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Capital structure, credit risk management and financial performance of microfinance institutions in Uganda

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The paper examines the relationship between capital structure, credit risk management and financial performance of microfinance institutions (MFIs) in Uganda based on agency theory. The study adopted a cross–sectional research design to examine 64 MFIs in Uganda. Correlation and multiple regression analysis were performed to analyze the data. The results reveal that credit risk management significantly contributes to sound financial performance. Second, capital structure is not significantly related to financial performance. Therefore, credit risk appraisal, credit risk monitoring and credit risk mitigation are essential in achieving sound financial performance of MFIs. However, the structure of debt or equity does not necessarily affect financial performance. Hence, managers should endeavor to instill risk preventive and control mechanisms so as to mitigate credit risks and achieve positive financial performance of MFIs.

Key words: Agency theory, capital structure, credit risk management, financial performance, microfinance institutions.

INTRODUCTION

Financial performance is an essential measure of the financial health, competitiveness, efficiency, cost effectiveness and productivity of a business enterprise. Invariably, financial performance is very instrumental in determining the growth and sustainability of microfinance institutions. Evidently, MFIs that experience sound financial performance exhibit high profits, portfolio quality and operational efficiency as well as improved competitive edge (Quayes, 2015). Additionally, good financial performance of microfinance institutions (MFIs) leads to realization of MFIs' profit maximization objective, reduction in the dependency rate, improved competitive

edge and promotion of entrepreneurial ventures as well as economic development in a country (Bassem, 2012; Otieno et al., 2016). As a result of sound financial performance, MFIs are able to improve the welfare of people through wealth creation and poverty reduction.

However, global empirical evidence observes that microfinance institutions experience poor financial performance, epitomized by low profitability, low portfolio quality, low operating efficiency and high operating costs. Similarly, in Africa, MFIs also manifest poor financial performance as evidenced by low efficiency ratios, declining net operating margins and declining portfolio

yield, a rise in operating costs, low relative productivity and profitability (Daher and Erwan, 2015). In the context of Uganda, the trend is the same, as illustrated by this statistical evidence; decrease in portfolio yield from 54.6% in 2015 to 52% in 2016, increase in operating costs from Ug. Shs. 270,887 in 2017 to Ug. Shs. 543,770 in 2018, the increase in cost of funds ratio from 12% in 2016 to 19.4% in 2017, a reduction in capital adequacy ratio from 50.12% in 2015 to 45.7% in 2017 and low levels of liquidity ratio of 10.54% against the benchmark of 15% (AMFIU, 2017/2018a). Hence, in view of the above evidence, the present study attempts to explore the contribution of capital structure and credit risk management to financial performance.

Empirically, earlier research collection on financial performance focused on investigating the determinants, challenges and cause-effect relationship; credit allocation, age, asset holding, yield on gross portfolio, number of loan officers and personnel productivity of MFIs (Mirza and Javel, 2013; Ssekiziyivu et al., 2017). Furthermore, previous studies underscored the role of asset base, regulation and macro-economic conditions in fostering financial performance (Caro, 2017). Other earlier studies explain the independent analysis of the relationship between capital structure, credit risk management and financial performance of financial institutions (Warsame, 2016). In this paper, extant empirical evidence is extended by exploring the combined contribution of capital structure and credit risk management to the financial performance of MFIs discourse. Therefore, this paper aims to examine the direct relationship between capital structure, credit risk management and financial performance of MFIs. In addition, the study explores the combined effect of capital structure and credit risk management on the financial performance, achieved through adoption of agency theoretical framework, quantitative approach and cross-sectional survey on 64 MFIs in Uganda. Thus, the key research question under investigation is whether a combined effect of capital structure and credit risk management positively influences financial performance of MFIs.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Theoretical foundation

The study is founded on Agency theory (Jensen and Mackling, 1976). The theory posits that there exists a contractual relationship between a principal and an agent who works for the principal. It is based on three important elements; first is the existence of a contract between the principal and the agent, the second is the performance of a service by the agent, the third element is the delegation of authority by the principal to the agent. The theory is applicable because it focuses on resolving problems that can exist in agency relationships due to unaligned goals or different aversion levels to risk. In the present research, the problem of concern is the declining financial performance of the MFIs. The shareholders of the MFIs (principals) invest capital, which is the capital structure comprising equity and debt. While MFIs (Agents) design operational risk management strategies to maximize returns on investment.

