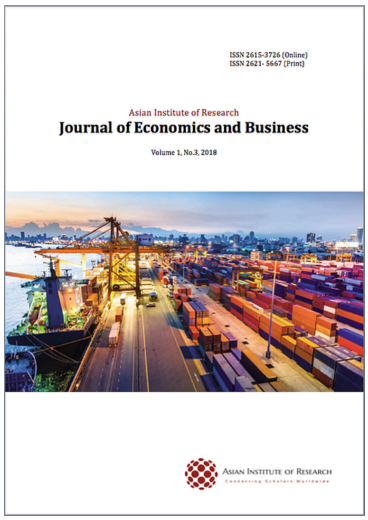

Journal of Economics and Business

Mensah, Nicholas Oppong, Yeboah, Edward, and Amartey, Benjamin Korley (2018), Credit Risk in Microfinance Institutions: Empirical Evidence from Accra Metropolis of Ghana. In: *Journal of Economics and Business*, Vol.1, No.3, 234-241.

ISSN 2615-3726

DOI: 10.31014/aior.1992.01.03.23

The online version of this article can be found at:
https://www.asianinstituteofresearch.org/

Published by:
The Asian Institute of Research

The Asian Institute of Research *Journal of Economics and Business* is a peer-reviewed International Journal. The journal covers scholarly articles in the fields of Economics and Business, which includes, but not limited to, Business Economics (Micro and Macro), Finance, Management, Marketing, Business Law, Entrepreneurship, Behavioral and Health Economics, Government Taxation and Regulations, Financial Markets, International Economics, Investment, and Economic Development. As the journal is Open Access, it ensures high visibility and the increase of citations for all research articles published. The *Journal of Economics and Business* aims to facilitate scholarly work on recent theoretical and practical aspects of Economics and Business.

Asian Institute of Research
Connecting Scholars Worldwide

ASIAN INSTITUTE OF RESEARCH
Connecting Scholars Worldwide

The Asian Institute of Research
Journal of Economics and Business
Vol.1, No.3, 2018: 234-241
ISSN 2615-3726

DOI: 10.31014/aior.1992.01.03.23

Credit Risk in Microfinance Institutions: Empirical Evidence from Accra Metropolis of Ghana

Nicholas Oppong-Mensah[1], Edward Yeboah[2], Benjamin Korley Amartey[3]

[1] Department of Agricultural Economics, Agribusiness, and Extension, University of Energy and Natural Resources (UENR), Sunyani, Ghana. Email: nicholas.mensah@uner.edu.gh
[2] Department of Accounting and Finance, KNUST School of Business, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana. Email: eddie.yeboah401@gmail.com
[3] Institute of Distance Learning (IDL), Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana

Abstract
This study investigates the credit risk in the Microfinance Industry in Ghana using Microfinance Institutions (MFIs) in Accra Metropolis as the test case. The study used the loan default rate as a proxy variable to measure credit risk and examined the effect of some explanatory variables on loan default. Primary data was used, and the purposive sampling techniques were adopted to select 90 respondents from 20 Microfinance Institutions out of 43. The multivariate linear regression model was used to analyze the relationship between the dependent and explanatory variables. The results indicated that interest rates have a positive and significant effect on loan default whereas loan maturity period has a negative and significant effect on loan default. Also, Credit Officers' educational level have a negative and significant effect on loan default while having a marketing department has a positive and significant effect on loan default. However, the loan appraisal process, lending gap, and governance quality have no significant effect on loan default. Thus, MFIs should promote sound loan pricing policies in order to charge the appropriate interest rate and adopt loan repayment regimes that boost liquidity. Additionally, Credit Officers should be highly educated, and hence management of MFIs should put in place continuous development programs to upgrade the skills of all personnel in the credit delivery system in relation to best practices in lending.

Key Words: Credit Risk, Loan Default, Microfinance Institutions.

1. INTRODUCTION

The Microfinance Industry in Ghana has attained significant growth in the wake of low financial inclusion in the country. However, in recent times a number of MFIs have collapsed, and some have experienced financial distress owing to ineffective credit management systems. Loan default, delinquencies, and non-performing loans do not only cause the liquidation of MFIs but also account for the loss of confidence in the financial system and its attendant dire consequences on economic growth in emerging economies such as Ghana.

