International Journal of Bank Marketing

Collective action among rural poor: Does it enhance financial intermediation by banks for financial inclusion in developing economies?

George Okello Candiya Bongomin, John C. Munene, Joseph Mpeera Ntayi, Charles Akol Malinga,

Collective action among rural poor

Does it enhance financial intermediation by banks for financial inclusion in developing economies?

Received 16 August 2017
Revised 16 November 2017
Accepted 13 December 2017

George Okello Candiya Bongomin and John C. Munene
Faculty of Graduate Studies and Research, Makerere University Business School, Kampala, Uganda
Joseph Mpeera Ntayi
Department of Procurement and Logistics Management, Makerere University Business School, Kampala, Uganda, and
Charles Akol Malinga
Department of Finance, Makerere University Business School, Kampala, Uganda

Abstract

Purpose – The purpose of this paper is to establish the mediating role of collective action in the relationship between financial intermediation and financial inclusion of the poor in rural Uganda.
Design/methodology/approach – The paper uses structural equation modeling (SEM) through bootstrap approach constructed using analysis of moment structures to test for the mediating role of collective action in the relationship between financial intermediation and financial inclusion of the poor in rural Uganda. Besides, the paper adopts Baron and Kenny's (1986) approach to establish whether conditions for mediation by collective action exist.
Findings – The results revealed that collective action significantly mediates the relationship between financial intermediation and financial inclusion of the poor in rural Uganda. The findings further indicated that the mediated model had better model fit indices than the non-mediated model under SEM bootstrap. Furthermore, the results showed that both collective action and financial intermediation have significant and direct impacts on financial inclusion of the poor in rural Uganda. Therefore, the findings suggest that the presence of collective action boost financial intermediation for improved financial inclusion of the poor in rural Uganda.
Research limitations/implications – The study used quantitative data collected through cross-sectional research design. Further studies through the use of interviews could be adopted in future. Methodologically, the study adopted use of SEM bootstrap approach to establish the mediating effect of collective action. However, it ignored the Sobel's test and MedGraph methods. Future studies could adopt the use of alternative methods of Sobel's test and MedGraph. Additionally, the study focused only on semi-formal financial institutions. Hence, further studies may consider the use of data collected from formal and informal institutions.
Practical implications – Policy makers and managers of financial institutions should consider the role of collective action in promoting economic development, especially in developing countries. They should create structures and design financial services and products that promote collective action among the poor in rural Uganda.
Originality/value – Although several scholars have articulated financial inclusion based on both the supply and demand side factors, this is the first study to test the mediating role of collective action in the relationship between financial intermediation and financial inclusion of the poor in rural Uganda using SEM bootstrap approach. Theoretically, the study combines the role of collective action with financial intermediation to promote financial inclusion. Financial intermediation theory ignores the role played by collective action in the intermediation process between the surplus and deficit units.

Keywords Mediating effect, Financial inclusion, Structural equation modelling, Financial intermediation, Collective action, AMOS

Paper type Research paper

1. Introduction

The concept of financial inclusion has become a key issue under the development agenda in a number of developing economies, Uganda inclusive. The World Bank's triennial Global Findex Data indicates that about 86 percent of the poor in low-income countries still remain largely

International Journal of Bank Marketing

0265-2323
DOI 10.1108/IJBM-08-2017-0174

excluded from access to and use of basic financial services (see also Bhanot *et al.*, 2012). Thus, in a bid to promote universal financial inclusion, especially among the rural poor, scholars and financial inclusion working groups across the globe have adopted different strategies.

Chibba (2008b) suggests that in order to appropriately advance financial inclusion, developing countries should liberalize their financial markets to allow entry and the functioning of diverse financial intermediaries. Correspondingly, Dev (2006) contends that new regulatory procedures and freedom of operation within the financial system that allows several financial intermediaries in the market can stimulate the financial inclusion process. Indeed, proponents of financial intermediation such as Gurley and Shaw (1960) and Diamond and Dybvig (1983) postulate that intermediaries such as banks can improve economic efficiency through facilitating transactions and portfolio creation, easing household liquidity constraints, spreading risks over time, and reducing the problem of asymmetric information in the financial markets.

