Ssekiziyivu, Bob; Mwesigwa, Rogers; Joseph, Mayengo; Nabeta, Isaac Nkote

Article

Credit allocation, risk management and loan portfolio performance of MFIs—A case of Ugandan firms

Cogent Business & Management

Provided in Cooperation with:
Taylor & Francis Group

Suggested Citation: Ssekiziyivu, Bob; Mwesigwa, Rogers; Joseph, Mayengo; Nabeta, Isaac Nkote (2017) : Credit allocation, risk management and loan portfolio performance of MFIs—A case of Ugandan firms, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 4,
https://doi.org/10.1080/23311975.2017.1374921

This Version is available at:
https://hdl.handle.net/10419/206007

Ssekiziyivu et al., *Cogent Business & Management* (2017), 4: 1374921
https://doi.org/10.1080/23311975.2017.1374921

cogent business & management

BANKING & FINANCE | RESEARCH ARTICLE

Credit allocation, risk management and loan portfolio performance of MFIs—A case of Ugandan firms

Bob Ssekiziyivu[1]*, Rogers Mwesigwa[1], Mayengo Joseph[1] and Isaac Nkote Nabeta[2]

Received: 28 June 2017
Accepted: 29 August 2017
First Published: 04 September 2017

*Corresponding author: Bob Ssekiziyivu, Department of Business Administration, Makerere University Business School, Kampala, Uganda
E-mail: bssekiziyivu@mubs.ac.ug

Reviewing editor:
Oluwafemi Oyemomi, Northumbria University, UK

Additional information is available at the end of the article

Abstract: *Purpose*: The purpose of this study was to establish examine the relationship between credit allocation, risk management and loan portfolio performance of MFIs in Uganda. *Design/methodology/approach*: A cross-sectional research design was adopted which involved descriptive, correlation and regression approaches. Data were analysed through SPSS. Simple random sampling was used to select a sample of 40 MFIs from the population of 45 in Kampala and Wakiso districts. *Findings*: Results indicated that credit allocation and risk management had a significant relationship with loan portfolio performance. Results from the regression analysis showed that credit allocation and risk management significantly predicted 23.9% of loan portfolio performance. *Practical implications*: It was recommended that managers of the MFIs should conduct pre-disbursement trainings through workshops and seminars for all successful loan applicants which would enable them on how to utilize the loan facilities acquired which will eventually reduce on

Bob Ssekiziyivu

ABOUT THE AUTHORS

Bob Ssekiziyivu holds master and bachelor's degrees in Business Administration from Makerere University and a postgraduate Diploma in Business Education from Makerere University Business School. He is currently studying CPA from Institute of Certified Public Accountants of Uganda (ICPAU). His research area is microfinance management.

Rogers Mwesigwa is a PhD student at Makerere University. He holds an MBA and Bachelor of Human resource Management at Makerere University. He also holds a CPA certificate from Institute of Certified Public Accountants of Uganda (ICPAU). His research interests are in areas project management and sustainability and microfinance.

Mayengo Joseph holds master and bachelor's degrees in Business Administration from Makerere University. His research interest is in strategic management and financial management.

Isaac Nkote Nabeta holds a PhD in finance and he is currently the dean, Faculty of Commerce at Makerere University Business School. His research area is Finance management.

PUBLIC INTEREST STATEMENT

Access to credit can play a pivotal role in economic growth. Banks and lending institutions provide the services that allow people to save and invest available assets and resources, which further supports and strengthens economic activity. Within economically poor communities, MFIs provide the credit access and financial services needed to develop income-earning businesses. However, in Uganda, the continued deterioration of loan portfolio performance among MFIs prompted the government to take several measures to improve on their performance but none of the measures have yielded positive results. Thus, this paper helps government, clients and MFIs to well understand issues of credit allocation, risk management and loan portfolio performance. Pre-disbursement training is recommended for all successful loan applicants for efficient loan allocation and management. This can be done through sensitization workshops for borrowers so to increase their financial literacy and utilization of the acquired loan facilities and this will eventually reduce on the default rates to improve the portfolio management in Ugandan MFIs.

the default rates. *Originality/value*: This is one of the few studies that focus on credit allocation, risk management and loan portfolio performance of MFIs within the context of Uganda.

Subjects: Economics; Finance; Business, Management and Accounting

Keywords: MFI; credit allocation; risk management and loan portfolio performance

1. Background

Loan portfolio performance continues to attract attention of scholars and policy-makers due to the long reputable need for credible Microfinance institutions (MFIs). Some empirical evidence has shown that in most developing economies, MFIs have brought millions of citizens into cohesive financial institutions which are succeeding very well in providing financial services to its members for improving their standard of living (Collier, Katchova, & Skees, 2011; Kumar & Golait, 2009; Moti et al., 2012). In continuing with this service, Biekpe and Kiweu (2009) point out that loan portfolio performance of MFIs is critical. With issues of over-indebtedness emerging among microfinance customers. Microfinance institutions aim at maximizing the return to a portfolio while keeping the risk within acceptable bound (Van der Maas, 2006). This maximization requires a balancing of high repayment rates, low arrear rates, low default rates as well as low portfolio at risk. Unfortunately for Ugandan case, MFIs suffer from poor credit allocation strategies and weak risk management practices according to Association of Microfinance Institutions Uganda (AMFIU), report (2014). Loan portfolios are the major asset of MFIs and various studies have been undertaken as regards to, for example, loan portfolio performance (González-Vega, 2003; Kropp & Katchova, 2011; Qinlan & Izumida, 2013).