Towards making MFIs solvent to enable them to play their pivotal roles in poverty alleviation and financial intermediation, sound credit risk management becomes absolutely critical. There becomes the need to know the causal variables of credit risk.

2. EMPIRICAL REVIEW

Credit risk has attracted numerous academicians and practitioners in the microfinance industry worldwide. Some contributors to the literature on credit risk focus on credit risk management practices and their effects on loan performance. Others delve into the factors accounting for loan defaults and non-performing loans (NPL) and have identified credit risk as the single most important factor that causes the collapse and under-performance of MFIs.

Ahmed and Malik (2015) investigated credit risk management and loan performance of Micro Finance Banks in Pakistan. They took credit terms, client appraisal, collection policy and credit risk control as the dimensions of the credit risk management practices and used multiple regression analysis for empirical relationship evaluation of the credit risk management practices on the performance of loan. Their study revealed that the credit terms and client appraisal have a positive and significant impact on loan performance while the collection policy and credit risk control have a positive but insignificant impact on loan performance.

Moti, Masinde,Galo, and Sindani (2012) undertook a similar study in the Micro Finance Sector in Kenya in connection with the effectiveness of the credit management system on loan performance. The study sought to establish the effect of credit terms, client appraisal, credit risk control measures and credit collection policies on loan performance. The researchers adopted a descriptive research design, and their respondents were the credit officers of the MFIs in Meru Town. Collection policy was found to have a higher effect on loan repayment. They recommended for further research on the effectiveness of credit referencing on loan performance of MFIs.

Maina, Kinyaririo, and Muturi (2016) assessed the influence of credit risk management practices on loan delinquency in Savings and Credit Cooperative Societies (SACCOS) in Meru County, Kenya. Their study also adopted a descriptive research design, and the population consisted of all the 44 credit officers of SACCOS in Meru County. The questionnaire was used for data collection, and multiple linear regressions were used in data analysis. The study revealed that there exists a strong relationship between credit risk controls, collection policy and loan delinquency in SACCOS. They concluded credit risk management practices significantly influenced loan delinquency in SACCOS in Meru County and recommended the adoption of a more stringent policy on credit risk management practices in SACCOS for effective debt recovery.

Kiplimo and Kalio (2014) investigated the effect of credit risk management practices on loan performance in MFIs in Baringo County, Kenya. The target population in the study was managers and credit officers in MFIs in Baringo County. The questionnaire was used for data collection, and descriptive and inferential statistics were used in data analysis. The study concluded that there was a strong relationship between client appraisals and loan performance in MFIs. It was revealed that an increase in client appraisal led to an increase in loan performance in MFIs in Baringo County. The study concluded that credit risk management practices significantly influenced loan performance in MFIs in Baringo County. The study recommended the adoption of a more stringent policy on credit risk management practices in MFIs in Baringo County so as to improve the financial performance.

Mwengei (2013) assessed the factors contributing to Non-performing Loans (NPLs) in Kenyan Banks. The study used secondary data form journals and Central Bank of Kenya annual reports from 2008 – 2012. He concluded that macroeconomic factors have led to the increase in NPLs. He also found that the Credit Reference Bureaus have a positive impact on the reduction of non-performing loans and therefore their use should be adopted by all banks and other lending institutions like SACCOS in order to control the serial defaulters.

Klein (2013) investigated the NPLs in Central, Eastern and South-Eastern Europe (CESEE) in the period of 1998-2011. He found out that the level of NPLs can be attributed to both macroeconomic conditions and banks' specific factors, though the latter set of factors was found to have a relatively low explanatory power. The examination of the feedback effects broadly confirmed the strong macro-financial linkages in the region. While NPLs were found to respond to macroeconomic conditions, such as GDP growth, unemployment, and inflation, the analysis also indicated that there were strong feedback effects from the banking system to the real economy, thus suggesting that the high NPLs that many CESEE countries are currently faced adversely affected the pace of economic recovery.

Mutambanadzo, Bhiri, and Makunike (2013) investigated the reasons behind the collapse and under-performance of MFIs in a dollarized regime in Zimbabwe. They adopted a survey design targeting all 17 MFIs in Bulawayo, inclusive of those that collapsed. Their major finding was that MFIs were facing funding challenges. Most of them use limited personal funds to finance their businesses. The study also revealed that MFIs have poor corporate governance structures. Management Information Systems (MIS) have not been fully exploited. The conclusion was that lack of funding is the major factor hindering the growth and development of MFIs in Zimbabwe.