According to the United Nations (2006), financial inclusion refers to easy access to safe savings, appropriately designed loans for poor and low-income households and for micro-, small-, and medium-sized enterprises, and suitable insurance and payment services. While Gorton and Winton (2002) define financial intermediation as a process by which banks collect deposits and give it out inform of loans to support investment in the economy. Indeed, financial intermediaries mobilize deposits from savers and allocate it to borrowers including the poor to help them come out of poverty.

However, the World Bank Global Findex Data indicates that about three-quarter of poor people around the globe, especially in Sub-Saharan Africa still lack access to formal financial services such as bank account, credit, insurance, and payment (see also Chibba, 2008a, c). Additionally, Beck *et al.* (2007) also revealed that barriers like high minimum deposit balances, minimum loan amounts and fees, strict documentation requirements, geographic centralization of deposit and loan decisions at headquarters, and long processing times have resulted into financial exclusion. Besides, the Bank of Uganda (2015) observes that formal financial institutions serve only 14 percent of the population in rural Uganda, partly because of high transaction cost and information asymmetry (see also Financial Sector Deepening Uganda, 2016).

Consequently, the World Bank (2002) observes that the poor in underdeveloped markets rely on informal groups under collective action to enable exchange. According to Marshall (1998), collective action is "the action taken by a group of individuals in pursuit of members' perceived shared interests." Desai and Joshi (2012) suggest that collective action among poor individuals, which emerges under low cost of information, opportunity to coordinate actions and engage in repeated interaction, and the power to reward contributors and punish free-riders can result into benefits shared by all such as access to financial services (Bowles, 1998; Ostrom, 1998; Henrich *et al.*, 2001; Fehr and Gächter, 2000; Ostrom, 2000; Ostrom and Ahn, 2009).

Thus, financial intermediaries such as banks rely on informal local networks of information created by collective action among the rural poor to market its financial products and services in order to scale-up the scope of financial inclusion. Accordingly, Besley and Coate (1995) and Stiglitz (1990) argue that sanction in group lending can reduce moral hazard of repayment and it acts as a peer monitoring tool among poor borrowers. Indeed, collective action helps financial intermediaries such as banks by monitoring, sanctioning, and providing information about group members in lending.

Previous scholars like Beck *et al.* (2008), Nissanke and Stein (2003), Mathews and Thompson (2008), Rau (2004), Kumar and Mishra (2011), Johnson and Nino-Zarazua (2009), and Rojas-Suarez and Gonzales (2010) have argued that financial intermediation leads to improved financial inclusion through financial deepening, especially in unbanked and under-banked communities. Similarly, Mishkin (2007), Chandan and Mishra (2010), Kendall *et al.* (2010), Demirguc-Kunt and Klapper (2012) contend that opening up of numerous bank branches and

the entering of other financial services, providers in the financial market can also pave way for provision of different financial products that suits the economic status of the poor.

However, these studies ignore the mediating role of collective action in the relationship between financial intermediation and financial inclusion of the poor, especially in rural Uganda. In addition, the financial intermediation theory by Gurley and Shaw (1960) assumes that there are no other factors that may influence information sharing and availability in the financial market. Yet collective action among individuals in local networks and groups with shared interest potentially reduces transaction cost and information asymmetry, which lowers the incidence of adverse selection and moral hazard in the process of lending by financial intermediaries. Indeed, group formation for collective action facilitates access to credit as a result of interaction among the poor (Anderson *et al.*, 2002; Folgheraiter and Pasini, 2009; Ito, 2003; Khan, 2009; Marr, 2006; Swain and Wallentin, 2009).

Thus, to this end, the main purpose of our paper is to establish the mediating role of collective action in the relationship between financial intermediation and financial inclusion of the poor in rural Uganda (Figure 1).