Study concepts

Capital structure is defined as the various means of financing a firm, that is, the proportionate relationship between debt and equity. The indicators of capital structure include; long term debt, short term debt or total debt and long term equity, short term equity or total equity (Vatavu, 2015). In this article, capital structure means debt and equity funds employed by MFIs. Credit risk management is the identification, measurement, monitoring and control of risk arising from the possibility of default from loan repayment. It therefore encompasses; appraisal, identification, measurement, matching, mitigation, monitoring and control of the credit risk exposures (Lalon, 2015). Contextually, credit risk management means credit risk appraisal, credit risk monitoring and credit risk mitigation of MFIs.

Financial performance is a measure of operational strength of a firm in relation to its revenue and expenditure as revealed by its financial statements. According to Hoskisson et al. (1993), the indicators of financial performance include; profitability, productivity, return on assets, return on equity, portfolio quality and operational efficiency. For this study, profitability, portfolio quality and operational efficiency measure financial performance.

Capital structure and financial performance

High debt/equity ratio contributes to improvement in firms' financial performance in terms of liquidity and profitability (Adesina et al., 2015). Relatedly, Kpwe (2017) affirms that capital structure significantly affects the financial performance of MFIs. Nevertheless, other scholars discount the relevance of capital structure in boosting the profitability and financial performance of firms (Mutenheri and Munangagwa, 2015; Ikapel and Kajirwa, 2017). Conversely, the present study explores further the effect of credit risk management on financial performance beyond just the capital structure analysis. The reviewed literature is paramount in deciphering the value of debt and equity capital in financial performance examination in the present study. Based on the aforementioned narrative, we developed and tested hypothesis.

H1: Capital structure significantly contributes to financial

performance.

Credit risk management and financial performance

Credit risk management promotes financial performance of financial institutions (Kimotho and Gekara). Likewise, Kariuki (2017) reveals that credit risk identification, credit risk analysis, credit risk monitoring and credit risk control, improve the financial performance of MFIs. However, other studies also affirm that credit risk management does not have a positive effect on financial performance of financial institutions (Obamide et al., 2015; Warsame, 2016). Nonetheless, the current study extends knowledge discourse by investigating the contribution of both capital structure and credit risk management to financial performance of MFIs. In light of the related literature reviewed, we formulated and tested hypothesis *H2: Credit risk management significantly contributes to financial performance.*

Capital structure, credit risk management and financial performance

The level of credit risk management, capital structure, competitive strategies and managerial competence influence financial performance of microfinance institutions. Gizaw et al. (2015) posited that for better financial performance, there is need for appropriate capital structure mix accompanied by high level of credit risk management. Similarly, Alshatti (2015) affirms that credit risk management and capital structure affect the financial performance of financial institutions. However, Paulino et al. (2018) in their study on commercial banks in Juba City concluded that credit risk management variables of credit risk identification, credit risk analysis and appraisal are not significantly related to financial performance while Sivalingam and Kengatharan (2018) in their study on Commercial banks in Sri Lanka concluded that there is a significant negative relationship between capital structure and financial performance of the said financial institutions. In this study, the combined effect of capital structure and credit risk management on financial performance is investigated in the microfinance industry. Based on evidence unveiled above, we suggested and tested the hypothesis *H3: Capital structure and credit risk management significantly contribute to financial performance.*

MATERIALS AND METHODS

Research design

The present study adopted a cross sectional design and quantitative research approach to collect quantitative data in a given timeframe. A pre-tested semi structured questionnaire anchored on a five-point Likert-scale was employed to collect data to ascertain construct validity.