Kohansal and Mansoori (2009) investigated the factors influencing repayment behaviour of farmers that receive a loan from the agricultural bank by using the logit model and a cross-sectional data of 175 farmers of Khorasan-Razavi province in 2008. The results showed that loan interest rate is the most important factor affecting repayment of agricultural loans. Farming experience and total application costs are the next factors respectively.

Derban, Binner, and Mullineaux (2005) examined institutional characteristics of 16 Community Development Finance Institutions in the UK and assessed their influence on the loan loss rates. The results showed that 8 out of 13 institutional characteristics examined significantly influence loan repayment performance. Although a vast body of literature supports the view that borrower characteristics are highly influential, their results provide strong evidence to show that institutional characteristics are equally important and both factors need to be taken into account if loan repayment performance is to be improved.

Awunyo-Vitor (2013) investigated the determinants of loan repayment default among farmers in Brong Ahafo region of Ghana. Data was gathered through a survey of 374 farmers in five districts within Brong Ahafo region of Ghana. The study employed a Probit model to investigate factors that influence farmers' repayment default. The results showed that farm size and employment in off-farm income generating activities reduces the likelihood of loan repayment default significantly. Also larger loan amount and longer repayment period, as well as access to training, are more likely to reduce loan repayment default.

3. METHODOLOGY

3.1. RESEARCH DESIGN

The study adopted the survey design and the econometric analysis techniques of multivariate linear regression. Multicollinearity test using variance inflation factor and Breusch-Pagan test for heteroskedasticity were conducted to test the fitness of the model.

3.2. SOURCE OF DATA

We used primary data sources for the study. The primary sources of data were collected through structured questionnaires.

3.3. SAMPLING

We also used a purposive sampling method to select 20 microfinance institutions in the Accra Metropolis out of a total population of 43 microfinance institutions. The selection was non-random and based on the following criteria: Number of years in business; Number of branches operating in the Accra Metropolis; Reputation of the institution; Presence of Headquarters in Accra; and a Total number of customer base.
Following a conventional rule of thumb for sample size determination is derived from the formula,
$n > 50+8m$

Where, n = sample size, and m = number of predictors (as cited by statistics solutions, 2005).
Substituting the number of predictors into the above formula yielded 90 as sample size, i.e., if n=5 (predictors) therefore substituting 5 into the above formula, gave a sample size of 90. Additional 10 respondents were added for contingency purpose making a total of 100, knowing that some respondents may not participate in the study. Purposive sampling technique was used to select five respondents from each of the 20 selected MFIs who are

mainly Credit Officers and Branch Managers. However, ten of the respondents could not complete their questionnaires and therefore reduced the sample size to 90. The responsive rate was 90%.

3.4. MODEL SPECIFICATION

The study used the loan default rate as a proxy to capture credit risk of the microfinance institutions. The higher the default rate, the risky and less sustainable the microfinance institutions are. A multivariate linear regression model was employed to establish the relationship between the degree of loan default rate of microfinance institutions and their loan appraisal process, lending gap, loan maturity period, interest rate, governance quality, credit risk management as well as some demographic characteristics. The multivariate linear regression is empirically specified as:

$$LoanDefault_i = {}_0 + {}_1LAP_i + {}_2LG_i + {}_3LMP_i + {}_4IR_i + {}_5GQ_i + {}_6HND_i + {}_7Fdegree_i + {}_8Masters_i$$
$$+ {}_9Experience2_i + {}_{10}Experience3_i + {}_{11}Experience4_i + {}_{12}Department2_i$$
$$+ {}_{13}Department3_i + {}_{14}Department4_i + e_i \quad (1)$$