2. Theory and hypotheses development

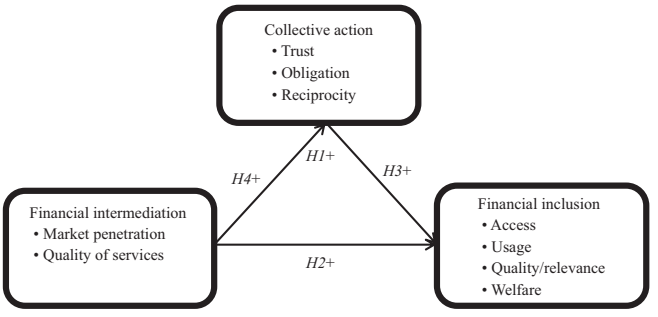
Financial intermediation and financial inclusion: collective action as mediator

Ayyagari *et al.* (2007) observe that finance promotes growth through an increase in productivity. Further, Beck *et al.* (2006) also state that financial development through existence of several players in the financial market significantly impacts on external shocks on the domestic economy. Equally, Schumpeter (1934) argues that financial intermediaries like banks, causes transformation in the path of economic progress by smoothing the allocation of savings, thus, resulting into productivity and growth. Therefore, the financial intermediation process is central to the development and growth in an economy.

Morris *et al.* (2006) suggest that collective action created by trust, obligation, and reciprocation that create social cohesion, which gives meaning to and sustains cooperation, can influence economic and social outcomes (see also Woolcock, 1998; Rankin, 2002; Sanyal, 2009). Conversely, Ostrom (2004) concludes that informal collective action of local networks of poor people can organize and coordinate local action that leads to achievement of specific short-term purposes such as access to banking services.

Accordingly, banks require lower-income households to meet lenders' requirements for formal physical collateral. Thus, the poor who lack physical collateral rely on their social safety nets such as social collateral based on collective action to access financial services from the banks (Conroy, 2005).

Collective action potentially reduces transaction cost and information asymmetry among the poor guided by locally devised and simple rules that rely on effective monitoring and



Source: Authors' illustration

Figure 1. Mediated model for the study

sanction systems, which results into benefits for all members (Meinzen-Dick *et al.*, 2004; Ostrom, 1990; Wade, 1988). Indeed, collective action helps financial intermediaries such as banks to monitor, sanction, and provide information about group members in lending.

The effectiveness of screening, monitoring, and enforcing loans repayment by the group improves repayment performance (Karlan, 2007). The group members' web of social tie enables them to extract and use the soft information available in their social network to screen, monitor, and enforce loan repayment on their peers. A study by Lapenu and Zeller (2002) revealed that more than two-thirds of borrowers in Africa, Asia, and Latin America were served by group lending programs based on collective action. Hence, the micro-borrower's social network creates value that can be used as social collateral in order to get access to external sources of financing. Thus, here we hypothesize that:

H1. Collective action mediates the relationship between financial intermediation and financial inclusion of the poor in rural Uganda.

Financial intermediation and financial inclusion

The theory of financial intermediation was first formalized in the works of Goldsmith (1969), Shaw (1973) and McKinnon (1973). Financial intermediation, which is central to the development and growth of any country, is the process that provides a link between lenders and borrowers. Therefore, financial intermediaries like banks, provides the necessary link between the lenders and borrowers in the financial markets.

Ongore and Kusa (2013) argue that through their intermediation function, banks play vital roles in the efficient allocation of resources mobilized for productive activities. Banks transfer funds from those who do not have productive use of it (surplus units) to those without funds but with productive ventures (deficit units). Chibba (2009) contends that banks play a critical role in providing financial services to the poor, especially in developing economies.

Furthermore, Merton and Bodie (1995) also point out that financial intermediaries are able to allocate scarce resources across space and time in an environment characterized by uncertainty. Financial intermediaries such as banks acquire information that is not readily available in the market from surplus and deficit units and use it to enable savings and borrowings (Mathews and Thompson, 2008). Indeed, banks rely on the acquired information for screening and defining its new clients including the poor to whom it extends financial services such as loans (Rau, 2004; Nissanke and Stein, 2003). However, because of information asymmetry and high transactional cost, financial intermediaries do not lend to those who lack collateral (see for, e.g. Rosengard and Prasetyantoko, 2011).