Study population, sample size and sampling procedure

Based on Krejcie and Morgan (1970)'s sample size determination method, the researchers established a sample size of 70 MFIs from a population of 85 registered MFIs in Uganda (AMFIU, 2017/2018b). However, the responses were gathered from 64 MFIs accounting for 91.4% above 70% threshold recommended by Kothari and Gang (2014). The targeted MFIs comprised; non-regulated MFIs, SACCOS, credit institutions, micro deposit taking institutions (MDIs) and commercial banks that offer microfinance services. They were selected using simple random sampling technique since the population size was relatively small and representative in nature. Conversely, purposive sampling method was used to select the respondents; the manager, credit officers and accountant from the selected MFIs. The selection criterion was founded on their managerial and operational roles and responsibilities that are critical in influencing financial performance.

Measurement of variables

Financial performance measures of profitability, portfolio quality and operational efficiency were adopted (Hoskisson et al., 1993). Meanwhile; capital structure was measured by debt and equity (Vatavu, 2015). Additionally, credit risk management measures of credit risk appraisal, credit risk monitoring and credit risk mitigation were considered (Kariuki, 2017). All the measurement items used by the cited scholars were modified and fitted to the microfinance setting in Uganda.

Reliability and validity of instruments

Table 1 results show that all the study variables had an alpha co-efficient of above 0.7 (equity α =0.931; debt α=0.788; credit risk appraisal α=0.862; credit risk monitoring α=0.720; credit risk mitigation α =0.815; profitability α=0.851; portfolio quality α=0.832 and operational efficiency α =. 841. Thus describing the internal consistency of the instrument scale and hence the reliability as recommended by Cronbach (1951). Meanwhile, the content validity Index (CVI) values are as follows: (capital structure CVI=0.86; credit risk management CVI=0.80; financial performance CVI=0.86). The CVI indices were all above 0.7 as recommended by Amin (2005), suggesting that the data adequately explained the study constructs.

Data management

The study controlled for response bias to avoid measurement errors by ensuring the question items were simple, precise, concise and no double questions were asked. Also checking for missing values and outliers due to data capture and entry errors was done. Mcar test was performed to test whether the data were missing completely at random or not. The results showed that the data were missing completely at random with p-value=0.023. The missing values were then corrected using linear interpolation method. Meanwhile, Z-score analysis was undertaken to check for outliers, whereby values with + or – 2.5 were deleted. The square root transformation method was further employed to correct the outliers in the data.

In addition, diagnostic tests to check for the fulfillment of normality, homogeneity and multi-collinearity assumptions in the data were performed. First, skewness and kurtosis tests statistical values were close to zero (skewness statistics ranging 0.000 to

Table 1. Reliability test results.

Variable	Number of items	Content validity index (CVI)	Cronbach average Alpha coefficient (α) per Variable	Average
Capital Structure	12/14	0.86		
Equity	5		0.931	
Debt	4		0.788	0.860
Credit Risk Management	12/15	0.80		
Credit Risk Appraisal	6		0.862	
Credit Risk Monitoring	2		0.720	
Credit Risk Mitigation	4		0.815	0.799
Financial Performance	12/14	0.86		
Profitability	4		0.851	
Portfolio Quality	4		0.832	
Operational Efficiency	4		0.841	0.841

Source: Primary data.

Table 2. Kaiser Meyer Olkin (KMO) and Bartlett's test results.

Component	KMO measure of sampling adequacy	Bartlett's test of sphericity	Df	Sig.
Capital structure	0.752	396.703	36	0.000
Credit risk management	0.803	382.814	66	0.000
Financial performance	0.744	443.135	66	0.000

Extraction Method: Principle Component Analysis; Rotational Method: Varimax with Kaiser Normalization.