Where *Loan Default* denotes loan default rates (in percentages); LAP denotes Loan Appraisal Process (mean score); LG represents Lending Gap (mean score); LMP denotes Loan Maturity Period (mean score); IR denotes Interest Rate charged per month (in percentages); GQ denotes Governance Quality; HND represents staff members with HND qualification, First degree indicates employees with first degree qualification while Masters denotes employees with masters degree qualification. Diploma was used as a based category. Experience2 denotes employees with working experience of 1-3years (1 if employee has 1-3years working experience and 0 otherwise), Experience3 denotes employees with working experience of 3-5years (1 if employee has 3-5years working experience and 0 otherwise), Experience4 denotes employees with working experience of more than 5years (1 if employee has more than 5years working experience and 0 otherwise), while Experience1 denoting working experience less than one was used as a based category. Department2 denotes Marketing Department (1 if employee works at the Marketing Department and 0 otherwise), Department3 denotes Human Resource Department (1 if employee works at the Human Resource Department and 0 otherwise), Department4 denotes Credit Department (1 if employee works at the Credit Department and 0 otherwise) and Department representing Finance Department was used as a based category. *e* denotes the error term which captures other variables unknown to the researcher. ${}_1,\ldots,{}_{14}$ denote the coefficients while ${}_0$ represents the constant term.

4. RESULTS AND DISCUSSIONS

The results in relation to the socioeconomic characteristics of the respondents captured in Table 1 below showed that the total number of the respondents were 90, comprising of 60 (66.7%) male and 30 (33.3%) female respondents. This means gender inequality exists in the microfinance industry. However, it is perceived that females are more risk-averse than males in lending decisions. The respondents fell within the various age categories, but mostly between the ages of 26 and 35years meaning workers in the institution are mostly youth by Ghana Statistical Service Standards. Most of the respondents are married, representing 46(51.10%) as against 44(48.9) respondents who are single and may need to ensure the continued existence of the institution in order to feed their families. Majority of the respondents hold a first degree followed by Masters' Degree, Higher National Diploma (HND) and Diploma representing 56.7%, 15.6%, 15.6% and 12.2 respectively.

This implies that 72% of the respondents at least hold a first degree, henceforth it can be concluded that they have the requisite knowledge and capacity to work in the microfinance institutions and would be able to make lending decisions. Most of the respondents were Credit Officers, 46 translating into 51.1%. This implies that most of the responses given by the respondents were from the Credit Officers who make lending decisions that involve credit risk and their accuracy can be assured. Furthermore, 28 of the respondents were in the Marketing Department translating into 31.1%, followed by the Finance and Human Resources Departments representing 10% and 7.8% respectively indicating the specialization of staff of the institution in the institutions' value chain.

Finally, 38 (42%) of the respondents had between 3-5years working experience while 26 (28.9%) had more than 5years working experience, 14 (15.6%) of them (respondents) had between 1-3 years, and 12 (13.3%) had less than a year working experience. These results show that 87% of the respondents had at least 3 years' experience working in the MFI, hence the tendency to be familiar with the risk in the entire industry and credit risk in particular.

TABLE 1: Socioeconomic Profile of the Respondents

Variable		**Frequency**	**Percent**
Gender	Male	60	66.7
	Female	30	33.3
Age	18-25	11	12.2
	26-35	57	63.3
	36-45	21	23.3
	Above 45	1	1.1
Marital status	Single	44	48.9
	Married	46	51.10
Educational level	Diploma	11	12.2
	HND	14	15.6
	First degree	51	56.7
	Masters	14	15.6
Department	Finance	9	10.0
	Marketing	28	31.1
	human resource	7	7.8
	Credit	46	51.1
Working experience	less than a year	12	13.3
	1-3years	14	15.6
	3-5years	38	42.2
	more than 5yrs	26	28.9

Source: Author's Survey Data, 2015

Variance inflation factor was estimated for the explanatory variables to determine if there is a problem of multicollinearity (Table 2). None of the variables had a variance inflation factor greater than 10. The mean variance inflation factor is 2.20 indicating there is no multicollinearity problem. Breusch-Pagan test was employed to check the presence of heteroskedasticity in the model. The chi-square statistic (10.20) from the test is statistically significant at 1% level showing that there is heteroskedasticity present in the model. The presence of heteroskedasticity in the model results in biased estimates. Therefore, the robust estimation approach was employed in computing the standard errors to address the issue of heteroskedasticity.