On the other side, credit allocation has a responsibility of ensuring the distribution of loans to different portfolios. According to Mathur and Marcelin (2014), credit allocation is a process of how a bank divides its financial resources and other sources of credit to different processes, borrowers and projects. Overall, it is management's goal to optimize credit allocation so that it generates as much wealth as possible for its shareholders. In a market with perfect information, there exists an equilibrium point where both demand and supply for loans are satisfied (Ciaian, Fałkowski, & Kancs, 2012). Furthermore, risk management enhances recovery rates of MFIs. Risk management is a cornerstone of prudent banking practice; undoubtedly all banks in the present-day volatile environment are facing a large number of risks such as credit risk, liquidity risk, foreign exchange risk, market risk and interest rate risk, among others risks which may threaten a bank's survival and success (Beresford-Smith & Thompson, 2007).

The continued deterioration of loan portfolio performance among MFIs in Uganda prompted the government to take several measures to improve on their performance but none of the measures have yielded positive results (Eriku, 2010). According to AMFIU (2014), MFIs in Uganda are customer-focused financial institutions offering relevant, accessible and affordable banking products and services in a refreshing manner with 514,214 borrowers and total loans of 612.5 million US dollars. However, MFIs loan loss grew from USh.114.6 billion to USh.243.1 billion between June 2013 and June 2014. The sector's Non performing loans (NPLs) grew by USh.48.2 billion to reach USh.116 billion at the end of June 2014, thereby accounting for 22.8% of the total NPLs in MFIs (https://www.mixmarket.org). The above concerns suggest an important need for more empirical studies on the relationship between credit allocation, risk management and loan portfolio performance. It is therefore upon this background that prompted the researchers to examine the relationship between credit allocation and risk management on loan portfolio performance of MFIs in Kampala city and Wakiso district.

Although some MFIs in Uganda have strived to improve on their performance, most of them have been unsuccessful in achieving loan portfolio performance. The success of MFIs largely depends on the effectiveness of their credit management systems because these institutions generate most of their income from interest earned on loans extended to small and medium entrepreneurs. However, a number of them have reported poor loan portfolio performance. MFIs are faced with low repayment rates, high non-performing loans (NPLs), high arrears rates and high portfolio at risk. MFIs' non-performing loans grew by USh.48.2 billion to reach USh.116 billion at the end of June 2014, thereby accounting for 22.8% of the total NPLs in the industry. Thus, in a view of the persistent unsatisfactory performance, credit allocation and risk management practices are questionable.

2. Literature review

2.1. Portfolio performance of MFIs

Microfinance is defined as the provision of financial services to low-income clients, including consumers and the self-employed, who traditionally lack access to banking and related services (González-Vega, 2008). Microfinance is a place for the poor and near poor clients to get access to a high quality financial service, which include not just credit but also savings, insurance and fund transfer. According to Ledger wood, Microfinance is a provision of a broad range of financial services such as savings, credit, insurance and payment services to the poor or low-income group who are excluded from the normal banking sectors.

A series of theoretical literature on microfinance has proposed numerous models to explain how the joint liability approach works before and after the loans' disbursement (Brehanu & Fufa, 2008; Armendariz & Morduch, 2005). Before the disbursement of loans, most lenders face the problem of adverse selection. It is expected that MFIs must have sufficient information about incomes, repayment capacities and creditworthiness of borrowers, and that they will use this information to make decisions. However, after the loan disbursements, the MFIs may be confronted with a moral hazard and enforcement problems. Further, available literature shows that threatening not to refinance defaulters or offering larger loans to borrowers who repay their debts, creates an incentive for peer monitoring, peer pressure and intra-group help among the borrowers (Armendariz & Morduch, 2005; Ogawa, Parker, Singh, & Thacker, 2009).

Microfinance Institutions in Uganda have tried to exploit the benefits of diversification. However, there has been no method for actually measuring the amount of diversification in a debt portfolio. Thus it should not come as a surprise that there have been many unexpected default events in MFIs portfolios in the last ten years (Bank Finland Plc's Annual Report & Corporate Governance Report's, 2013). Portfolio analysis has been applied successfully in a variety of areas of finance, notably to equity portfolios. The analysis shows the amount of risk reduction achievable through diversification. Bernile, Cumming, and Lyandres (2007) hypothesize that MFIs have increased focus on the effects of increased bank management practices on portfolio size and subsequent effects on portfolio success rates (González-Vega, 2008; Obamuyi, 2009). Lending to lower income group raises many debates among practitioners and academicians. The poor are usually excluded from credit facilities because of many reasons which include insufficient collateral to support their loans, high transaction costs, unstable income, lower literacy and high monitoring costs.

2.2. Credit allocation

The role of the financial system is to allocate the bank's savings to its highest value uses (Wurgler, 2000), including new firms (Kimutai & Ambrose, 2013). Consequently, how well firms in the financial sector, especially banks and MFIs, are governed affects not just those firms, but the efficiency of capital allocation across the entire economy. Credit allocation happens when lenders, in spite of having sufficient funds, do not offer loans to all applicants who are able to pay the prevailing interest rates or the non-price element of a loan contract such as collateral requirement (Ke, Wang, & Chan, 2011).

Average loan sizes are typically small and the institutional environment is underdeveloped, making adequate screening and thorough enforcement efforts immensely costly per unit of credit. One particular problematic characteristic of credit markets in developing countries is that they usually lack private or public mechanisms which assist lenders in sharing information about current borrowers and new loan applicants.

2.3. Risk management

In the management of credit risk we thus have to deal with "true uncertainty" in the sense of Frank Knight (Voropaev, 2009) who was the first to distinguish between "risk" based on known probability measures and true uncertainty where the underlying statistical distributions are unknown. Knight's ideas have been further developed by several authors over the years and in particular by Ben-Haim (2001) who has developed a quantitative formulation known as information-gap decision theory. Ben-Haim (2005), has recently applied this theory to the management of financial market risk.