0.156 and kurtosis statistics between (-0.001 to-1.050). Therefore, confirming the normality of the data as supported by Field (2009). Meanwhile, homogeneity of variance assumption is confirmed by the levene test results indicating a p-value > 0.05 (capital structure, p= 0.646; credit risk management, p= 0.223), implying that all the data were sourced from the sample population. Further, multi-collinearity test results showed a variance inflation factor (VIF=1.028) and (tolerance value =0.093); values of less than 5 and greater than 0.02 respectively, ruling out association between the independent variables. Hence, all the parametric assumptions were satisfied and data fit for further statistical analysis.

Furthermore, the researchers conducted exploratory factor analysis to test for the factor loading for each of the study constructs using principal component matrix-varimax method. The results reveal that the question items of the different study variables had communalities above 0.5. The communalities values for capital structure ranged between (equity=0.831 to 0.909; debt=0.666 to 0.837). Whereas absolute values for credit risk management (credit risk appraisal=0.598 to 0.837; credit risk monitoring=0.0759 to 0.877 and credit risk mitigation=0.709 to 0.776) and finally the communalities statistics for financial performance (profitability=0.624 to 0.918; portfolio quality=0.643 to 0.885 and operational efficiency=0.663 to 0.890). Hence, the extracted question items adequately explained the study constructs. In addition, Kaiser-Meyer Olkin (KMO) values for capital structure=0.752, credit risk management=0.803, financial performance=0.744) were above 0.7 as recommended by Field (2009), inferring the study sample was adequate to explain the study variables. Meanwhile, Bartlett's test of sphericity results was significant at p<.05 (capital structure p-value=0.000, credit risk management p-value=0.000, financial performance p-value=0.000), indicating sufficient correlation among the measurement items of each study variable as seen in Table 2.

Data analysis

To obtain the hypothesized study results, descriptive frequency analysis was performed using SPSS computer package. First; to determine the organizational characteristics of the MFIs and test for parametric assumptions of the study. Second, Spearman's correlation was performed to test for the degree of association between the study variables. Furthermore, multiple regression analysis was carried out to test for the relationship between capital structure, credit risk management and financial performance.

RESULTS AND DISUSSION

Descriptive statistics

For better understanding and discussion of the empirical, theoretical and conceptual framework of the study varia-bles, we provide the organizational characteristics of MFIs under study. The statistics indicate that out of the 64 MFIs sampled for the study, they comprise non-regulated MFIs (45.3%), SACCOS (34.4%), Micro Depos-it Taking Institutions (9.4%), commercial MFIs (6.3%) and credit institutions (4.7%). On the distribution of capital structure (type of capital employed), the majority of MFIs employ both equity and debt finance (56.3%); whereas other MFIs employ only equity finance (40.6%) and debt finance (3.1%) in their operations. For the number of years in operation, the results indicate that a biggest

Table 3. MFI characteristics.

MFI Characteristics	Frequency	Percentage	Cumulative percent (%)
Category of the institution			
Commercial Bank	4	6.3	6.3
Credit institution	3	4.7	10.9
Micro Deposit Taking Institution (MDIs)	6	9.4	20.3
SACCO	22	34.4	54.7
Other Non-Regulated Microfinance institutions	29	45.3	100.0
Total	64	100.0	
Type of capital employed			
Debt	2	3.1	3.1
Equity	26	40.6	43.8
Hybrid	36	56.3	100.0
Total	64	100.0	
Number of years in operation			
20 years and above	21	32.8	32.8
15-19 years	15	23.4	56.3
10-14 years	12	18.8	75.0
5-9 years	11	17.2	92.2
Less than 5 years	5	7.8	100.0
Total	64	100.0	
Debt/Equity ratio			
Less than 20%	38	59.4	59.4
20-39%	19	29.7	89.1
40-59%	4	6.3	95.3
60-79%	1	1.6	96.9
80% and above	2	3.1	100.0
Total	64	100.0	