Additionally, Mishkin and Eakins (2009) elucidate that banks are financial institutions that accept deposits and make loans. Thus, for the poor who are presumed illiterate and at the "bottom of the pyramid", can also save, borrow, and make payments (World Bank, 2014). Conversely, Chandan and Mishra (2010), Kendall *et al.* (2010), and Demirguc-Kunt and Klapper (2012) observe that opening up of numerous bank branches and the entering of other financial services, providers in the financial market can pave way for the provision of varieties of financial products that suit the economic status of the poor. The cost incurred by banks in the intermediation process in the market determines the penetration level and provision of quality financial services. Hence, we hypothesize that:

H2. Financial intermediation significantly affect financial inclusion of the poor in rural Uganda.

Collective action and financial inclusion

The logic of collective action is treated in Mancur Olson's (1965) path-breaking work on interest group formation in the long run based on trustful cooperation that can create prosperity.

Scott (2001) observes that collective action guided by social obligation facilitate gains among the actors. Coleman (1990) further argues that social sanction created by trust force people to behave cooperatively in the society.

Indeed, Meinzen-Dick *et al.* (2004) suggest that trust, reciprocity and exchanges, common rules, norms, and sanctions, as well as networks and groups are important mechanisms for promoting collective action. Members will sustain their obligations because violating agreement of collective action can lead to social exclusion. Consequently, this lowers uncertainty and reduces transaction cost, thereby, fostering economic activity at both micro and macro levels, especially in rural development (Grootaert and Van Bastelaer, 2002).

Therefore, it can be deduced that having feelings of shame, incredibility, and being socially excluded in the case of violating collective agreement will encourage individuals to honor their obligations, which promotes collective action among the poor. The willingness and cooperation to share information culminates into collective action. Thus, this results into reduction in cost of information acquisition and uncertainty about reliability. Munene *et al.* (2005) suggest that cooperation among rural poor households contribute to the likelihood that they will move beyond their diverse self-interest towards mutually beneficial collective action, which can help them to escape from poverty. Consequently, for the poor who own no physical collateral can rely on their informal groups formed through collective action and cooperation to have access to financial services offered by financial intermediaries. Collective action based on trust and obligation that results into reciprocity helps the poor to access financial services such as loans. Indeed, sanctions based on informal norms help the poor to monitor and screen members who have to be included in the group in order to avoid default in loan repayment.

Joshi (2006) and Lahiri-Dutt and Samanta (2006) conclude that poor households who live in closely knit communities have been able to collectively access financial services from financial intermediaries in order to progress out of poverty (see also Ibrahim, 2006). Collective action becomes the bankable collateral that leads to increased access to financial services by the poor (Mayoux, 1995; Morduch, 2000; Rankin, 2002; World Bank, 2001). A study by Sanyal (2009) found that collective action led to access to financial services from microfinance institutions by women in India. Therefore, we hypothesize that:

H3. Collective action significantly affect financial inclusion of the poor in rural Uganda.

Financial intermediation and collective action

Ramakrishnan and Thakor (1984) observe that financial intermediaries such as banks pool funds from savers and lend to companies that need resources for investment in the presence of imperfect information. Similarly, Merton and Bodie (1995) argue that financial intermediaries are able to allocate scarce resources across space and time in an environment characterized by uncertainty. In light of this, Levine (1997) indicates that risk pooling and diversification is among the important functions that banks perform to benefit the economy.

However, it is the uncertainty that gives rise to risk and underscores the need for appropriate risk management strategies. The main cause of uncertainty in banking is market frictions such as transaction cost and information asymmetry. The bank finds it difficult to determine the exact credit-worthiness of the borrower and as well as to accurately monitor the project after the loan has been disbursed. This complication gives rise to adverse selection and moral hazard in lending. Besides, Gropp *et al.* (2007) argue that during the life of the loan, there is a possibility of default and failure to repay the loan in full by borrowers.

Dasgupta (2002) observes that poor individuals engaged in long-term collective action (cooperation) can perform their obligations due to existing care and trust for one another. Thus, collective action as guided by locally devised and simple rules that rely on effective monitoring and sanction systems, potentially reduces transaction cost and information asymmetry, which results into benefits such as access to financial services for all the

members. Wydick (1996) observes that when the threat of social sanction is sufficiently strong and credible, the group is able to deter moral hazard in credit contract.