Beresford-Smith and Thompson (2007) provides that the management of credit risk is now commonplace in most financial institutions where safeguards are needed to lower potential losses from defaults on loans and therefore quantitative methods for managing these and other risks are now required in most countries.

Further, Al-Tamimi and Al-Mazrooei (2007) stipulates that all banks in the present-day volatile environment are facing a large number of risks such as credit risk, liquidity risk, foreign exchange risk, market risk and interest rate risk, among others and such risks may threaten a bank's survival and success. In other words, banking is a business of risk and for this reason, efficient risk management is absolutely required.

According to the consultative paper issued by the Basel committee on banking supervision (see Hassan and Sanchez (2009)); most banks' loans are the largest and most obvious sources of credit risk. Banks are increasingly facing credit risk in various financial instruments other than loans, including acceptances, interbank transactions, trade financing, foreign exchange transactions, financial futures, swaps, bonds, equities, options, the extension of commitments and guarantees and the settlement of transactions (Rosenberg, Gonzalez, & Narain, 2009).

2.4. Credit allocation and loan portfolio performance

Bank Finland Plc's Annual Report and Corporate Governance Report's (2009) stipulates that credit allocation is an important determinant of loan portfolio performance. Recent theories predict considerable impacts of credit allocation on loan portfolio performance and in this regard, most MFIs in developing countries face this problem of temporal credit allocation which can be prevailed over through effective systems in managing this process. When credit allocation is efficiently managed, MFIs will have a better performance (Oboh & Ekpebu, 2011).

There are several characteristics common to these studies. First, almost all of the studies investigated the effects of banks' capital adequacy ratio and ratio of non-performing loans to total loans on credit allocation (Bank Finland Plc's Annual Report & Corporate Governance Report, 2013). Many of the studies obtained significantly positive effects with respect to the capital adequacy ratio and significantly negative effects with the non-performing loans ratio in relation to bank loans. In other words, the credit crunch hypothesis is supported by these studies (Qinlan and Izumida, 2013). It is true that, in these studies, the factors affecting demand for bank loans were partially controlled for; however, they only estimate the supply schedule of bank loans. One exception is Ohkusa's study (2002), in which the level and growth rate of firms' profits are shown to be important factors that influence the lending attitude of financial institutions. Given that it is not an easy task to thoroughly identify demand and supply with respect to bank loans, it would be preferable to include not only factors affecting bank loan supply but also those affecting demand for bank loans.

Secondly, most of these studies examine total bank loans, with the exception of Ogawa (2003). They divide loans into several components and pay special attention to the relationships between banks' balance sheet conditions and bank loans to small firms. Ogawa's study (2003) revealed evidence suggesting that the effect of the non-performing loans ratio is particularly strong for loans to small firms. Moreover, Ogawa also examined the effect of the non-performing loans ratio on bank loans by industry and reported its effect on loan portfolio performance.

More formal empirical works estimate the supply equation of bank loans. The balance sheet variables commonly used in these studies are the ratio of non-performing loans to total loans, banks' capital adequacy ratio and firms' debt-asset ratio. Guido (2008) found that banks with a higher non-performing loans ratio tend to increase loans to the construction industry while Giné & Karlan, 2010) also found that non-performing loans to the real estate industry exert a significantly positive effect on loans granted to this industry. Tsuru (2001) found that the capital adequacy ratio had significantly negative effects on loans made to the real estate industry. Heilig, Young, and Williams (2012) argued that banks with a lower capital adequacy ratio tend to increase real estate loans. The studies by Hibara (2002), Kobayashi , Saita, and Sekine (2002), and Peek and Rosengren (2005), are unique in that they used matched samples of individual firms and bank lenders' transactions. By examining the relationship between the non-performing loans ratio and the debt-asset ratio, Hibara (2002), found that banks with higher non-performing loans ratios tended to use less restraint in making loans to firms with high debt-asset ratios.

Kobayashi et al. (2002) showed that beyond a certain point of debt-asset ratio, a rise in the debt-asset ratio corresponded with an increase in lending to firms in the construction and real estate industries. Peek and Rosengren (2005) offer the most comprehensive micro study. They demonstrated that Japanese banks increased loans to less profitable firms in the 1990s. Moreover, they found that this was especially so for banks with balance sheet deterioration and loans to affiliated firms. Since listed firms' information constitutes the micro data, the evidence supporting the ever greening argument is confined to large firms, with no information concerning small or medium-sized firms included.

It is worth noting that small or medium-sized firms are more dependent on bank loans, so investigation into how credit allocation is influenced by the balance sheet conditions of firms, as well as that of banks, is important. The benefit of examining micro data from firms and banks in the context of this study is that it enables us to make clear estimates of the effects of balance sheet conditions of firms and banks on credit allocation. However, we fail to obtain macro or industry level implications for credit allocations from micro level evidence. It is true that credit is constrained for some firms with heavy debts and is expanded for some firms with excessive debts, but micro level evidence is silent as to the aggregated consequences of credit allocations on the industry level. In the subsequent sections, we investigate how credit is allocated for small and medium-sized firms as well as large firms.

2.5. Risk management and loan portfolio performance

As a lending institution, MFI is a risky business because it offers credit to the poor people without any collateral and the repayment of loans cannot be fully guaranteed. However, the repayment rate is the most important performance indicators of MFIs. Yang and Mwase (2012), finds that the failure of a large number of MFIs in many developing countries was due, among other things, to their inability to ensure good repayment rates among their borrowers. Venkiteshwaran (2014), also emphasizes that a high profit earned by MFIs cannot be used as the only indicator of self-sustainability of the institutions, since a high profit could be attained only in the short period. Attaining a high loan collection rate is a necessary condition for MFI to become self-sustainable in the long-run. Loan losses often have been the largest cost borne by the institutions and the principal cause of insolvency and illiquidity.