Source: Primary data.

number of MFIs (32.8%) have been in operation in Uganda for a period of 20 years and above. In addition, 23.4% have been in operation between 15-19 years, 18.8% have operated for a period between 10-14 years, 17.2% have been in business for a period between 5-9% years. Meanwhile, 7.8% have been active for a period less than 5 years. Majority of MFIs (59.4%) had debt/equity ratio below 20% and other MFIs (3.1%) registered a ratio greater than 80% as shown in Table 3.

Spearman's correlation analysis

Spearman's correlation coefficient was performed to examine the relationship between the study variables. The results in Table 4 show that there is no significant association between capital structure and financial performance (r = 0.124, p>0.01). This implies that a unit change in the way MFIs are financed using equity or debt is not necessarily associated with the change in the financial performance. The results further reveal that there is a significant positive relationship between credit risk management and financial performance (r=0.535, p<0.01). In essence, effective credit risk identification, credit risk monitoring and credit risk mitigation contribute to sound financial performance of MFIs.

Multiple regression analysis

The results in Table 5 demonstrate that capital structure and financial performance of MFIs are not significantly related (β=0.037, p>0.01). Whilst, credit risk management and financial performance are positively and significantly related (β=0.529, p<0.01). Hence debt or equity structure does not necessarily contribute to financial performance. Instead, the preventive and control measures of credit risk contribute to financial performance of MFIs. The

Table 4. Spearman's correlation matrix results.

Variable	1	2	3
Capital structure	1		
Credit risk management	0.164	1	
Financial performance	0.124	0.535[**]	1

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

Table 5. Multiple regression results.

	Co-efficients[a]				
Model	Unstandardized coefficients		Standardized coefficients	T	Sig.
	B	Std. error	B		
(Constant)	0.441	0.684		0.644	0.522
1 Capital structure	0.038	0.111	0.037	0.337	0.737
Credit risk management	0.692	0.143	0.529	4.827	0.000

R=0.536[a], R Square =0.287, Adjusted R Square = 0.264, F Statistic = 12.304, Std. error of the estimate = 0.6574, Sig. =0.000.

predictor power of the model (R^2 =0.287) accounting for 29% explanatory power implies that combining appropriate debt or equity volumes together with effective credit risk appraisal, credit risk monitoring and credit risk mitigation contribute to better financial performance of MFIs. Overall, the model is well specified (F= 12.304, p<0.01), suggesting that both capital structure and credit risk management adequately explain financial performance of MFIs.

DISCUSSION

The discussion expounds on the direct relationship between capital structure, credit risk management and financial performance of MFIs. In addition, it also details the combined effect of capital structure and credit risk management on financial performance.

First, the evidence shows that capital structure and financial performance are positively but not significantly related. Hence hypothesis H1 was not supported. This implies that a positive change in capital structure does not necessarily contribute to a positive change in financial performance. Indeed, the type and nature of debt or equity alone does not necessarily contribute to financial performance of MFIs. Exemplified by the fact that, whether the debt/equity ratio is small or large in size, secured or unsecured, public or private, it may be susceptible to tendencies of delinquency or default risk once disbursed, which may adversely affect financial performance. Hence, without established operational measures in place that influence the quality of debt such as; appraisal, tracking and recovery mechanisms, debt will not positively contribute to financial performance. Similarly, prior studies affirm that capital structure is not relevant in determining the financial performance of a firm (Mutenheri and Munangagwa, 2015; Ikapel and Kajirwa, 2017). However, other scholars observe a positive relationship between debt/equity ratio and financial performance (Adesina et al., 2015; Kpwe, 2017). All in all; we affirm that debt/equity ratio alone does not necessarily contribute to the quality of financial performance. Instead, the structural operational measures in dispensing the debt or equity are the most important in determining the financial performance of MFIs.