Indeed, group formation for collective action facilitates access to credit as a result of interaction among the poor (Anderson *et al.*, 2002; Folgheraiter and Pasini, 2009; Ito, 2003; Khan, 2009; Marr, 2006; Swain and Wallentin, 2009). The members of the group screen each other and decide with whom to associate. Being rational individuals, the group members will associate in a combination that allows them to minimize the cost of monitoring and the risk of repaying their peers' loans (Hermes *et al.*, 2005). Thus, here we hypothesize that:

H4. Financial intermediation and collective action are significantly related.

3. Data and methodology

Research design and procedures

The study used data collected through cross-sectional research design using a semi-structured questionnaire that was administered to poor households and accounts relationship officers of PRIDE MDI. Cross-sectional research design was adopted because of its strength in allowing large amount of data to be collected over a shorter period of time. Besides, poor households were selected for the study because existing evidence revealed that only 14 percent of the rural poor are served by formal financial institutions in Uganda (Financial Sector Deepening Uganda, 2016). Furthermore, the relationship officers were used in the study because they have more information about the financial behaviors of the poor who consume financial services offered by the MDI.

Population and sample size

The population for this study included both poor individuals living in rural Uganda and relationship officers of PRIDE MDI. The poor households were selected for this study because they are under-banked or/and unbanked with limited access to and use of financial services provided by formal financial institutions. Thus, for the purpose of this study, a total population of 1,200,000 poor households (Uganda Bureau of Statistics, 2014) residing along the digital banking map were used in the study. In addition, a total population of 100 relationship officers of PRIDE MDI was also used in the study (PRIDE MDI, 2015). This is because they deal directly with the poor who are clients of PRIDE MDI. Therefore, a total sample size of 400 poor households and 80 relationship officers were selected for the study based on formula derived by Yamane (1978). Overall, a total target sample of 480 individuals was used for the study.

Sampling method and procedures

The samples for this study were selected from both poor households who reside in rural Uganda and relationship officers who are staff of PRIDE MDI. Thus, a total sample size of 400 poor households was randomly selected for the study. Random sampling method was adopted in order to give all the poor households equal chances of being included in the study. During the selection process, three conditions of households' utilities, housing conditions, and households' welfare were used to identify poor households to be included in the sample as recommended by Uganda Bureau of Statistics (2012). This procedure was used until a total sample of 400 poor households were identified and selected for the study.

In addition, a total of 80 relationship officers were also purposively sampled because they were in direct contact with the poor who consume financial services offered by the MDI. Thus, they were in a better position to provide the right information about the poor households who are clients of the MDI. The poor households and PRIDE MDI were the units of analyses, while the households' heads and relationship officers were the unit of inquiry. Overall, a total of 440 responses were received back. This accounted for 91.6 percent response rate in the study.

Data collection instruments, validity, and reliability

Data for this study were collected using a semi-structured questionnaire containing both open- and closed-ended questions. The semi-structured questionnaire was used in the study to give the respondents opportunity to provide defined and non-defined responses about the study. The questionnaire was designed based on nine steps recommended by Churchill and Iacobucci (2004). The items included under each of the variables were anchored onto a five-point Likert scale as recommended by Likert (1932), Johns (2010), and DeVellis (2003). Prior to the final field study, the questionnaire was pre-tested to ascertain the validity and the reliability of the items. The content validity indices were 0.93, 0.85, and 0.88 for financial intermediation, collective action, and financial inclusion respectively. While the reliability results were 0.783, 0.751, and 0.838 for financial intermediation, collective action, and financial inclusion respectively. The items that were found to be redundant, hard to understand, and ambiguous were deleted from the final questionnaire for the main study.