Measuring the effect of risk management on loan portfolio performance is instrumental to understanding the channels through which internal practices affect the lending process. Rehman, suggests that optimal application and commitment towards risk management result in an increased company's perfomance, the financially well managed MFIs are operationally efficient.

Risk management practices promote more strategic consideration of risk and its effective implementation can create a long-term competitive advantage (Nocco & Stulz, 2006). Luhmann (2005) argues that risk unlike danger and uncertainty, implies a domain for decision-making about the future. Therefore, risk management as a component of financial management practice creates an expectation of decidability and management of uncertainty and opportunity (Power, 2007). Indeed, certain risk management practices provide strategies that can influence a large number of customers to have a lasting preference for an MFI's products. Thompson, Strickland, and Gamble (2009) are of the view that the adoption of risk management techniques may provide an organization with a sustainable competitive advantage over its rivals.

2.6. Credit allocation and risk management

Merton-type models, also referred to as structural models, such as Portfolio Manager (Becker & Milbourn, 2011) and Credit Metrics, have become a standard choice for financial institutions' credit risk economic capital frameworks. In these models, default correlations between different borrowers are modelled using a set of common systematic risk factors associated with the state of economy. Computationally heavy Monte Carlo simulations are usually used for calculations of portfolio-wide risk measures as well as credit allocation to sub-portfolios and/or individual exposures. However, simulation-based risk allocation on exposure level suffers from Monte Carlo noise and is especially demanding in terms of computer power/time.

Unfortunately, most of the research on credit allocation techniques focuses on "advanced" risk measures like value at risk (VaR) and expected shortfall (ES), leaving variance–covariance-based allocation approach aside. Despite the shortcomings of this approach, this (old-fashioned) allocation method still remains the allocation method of choice for many financial institutions. Yet, no efficient analytical solution has been reported so far. A brute force approach consists of calculations of all pairwise correlations in the portfolio and the amount of such calculations is quadratic in the number of loans in the portfolio. This quadratic complexity of the calculations makes such an approach impractical for big portfolios. In this article, a variance–covariance-based analytical credit allocation technique is proposed. The proposed approach is applicable to fully featured Gaussian multi-factor Merton-type models, is suitable for virtually any portfolio size and composition and is remarkably accurate and fast. The main advantage of the proposed technique is that the underlying algorithm is of linear complexity in portfolio size (Al-shibly, 2013).

2.7. Research methodology

The study was carried out using a cross-sectional research design where a population of 45 registered MFIs in Kampala city and Wakiso district (AMFIU 2014) and a sample of 42 was chosen according to Krejcie and Morgan (1970). The unit of analysis was the microfinance institutions and the unit of enquiry was the MFI officers who are General Managers (GM), Branch Managers, risk managers and supervisors. A list of officers was obtained from the Human resource officers where random numbers were assigned to each officer. In order to fulfil the objectives of the study, the researchers selected a sample of respondents who were considered sufficiently experienced on the study variables especially from the point of view of their work experience. The appropriate respondents were purposively selected, based on their knowledge of the information required, accessibility, experience and willingness to participate in the study. Though four officers per MFI were targeted, the number of respondents from the firms ranged between three and four officers. To address variations in firm responses, a minimum of three officers were considered for analysis. The decision to accept a minimum of three senior staff per firm is based on Baer and Frese (2003).

Table 1. Validity and reliability results

Variable	Content validity index	Cronbach's alpha	Number of items
Credit allocation	0.813	0.701	14
Risk management	0.802	0.748	19
Loan portfolio performance	0.941	0.721	18

Source: Primary data.

2.8. Data source, data collection instrument, validity and reliability

Primary data were obtained from officers of registered operating MFIs by use of the questionnaire. The respondents were requested to indicate the extent of their agreement with a series of questions on a five-point Likert scale. The instrument was pre-tested through a pilot study to get rid of any possible errors to ensure its validity and reliability. Research assistants were hired, but guided to ease the data collection process. Validity of the questionnaire was established using Content validity Index (CVI) to determine the relevance of the questions in measuring the variables (Campbell & Stanley, 1966). In order to test and improve the validity of the questionnaire, the researchers availed the first draft of the instruments to experienced researchers for constructive criticism and then later to the supervisors. These were requested to look at the items and check on language clarity, relevancy, comprehensiveness of content and the length of the instruments. Thereafter, the researchers made the necessary adjustments in respect to the comments. The researchers went ahead to calculate a Content Validity Index (CVI). The questionnaire was given to experts who rated the questions by providing their comments and the researcher used their judgements to change some of the items in the questionnaire.

In order to establish the reliability of the instrument, the researchers conducted a pilot study. Using the results of the pilot study, the reliability of the instruments was computed using the Cronbach's Alpha Coefficient.

Results in Table 1 indicate that the research instrument contained items relevant to the study. This is because the content validity index for all the variables was above the acceptable threshold of 0.7 according to George and Mallery (2003) and Gliem and Gliem (2003). The Cronbach's alpha coefficients of all the variables of over 0.7 implied that the instrument could be relied on to produce consistent results as commended by George and Mallery (2003).