Second, the results confirm a significant relationship between credit risk management and financial performance. Thus, hypothesis H2 was supported. This means that a positive change in credit risk management contributes to a positive change in financial performance of MFIs. In reality, MFIs carry out due diligence, loan structuring, loan tracking and loan recovery processes as means of preventing and controlling credit risk. For instance, in the course of appraisal, MFIs endeavour to establish the capital, collateral, character and capacity position of the potential clients. Similarly, credit officers routinely monitor and supervise disbursed loans to ensure the borrowers do not default and to effect full recovery of the disbursed loans. MFIs also ask for collateral as a safeguard for delinquency and default of borrowers. Penalties and fines are imposed on those who have defaulted as a control measure. As a result of credit risk preventive and control measures, MFI portfolio quality is healthy thus contributing to sound financial performance. The study evidence is in consonance with earlier studies that underpinned the relevance of credit

risk identification, analysis, monitoring and control in the performance of financial institutions (Lalon, 2015; Kimotho and Gekara, 2016; Kariuki, 2017). On the contrary, Obamide et al. (2015) and Warsame (2016) argue that credit risk management does not necessarily contribute to financial performance of financial institutions. However, this study underscores the value of credit risk prevention and control due to the complexity of the microfinance business environment in the 21st centenary.

Third, hypothesis H3 was supported because the results demonstrate that capital structure and credit risk management combined have a high explanatory power on financial performance of MFIs. This implies that a positive change in capital structure and credit risk management variables when combined contributes to a positive change in financial performance of MFIs. In Uganda, MFIs extend loans to borrowers from both borrowed and personal loan capital sources. Nevertheless, for these loans to be productive and revenue generating, there is need to prevent and control operational risks through a comprehensive risk mitigation strategy that includes; risk identification, analysis, control and management. For instance, MFIs carry out pre-disbursement due diligence of the repayment capacity and risk levels of potential clients. They also carry out thorough approval of loans and verification of documents before disbursement. Once the loans are disbursed, the MFIs then effect; close monitoring and supervision of loans to guarantee a healthy loan portfolio. Therefore, once the risks are prevented, controlled and managed, the MFIs will have a healthy loan portfolio that is productive and contributing to sound financial performance. The findings are in agreement with the insights that credit risk management positively contributes to financial performance of financial institutions.

Conclusion

The study set out to examine the contribution of capital structure and credit risk management to financial performance of MFIs in Uganda. The study based on agency theoretical composition, quantitative approach and employed cross-sectional design to survey 64 MFIs in Uganda to obtain the study results. First, the results confirm that capital structure and financial performance are not significantly related. Second, the evidence affirms that there is a significant relationship between credit risk management and financial performance. Third, capital structure and credit risk management combined effect have a strong explanatory power on financial performance of MFIs. In essence, debt and equity capital alone do not necessarily contribute to financial performance of MFIs. On the other hand, credit risk measures are vital in fostering financial performance of MFIs. However, combined effect of borrowed or equity finance together with credit risk preventive and control mechanisms significantly contributes to sound financial performance.

Deductively, the above anecdote shows that disbursing any form of loan capital is not enough without an appropriate risk management strategy.

The aforementioned evidence is consistent with previous studies that indicate capital structure and credit risk mechanisms are essential in fostering positive financial performance (Gizaw et al., 2015; Alshatti, 2015). The study evidence is useful to policy makers; governments should create a flexible and an enabling regulatory policy environment that allows MFIs to develop operational risk management strategies. At institutional level, managers should endeavor to develop and strengthen risk preventive and control operational strategies in order to identify, monitor, control and mitigate the different operational risks including credit risk. The study was limited in perspective, since it was cross-sectional in nature and pegged to a quantitative approach. Nevertheless, future studies may adopt a longitudinal dimension and mixed method approach to cater for quantitative and qualitative findings.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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