techniques used and expand loan monitoring framework among SHGs for effective credit portfolio assessment. Further SHGs management should strengthen group solidarity to facilitate prompt loan repayment by the group members.

MFIs management should pay attention to the performance of the external factors investigated in this study when providing loans so as to reduce the magnitude of loan delinquency. Also MFIs portfolios management strategies should focus more on the internal causes of delinquency which they have more control over and seek practical and achievable solutions to redress delinquency problems.

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