3. Findings

3.1. Demography

Results from the analysis indicate that out of the 139 respondents, 57.6% of the respondents were males and 42.4% were females. Of the 139, 55.4% were aged between 25 and 35 years, followed by those aged between 36 and 45 years accounting for 33.1%, those below the age of 25 years accounted for 10.1% and lastly were those aged between 46 and 55 years accounting for 1.4%. A question was asked to find out the level of education of the respondents, and 54% were found to have attained a bachelor's degree, 35% a master's degree, and 11% were found to have attained certificate/Diploma. In terms of positions held by the respondents, the position of branch manager accounted for 27.3%, supervisors 26.6%, general manager 24.5% and risk manager 21.6%. Experience wise 47.5% of the respondents had spent less than 5 years in the organization, 45.3% have spent between 6 and 10 years, 5.8% have spent 11 and 15 years and 1.4% had spent 16 and 20 years. In terms of firm financing, 45% were found to use equity and loans as a form of finance, 25% use equity capital, 17.5% use donations, and 12.5% use loans only as a form of financing. Further in terms of number of years of operation, 41% were found to have existed between 6 and 10 years, 29.5% between 11 and 15 years, 19.4 % of the MFIs had been in existence for more than 16 years and 10.1% had existed for less than 5 years. In terms of capital size in shillings, 40.3% of the MFIs had capital of 1.5 Billion shillings and above, 22.3% had between 1 and 1.5 Billion shillings,

Table 2. Correlation results

	1	2	3
Credit allocation (1)	1.00		
Risk management (2)	0.426**	1.00	
Loan portfolio performance(3)	0.395**	0.446**	1.00

**Correlation is significant at the 0.01 level (2-tailed).

25.9% between 500 Million to 1 Billion shillings and 11.5 were found to have less than 500 Million shillings. Lastly, as far as branches were concerned, majority of the MFIs accounting for 50.4% had less than 5 branches, 20.9 % ranged between 6 and 10 branches, 13.7 % between 11 and 15 branches, 7.2 % between 16 and 20 branches and 7.9 % of the MFIs had more than 20 branches.

3.2. Correlation analysis

Pearson product moment correlation method was used to generate the measure of the magnitude and direction of the relationship between the study variables. The results that were obtained are presented in Table 2.

Results in Table 2 showed a positive significant relationship between credit allocation and risk Management ($r = 0.426$, $p < 0.01$). This implied that higher levels of credit Allocation through collateral requirement, amount applied for, and amount approved are associated with risk Management in regard to assessment, control, prioritization, and design procedures. Results further showed a positive significant relationship between credit allocation and loan portfolio performance ($r = 0.395$, $p < 0.01$). This implied that higher levels of credit allocation through collateral requirement, amount applied for, and amount approved are associated with loan portfolio performance in regard to arrear rates, portfolio at risk, and repayment Rates. Also, there was a positive significant relationship between risk management and loan Portfolio ($r = 0.446$, $p < 0.01$). This implied that higher levels of risk management through assessment, control, prioritization, and design procedures are associated with loan portfolio in regard to arrear rates, portfolio at risk and repayment Rates.

3.3. Regression analysis

In order to establish the extent to which the variance in loan portfolio performance of MFIs is explained by credit allocation and risk management, regression analysis was carried out. Regression analysis also helped to establish the significance of each of the independent variables on the variance in the loan portfolio performance of MFIs. The results that were obtained are presented in Table 3 below.

The results in Table 3 above reveal that credit allocation and risk management had significant effect on loan portfolio performance, thus ($\beta = 0.240$, $p < 0.01$) and ($\beta = 0.326$, $p < 0.01$), respectively,

Table 3. Regression results

Model	Unstandardized coefficients		Standardized coefficients	*t*	Sig.
	B	Std. error	*β*		
(Constant)	−1.006E-013	0.029		0.000	1.000
Credit allocation	0.240	0.079	0.251	3.055	0.003
Risk management	0.326	0.079	0.339	4.134	0.000
a. Loan portfolio					
$R = 0.500$	*F* statistic = 22.698				
$R^2 = 0.250$	Sig. = 0.000				
Adjusted $R^2 = 0.239$					

implying that credit allocation and risk management enhance loan portfolio performance. From the results risk management was more significant in determining loan portfolio performance compared to credit allocation. Further still, the model was found to be well specified and the model's predictive power is 23.9%, an implication that credit allocation and risk management impact on loan portfolio performance by 23.9%. Risk management is most influential at explaining loan portfolio performance ($\beta = 0.326$, $p < 0.01$) followed by credit allocation ($\beta = 0.240$, $p < 0.01$). The regression model was statistically significant ($p < 0.01$).

4. Discussion

There was a positive significant relationship between Credit Allocation and Risk Management in MFIs. This meant that credit allocation enhanced risk management in these firms. Therefore, the study indicate that collateral requirement, amount applied for and amount approved is a function of how borrowers are assessed, controlled and how prioritization and designing procedures are conducted. The findings of the study are consistent with a number of studies. The argument is that the amount of loan given depends on borrowers' credit records that he/she exerts in assessing current business processes for potential threats periodically (Bank Finland Plc's Annual Report & Corporate Governance Report, 2013). This positive relationship suggests that MFIs use risk-based pricing in its loan portfolio thus MFIs will always use adequate loan assessment before approving loans to different clients. It also suggests that the credit allocation is intense to signal its commitment to risk management enhancement roles. This is also in agreement with Becker and Milbourn (2011), who highlights that MFIs which give borrowers the entire amount applied for are most likely to be exposed to high risks and this in most cases, hinder their portfolio performance.

However, there have been some studies with contrary results, for example, Kalkbrener et al., observed a negative signal or impact on the relationship between credit allocation and risk management which gave insignificant results and concluded that there was no relationship between the two. Similarly, this is in agreement with Al-shibly (2013), who found no support to the view that credit apportionment is associated with high risk borrowers.