Table 2: Diagnostic test

Multicolinearity Test		
Variable	VIF	1/VIF
Depart4	3.72	0.268958
Depart3	3.37	0.297008
Experience4	3.08	0.325100
Edu3	2.78	0.359329
Edu4	2.77	0.360473
Experience3	2.68	0.373677
Edu2	2.25	0.445264
Experience2	2.24	0.446065
GQ	2.17	0.461431
experience5	2.06	0.485689
LG	1.76	0.568194
IR	1.45	0.690117
LAP	1.42	0.704217
	1.38	0.725145
	1.27	0.785747
Mean VIF	2.20	
Breusch-Pagan Heteroskedasticity Test		
Chi-square (1)	10.20	
Probability	0.001***	

*, ** and *** denote 10%, 5% and 1% levels respectively.

Source: Authors' Estimation Using Field Survey Data, 2015

Table 3 below presents results on the estimates of the multivariate linear regression together with the standard errors, t-values, and probabilities. The R-square of 0.3049 indicates that about 30.49% of the variation in loan default rate which was used as a proxy for credit risk is explained by the variation in the explanatory variables as shown in the multivariate regression model. In addition, F-statistic (5.17) is statistically significant at 1% level suggesting that the explanatory variables jointly influence the loan default rate of microfinance institutions. Among the variables included in the linear regression; interest rate, loan maturity period, having HND, First degree, Masters, Marketing and credit departments had a significant influence on the loan default.

The coefficient of interest rate has a positive effect on the loan default rate and is significant at a 5% level. This suggests that increasing the interest rates of microfinance institutions tends to increase loan default rate. This means that when MFIs charged high-interest rates borrower's repayment will as well increase and all other things being equal the returns on the borrower's investment will be adversely affected therefore loan repayment becomes a challenge and this will increase default rate. This finding is consistent to that of Kohansal and Mansoori (2009) who averred that loan interest rate is the most important factor affecting repayment of agricultural loans. The finding is also in tandem with the assertion of Mwenygei (2013) that macroeconomic factors have led to the increase in NPLs in banks and other lending institutions.

The loan maturity period tends to have a negative influence on loan default and is significant at a 10% level. This indicates that when microfinance institutions offer longer loan maturity period for their clients, the level of default rate tends to reduce. Practically, this means that when loan maturity period is longer instalment amount reduces and therefore give borrowers the incentive to pay their loans easily. This eventually reduces loan default rate as compared to shorter maturity period which results in higher instalment amount. This finding is not consistent with that of Awunyo-Vitor(2013) who noted that longer repayment period is likely to reduce loan repayment default.

The coefficients of education variables- HND, first degree, masters- had negative impacts on loan default rate and are significant at 5%, 1%, and 5% respectively. The implication of this result is that the microfinance institution with personnel with higher education level- HND, first degree and masters tend to reduce loan default rate than those with diploma education. Microfinance Officials especially Credit Officers with higher education

level have the needed expertise and knowledge to properly screen loan applicants to ensure that loans are extended to the right borrowers. This helps reduce default rate as compared to members of staff with low education level.

In addition, the coefficient of the marketing department positively relates to loan default rate and is significant at 5% level. This indicates that personnel of microfinance institutions in the marketing department are less likely to contribute to reducing loan default unlike those in the finance department.

The coefficient of the credit department negatively relates to the loan default rate and is significant at 5% level. The implication of this result is that Credit Department Officers tends to significantly contribute to reducing loan default rates than those in the finance department. The credit department is directly involved in the management of the loan portfolio of microfinance institutions. The findings on the education and Credit Department variables confirmed the assertion of Derban, Binner, and Mullineaux (2005) that institutional characteristics are highly influential determinants of repayment and if the default is to be minimized, they need to be taken into consideration.

Table 3: Estimates of the Multivariate Linear Regression Model

Variable	Coefficient	Standard error	T-value	Probability
Loan appraisal process	-1.321348	1.896217	-0.70	0.488
Lending gap	-0.4485955	2.355842	-0.19	0.850
Interest Rate	1.977575**	0.9211535	2.15	0.035
Governance quality	-0.7047472	2.78808	-0.25	0.801
Loan maturity period	-6.456428*	3.601694	-1.79	0.077
EDU2 (HND)	-6.909925**	2.875154	-2.40	0.019
EDU3 (First Degree)	-6.791682***	2.259806	-3.01	0.004
EDU4 (Masters)	-6.976449**	2.991711	-2.33	0.023
Experience2 (1-3years)	1.253165	3.764329	0.33	0.740
Experience3 (3-5years)	-2.92	2.664637	-1.10	0.277
Experience4 (more than 5years)	-1.08739	3.704657	-0.29	0.770
Depart2 (Marketing)	6.922192**	2.912985	2.38	0.020
Depart3 (Human resource)	-3.390401	3.820903	-0.89	0.378
Depart4 (Credit)	-9.013731***	2.672156	-3.37	0.001
Constant	28.96414**	14.59836	1.98	0.051
R-squared	0.3049			
F-statistic	5.17			
Probability	0.004			