The findings indicate a positive significant relationship between Credit Allocation and Loan Portfolio performance. This meant that credit allocation enhanced loan portfolio performance of MFIs. In other words, when MFIs consider collateral requirement, amount applied for and approved, the loan portfolio quality significantly improves. Further, if the arrear rates reduce, portfolio at risk reduces and repayment rates increase, MFIs register superior performance. Thus, emphasis should be put on the collateral requirements; loan amount applied for as well as loan amount approved to enable these MFIs report good loan portfolio performance. This is in agreement with the study by Qinlan and Izumida (2013), who stipulates that the better the credit allocation policies of the firm, the better will be its loan portfolio performance. This is also in line with Rabo, Kushwaha, and Abubakar (2001) who concluded that MFIs' loan allocation to the borrower's increases with increasing loan size. This confirmed the findings of Emereole (2004), who stipulated that increase in loan size to farmers necessarily requires the employment of more farm inputs which in turn require additional capital for their purchase. Bank visits also had a positive sign implying that beneficiaries visited by bank officials tend to allocate more funds to the farm sector. The coefficient for length of loan delay showed inverse relationship with rate of credit allocation to the farm implying that less of delayed loan is used for farm work.

However, the findings of this study contradicted with those of Adolfo (2008), who found a weak relationship between credit allocation and loan portfolio quality. Further, Oboh and Ekpebu (2011) highlights that inadequate loan facilities are common problems among publicly owned agricultural credit institutions in Nigeria. The inadequate amount of loan granted to applicants might limit their capacity to finance their farm investment plans thereby affecting farm output and productivity negatively.

Risk Management and Loan Portfolio performance are significantly and positively associated. This means that risk management enhances loan portfolio performance of MFIs. Therefore if risk assessment, control and prioritization and designing procedures are carried out, MFIs will have high repayment rates, low arrear rates and its portfolio at risk significantly improves. MFIs will be able to use risk-based pricing in its loan portfolio, ability to mitigate risks and also increase the focus on the relationship between them and their customers. Therefore MFIs' borrowers will be in position to access credit after following acceptable policies and procedures and this will eventually help the MFIs to have healthy repayment rates. MFIs must apply risk management practices in order to improve on their loan portfolio performance. This can create a cost advantage by enabling firm's source the factors of production more efficiently and managing the associated loan risk caused by market volatility. It can also enable differentiation, by providing the ability to deliver an enhanced customer experience through a more stable pricing environment, or an ability to offer more advantageous business terms. This is in agreement with Thompson et al. (2009), who established that the adoption of risk management techniques may provide an organization with a sustainable performance over its competitors. Their study confirmed that indeed, certain risk management practices provide strategies that influence a large number of borrowers to have an enduring preference for MFI's loans. This is also in line with MacDonald and Timith (2006), who stipulated that adapting to a changing banking environment, analysing bank performance and establishing profitability and risks management help banks to manage the cost of funds, bank capital and liquidity hence managing credit given to customers and managing the investment portfolio.

However, Peek and Rosengren (2005) finds a negative relationship between risk management and loan portfolio, in his study; Banks that give credit to customers with less risk are more prone to non-repayment behaviours compared to high risk customers, therefore having stringent policies affect loan performances. This was also in agreement with Bailey et al.'s, findings who observed that firms that are risk hostile may have been created due to financial distress and hence there is little informational value in additional bank loan portfolios. Furthermore, the result indicates that MFIs that are always informed about the risky areas have a strong incentive to improve loan performance and rid themselves of the loan defaulters since the firm will be able to assess the prior to loan approvals.

5. Conclusion

Basing on the results of current study, it can be concluded that; given the importance of risk management as the most significant determinant of loan portfolio performance of MFIs in Kampala city and Wakiso district, it is imperative for all the policy-makers of the MFIs in this region to give it priority and the weight it deserves. The managers need to pay particular attention to assessment, control and designing relevant procedures required in advancing loan facilities to borrowers. Similarly, the study also revealed that credit allocation is of paramount importance in achieving loan portfolio performance of MFIs and this can be realized through analysing collateral requirements, amount applied for as well as amount approved. Furthermore, when unique credit allocation strategies are implemented and sound risk management techniques adopted, MFIs will be able to report superior performance in terms of high repayments rates, low portfolio at risk as well as low defaults rates.

6. Recommendations

Given the objectives of the research study, the findings, discussion and conclusions, the following recommendations have been made by the researchers:-

Effective mechanisms such as loan assessments, controls, loan approvals, credit ratings and borrower evaluation mechanism related arrangements should be carried by MFIs in order to safeguard themselves against various forms of risks faced by the financial sector. In this regard, efforts are needed to improve the power balance in complex credit allocations with effective risk management practices and improve the role of the loan officers and supervisors, such as strengthening the independence of the loan department, advocating the borrowing function of strategic management to prevent defaults and regular visits.

In addition, pre-disbursement training is recommended for all successful loan applicants for efficient loan allocation and management. This can be done through sensitization workshops for borrowers so to increase their financial literacy and utilization of the acquired loan facilities and this will eventually reduce on the default rates.

MFIs should maintain a moderate risk profile and employ risk monitoring of such high quality that no single event will significantly impair the MFI's financial position.

MFIs should carry out routine monitoring of clients in order to know their financial behaviour and utilization capabilities. This can be done before, during and after extending loans to these borrowers. This will minimize instances of defaulting, write offs/cancellations, penalties which hinders performance.

7. Limitations of the study

The study used a self-administered questionnaire with close ended questions and this is likely to limit the amount of data to be collected. The study used cross-sectional research design which generalizes the data of the sample to a bigger population and this had an implication on the findings and conclusion of the study

The data collection process were costly, whereby the researchers had to move to various MFIs in different locations and this required some finances and time.

Some respondents were unwilling to answer the different questions thinking that the information would be used to disclose what actually is happening in different MFIs.

Funding
The authors received no direct funding for this research.

Author details
Bob Ssekiziyivu[1]
E-mail: bssekiziyivu@mubs.ac.ug
ORCID ID: http://orcid.org/0000-0001-9739-0049
Rogers Mwesigwa[1]
E-mail: rmwesigwa@mubs.ac.ug
Mayengo Joseph[1]
E-mail: jmayengo@mubs.ac.ug
Isaac Nkote Nabeta[2]
E-mail: inkote@mubs.ac.ug
[1] Department of Business Administration, Makerere University Business School, Kampala, Uganda.
[2] Department of Finance, Makerere University Business School, Kampala, Uganda.

Citation information
Cite this article as: Credit allocation, risk management and loan portfolio performance of MFIs—A case of Ugandan firms, Bob Ssekiziyivu, Rogers Mwesigwa, Mayengo Joseph & Isaac Nkote Nabeta, *Cogent Business & Management* (2017), 4: 1374921.

References

Adolfo, F. (2008). Competition and circulation of economic elites: Theory and application to the case of Peru. *The Quarterly Review of Economics and Finance, 48*, 263–273.
Al-shibly, H. H. (2013). The impact of risk management on construction projects success from the employees perspective, 12–43.
Al-Tamimi, H., & Al-Mazrooei, M. (2007). Banks' risk management: A comparison study of UAE national and foreign banks. *The Journal of Risk Finance, 8*(4), 394–409. https://doi.org/10.1108/15265940710777333
Armendariz, B., & Morduch, J. (2005). *The economics of microfinance*. Banerjee: MIT Press.
Baer, M., & Frese, M. (2003). Innovation is not enough: Climates for initiative and psychological safety, process innovations, and firm performance. *Journal of Organizational Behavior, 24*, 45–68.
Bank Finland Plc's Annual Report and Corporate Governance Report. (2009). Retrieved from https://globenewswire.com/news-release/2011/02/28/203196/0/en/Nordea-Bank-Finland-Plc-s-Annual-report-2010.html
Bank Finland Plc's Annual Report and Corporate Governance Report. (2013). Retrieved from https://www.nordea.com/Images/35101529/Appendix%20(9)%20%20Annual%20report%20NBF%202013.pdf
Becker, B., & Milbourn, T. (2011). How did increased competition affect credit ratings? *Journal of Financial Economics, 101*, 493–514. https://doi.org/10.1016/j.jfineco.2011.03.012
Ben-Haim, Y. (2001). *Information gap decision theory: Decisions under severe uncertainty*. London: Academic Press.
Ben-Haim, Y. (2005). Value-at-risk with info-gap uncertainty. *The Journal of Risk Finance, 6*(5), 388–403. https://doi.org/10.1108/15265940510633460
Bernile, G., Cumming, D., & Lyandres, E. (2007). The size of venture capital and private equity fund portfolios. *Journal of Corporate Finance, 13*, 564–590. https://doi.org/10.1016/j.jcorpfin.2007.04.004
Beresford-Smith, B., & Thompson, C. J. (2007). Managing credit risk with info-gap uncertainty. *The Journal of Risk Finance, 8*, 24–34. https://doi.org/10.1108/15265940710721055
Biekpe, N., & Kiweu, J. M. (2009). Leveraging donor funds: The switch to commercial funding. *Managerial Finance, 35*, 1011–1026. https://doi.org/10.1108/03074350911000061
Brehanu, A., & Fufa, B. (2008). Repayment rate of loans from semi-formal financial institutions among small-scale farmers in Ethiopia: Two-limit Tobit analysis. *The Journal of Socio-Economics, 37*(6), 2221–2230. https://doi.org/10.1016/j.socec.2008.02.003
Campbell, D. T., & Stanley, J. C. (1966). *Experimental and quasi-experimental designs for research*. Chicago, IL: Rand McNally.

Ciaian, P., Fałkowski, J., & Kancs, D. A. (2012). Access to credit, factor allocation and farm productivity. *Agricultural Finance Review, 72*, 22–47. https://doi.org/10.1108/00021461211222114

Collier, B., Katchova, A. L., & Skees, J. R. (2011). Loan portfolio performance and El Niño, an intervention analysis. *Agricultural Finance Review, 71*(1), 98–119. https://doi.org/10.1108/00021461111128183

Emereole, C. O. (2004). *Determinants of income and consumption expenditure of small holder farm households in Ikwuano LGA of Abia State, Nigeria* (PhD dissertation). Department of Agricultural Economics, Michael Okpara University of Agriculture, Umudike, Nigeria.

Eriku, J. (2010). *Government moves to recover loans from SACCOS*. Retrieved from https://microfinanceafrica.net/news/

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update* (4th ed.). Boston, MA: Allyn & Bacon.

Giné, X, & Karlan, D. (2010). Put your money where your butt is: A commitment contract for smoking cessation. *American Economic Journal: Applied Economics, 2*, 213–235. Retrieved from https://www.aeaweb.org/articles.php?

Gliem, J. A., & Gliem, R. R. (2003). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient Likert-type scales. *Midwest Research to Practice Conference in Adult, Continuing, and Community Education*.

González-Vega, C. (2003). *Deepening rural financial markets: Macroeconomic, policy and political dimensions*. Paper for Paving the Way Forward: An International Conference on Best Practices in Rural Finance, Washington, DC, 2–3 June.

González-Vega, C. (2008). Impact of microfinance on schooling: Evidence from poor rural households in Bolivia. *World Development, 36*, 2440–2455.

Guido, W. (2008). On the failure of the bootstrap for matching estimators. *Econometrica, 76*(6), 1537–1557.

Hassan, K., & Sanchez, B. (2009). *Efficiency analysis of microfinance institutions in developing countries* (Networks Financial Institute Working Paper 2009-WP-12). Retrieved from SSRN: https://ssrn.com/abstract=1492238

Heilig, J. V., Young, M., & Williams, A. (2012). At-risk student averse: Risk management and accountability. *Journal of Educational Administration, 50*(5), 562–585. https://doi.org/10.1108/09578231211249826

Hibara, N. (2002). *What happens in banking crises? Moral hazard vs. credit crunch, mimeographed*.