*, **, *** denote 10%, 5% and 1% significant levels respectively.

Source: Authors' Estimation (Field Data, 2015)

5. CONCLUSION AND RECOMMENDATIONS

The study concludes that the significant factors that drive credit risk are the interest rate, loan maturity period and educational levels of personnel in the lending cycle. The following recommendations are made for the attention and consideration of operators in the Microfinance fraternity.

1. MFIs should avoid charging high-interest rates which adversely affect clients' return on investment and consequently their repayment performance. MFIs should undertake loan pricing of all their products and facilities in order to charge affordable interest rates. Additionally, managers of the economy should ensure macroeconomic stability and fiscal consolidation in other to avoid high-interest rate regime in the financial service industry.
2. MFIs should concentrate on extended credit to borrowers with shorter repayment periods. This will not only reduce the incidence of high defaults but also boost liquidity which is the lifeblood of the solvency of MFIs.

3. Credit Officers should be highly educated, and management of MFIs should put in place continuous development programs to upgrade the skills of all personnel in the credit delivery system including marketing officers in relation to best practices in lending.

REFERENCES

1. Ahmed, S.F and Malik, Q.A. (2015).Credit management and Loan performance; Empirical investigation on microfinance Banks of Pakistan.*International Journal of Economics and Financial Issues*, 5(2), 574-579.
2. Awunyo-Vitor, D (2013). Determinants of Loan Repayment Default among Farmers in Ghana. African Journal of Economics, Vol. 1(3), Pp. 071-076.
3. Derban, W.K., Binner, J.M., and Mullineux, A. (2005).Loan repayment performance in community development finance institutions in the UK.*Small Business Economics*, *25*, 319-332.
4. Kiplimo, K.S, and Kalio, A.M (2014). Influence of Credit Risk Management Practices on Loan Performance of Microfinance Institutions in Baringo County. *International Journal of Science and Research (IJSR), Volume 3 Issue 10, Pp. 2260-2267.*
5. Klein, N. (2013). *Non-Performing Loans in CESEE; Determinants and Impact on Macroeconomic Performance*.IMF Working Papers 13/72.
6. Kohansal M. R., Mansoori, H. (2009). Factors affecting loan repayment performance of farmers in Kharasan- Razavi province of Iran. A paper presented in a conference on *International Research on Food Security. Natural Resource Management and Rural Development*, University of Hamburg, October 6-8, 2009.
7. Maini, J.N., Kinyaririo, D.K and Muturi, H.M (2016). Influence of Credit Risk Management Practices on Loan Delinquency in Savings and Credit Cooperative Societies in Meru County, Kenya. *International Journal of Economics, Commerce, and Management, Vol. IV, Issue 2, Pp. 763-773.*
8. Moti, H.O., Masinde, J.S., Galo, M.N and Sindani, M.N. (2012). "Effectiveness of Credit Management System on Loan Performance: Empirical Evidence from Micro Finance Sector in Kenya" *International Journal of Business, Humanities, and Technology*, 2(6).
9. Mutambanadzo, T., Bhiri, T., and Makunike, S. (2013).An analysis challenges faced by Zimbabwean microfinance institutions in providing financial services to the poor and informal sector in the dollarized regime.*Global Journal of Commerce and Management Perspectives*, Vol. 2(3), 154-159.
10. Mwengei, K.B.O. (2013). Assessing the factors contributing to non-performing loans in Kenyan banks. *European Journal of Business Management, 5*(32), 155-163.
11. Statistics Solutions.(2005). *Assumptions and considerations for regression*. Retrieved December 22, 2005 from www.statisticsolutions.com/Multiple_Regression.htm