Ke, Y., Wang, S., & Chan, A. P. (2011). Equitable risks allocation of projects inside China: Analyses from Delphi survey studies. *Chinese Management Studies, 5*, 298–310. https://doi.org/10.1108/17506141111163372

Kimutai, C. J., & Ambrose, J. (2013). *Factors influencing credit rationing by commercial banks in Kenya, 3*(20), 244–252.

Kobayashi, K., Saita, Y., & Sekine, T. (2002). *Forbearance lending: A case for Japanese firms* (Working Paper 02-2). Research and Statistics Department Working Paper (Bank of Japan).

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*(3), 607–610.

Kropp, J. D., & Katchova, A. L. (2011). The effects of direct payments on liquidity and repayment capacity of beginning farmers. *Agricultural Finance Review, 71*, 347–365. https://doi.org/10.1108/00021461111177611

Kumar, P., & Golait, R. (2009). Bank penetration and SHG-Bank linkage programme: A critique. *Reserve Bank of India Occasional Papers, 29*, 119–138.

Luhmann, N. (2005). *Risk a sociological theory*. Aldine Transaction.

MacDonald, S., & Timith, W. K. (2006). *Management of banking* (6th ed.). Loudonville, OH: Pre- Press Comm. Inc.

Mathur, I., & Marcelin, I. (2014). Unlocking credit. In Jonathan A. Batten & Niklas F. Wagner (Eds.), *Risk management post financial crisis: A period of monetary easing (contemporary studies in economic and financial analysis* (Vol. 96, pp. 221–252). Bingley: Emerald Group Publishing Limited. https://doi.org/10.1108/csef

Moti, H., Masinde, J., Mugenda, N., & Sindani, M. (2012). Effectiveness of credit management system on loan performance: Empirical.

Nocco, B. W., & Stulz, R. M. (2006). *Enterprise risk management: Theory and practice*. Retrieved from SSRN https://ssrn.com/abstract=921402

Obamuyi, T. M. (2009). Credit delivery and sustainability of micro-credit schemes in Nigeria. *Journal of Enterprising Communities: People and Places in the Global Economy, 3*, 71–83. https://doi.org/10.1108/17506200910943689

Oboh, V. U., & Ekpebu, I. D. (2011). Determinants of formal agricultural credit allocation to the farm sector by arable crop farmers in Benue State. *Nigeria, 6*(1), 181–185.

Ohkusa, Y. (2002). Kashishiburi to Shinsa Kino [Credit Crunch and Screening Function]. In N. Mitani & A. Wakisaka (Eds.), *Micro Business no Keizai Bunseki - Cyusho Kigyo Keieisha no Jittai to Sono Koyo Sosyutsu* [Economic analysis of MicroBusiness – Realities of entrepreneurs of small business and job creation -] (pp. 145–160). Tokyo: University of Tokyo Press (in Japanese).

Ogawa, K. (2003). Daifukyo no Keizai Bunseki [Economic analysis of depressions]. *Nihon Keizai Shimbunsha* (in Japanese).

Ogawa, S., Parker, J., Singh, D., & Thacker, N. (2009). *Financial Interconnectedness and Financial Sector Reforms in the Caribbean* (IMF working paper).

Peek, J., & Rosengren, E. S. (2005). Unnatural selection: Perverse incentives and the misallocation of credit in Japan. *American Economic Review, 95*(4), 1144–1166. https://doi.org/10.1257/0002828054825691

Power, M. (2007). *Organized uncertainty – Designing a world of risk management*. Oxford: University Press.

Qinlan, Z., & Izumida, Y. (2013). Determinants of repayment performance of group lending in China: Evidence from rural credit cooperatives & apos; program in Guizhou province. *China Agricultural Economic Review, 5*(3), 328–341. https://doi.org/10.1108/CAER-08-2012-0083

Rabo, E. K., Kushwaha, S., & Abubakar, M. M. (2001). Procurement and utilization of institutional credit by small scale farmers in Katagum LGA of Bauchi State. In *Proceedings of the 34th 810 Annual Conference of Agricultural Society of Nigeria,* Bauchi October 15–19 (pp. 75–80).

Rosenberg, R., Gonzalez, A., & Narain, S. (2009). The new moneylenders: Are the poor being exploited by high microcredit interest rates? In T. A. Watkins & K. Hicks (Eds.), *Moving beyond storytelling: Emerging research in microfinance contemporary studies in economic and financial analysis* (Vol. 92, pp. 145–181). Bingley: Emerald Group Publishing Limited. https://doi.org/10.1108/csef

Thompson, A. A., Strickland, A. J., & Gamble, J. E. (2009). *Crafting and executing strategy: The quest for competitive advantage. Concepts 17th ed*.

Tsuru, K. (2001). *The choice of lending patterns by Japanese banks during the 1980s and 1990s: The causes and consequences of a real estate boom* (IMES Discussion Paper No. 2001-E-8). Bank of Japan.

Venkiteshwaran, V. (2014). Do asset sales affect firm credit risk? – Evidence from credit rating assignments. *Managerial Finance, 40*(9), 903–927.

Voropaev, M. (2009). *Variance-covariance based risk allocation in credit portfolios: Analytical approximation*.

Wurgler, J. (2000). Financial markets and the allocation of capital. *Journal of Financial Economics, 58*, 187–214. https://doi.org/10.1016/S0304-405X(00)00070-2

Van der Maas, P. (2006). Active loan portfolio management. *Managerial Finance, 9*(1), 47–52.

Yang, Y., & Mwase, N. (2012). *BRICs' philosophies for development financing and their implications for LICs* (IMF Working Paper).

Cogent Business & Management **(ISSN: 2331-1975) is published by Cogent OA, part of Taylor & Francis Group.**