Data analytical techniques

Data collected from the main study were sorted, arranged, and serially numbered. The raw data from the field were captured into SPSS (19) statistical analysis tool and checks for data entry errors, missing values, and outliers were performed. Missing values analysis and data entry errors were checked by generating frequencies and descriptive statistics, while box plots were used to test for existence of outliers in the data. The Little's MCAR test results revealed that the amount of data missing were minimal at less than 3 percent. Therefore, the missing data were replaced using linear interpolation as recommended by Hair *et al.* (2010). The box plot results indicated that outliers were not a problem in the data, thus, the data were good enough for further statistical analysis. More so, analysis of moment structures (AMOS) software was adopted to run confirmatory factor analysis (CFA) and structural equation model for both the measurement and structural models. Prior to performing CFA and SEM, exploratory factor analysis (EFA) was performed to ensure convergent validity among all the items under each of the variables. The results of the EFA indicated that all the items loaded well to each other with eigenvalues greater than 1 and absolute value above 0.5 to explain each of the variables under study.

Measures of research variables

Financial intermediation was measured based on the constructs of market penetration and quality of financial services using 28 items as recommended by Dutta and Dutta (2011), Allen *et al.* (2011), and Yaron *et al.* (1997). Conversely, after carrying out exploratory factor analysis and confirmatory factor analysis, 14 items were retained as valid and reliable measures of financial intermediation.

The variable of collective action was measured based on the constructs of trust, obligation, and reciprocity using ten items. However, after running EFA and CFA, nine items were retained as valid and reliable measures of collective action. The measurements for collective action were developed and adopted from scholars such as Olson (1965), Scott (2001), Coleman (1990), and Meinzen-Dick *et al.* (2004).

Finally, financial inclusion was measured using the dimensions of access, quality, usage, and welfare with 39 items but after performing EFA and CFA, ten items were retained as valid and reliable measures of financial inclusion. Therefore, the dimensions of access, quality, usage, and welfare were adopted as measures of financial inclusion under this study as recommended by ACCION (2011), AFI Financial Inclusion Data Working Group (2011), Čihák, *et al.* (2012), Claessens (2006), Ardic *et al.* (2011), Kendall *et al.* (2010), and Beck *et al.* (2008).

The original item measurement scale ranging from 1 – strongly disagree to 5 – strongly agree used in the pilot study was maintained to avoid errors in the final study results.

Confirmatory factor analysis (CFA)

Anderson and Gerbing (1988) suggest that as a first step, estimation of CFA measurement model is very important before constructing the final SEM model using bootstrap in order to establish existence of mediation (see also Jackson *et al.*, 2009). CFA is a special form of factor analysis used to test whether measures of a construct are consistent with a researcher's understanding of the nature of that construct (Byrne, 2010). Indeed, CFA is a way of testing how well the measured variables represent a smaller number of constructs.

Therefore, to confirm the relationship between the latent and manifest variables, goodness-of-fit (GOF) indices are adopted to explain the relationships. According to Hair *et al.* (2010), GOF indices are used to determine how well the observed data fit to the model. The GOF indices are the measures indicating how well a specified model reproduces the covariance matrix among the indicator variables. Thus, it is recommended that use of three to four fit indices provide adequate evidence of model fit (Hair *et al.*, 2010). However, researchers adopting the use of CFA and SEM should report at least one incremental index and one absolute index in addition to the χ^2 value and the associated degrees of freedom because using a single GOF index even with a relatively high cut-off value, is no better than simply using the χ^2 GOF test alone. Hence, reporting the χ^2 value and the degrees of freedom, the CFI or TLI, and the RMSEA will provide sufficient unique information to evaluate a model.

AMOS/20 software was used to construct the measurement and SEM models (Arbuckle, 2009) and absolute values and goodness-fit-indices (χ^2-CMIN-minimum value/ degree of freedom (DF), Tucker–Lewis index (TLI), comparative fit index (CFI), relative fit index (RFI), incremental fit index (IFI), normed fit index (NFI), and root mean square error of approximation (RMSEA) were used to show that the measurement model and the structural model fit well to the observed data. The results of the CFA and SEM models are indicated in Figures A1-A4, respectively.

Testing for mediation using SEM bootstrap approach

SEM is a comprehensive statistical modeling tool for analyzing multivariate data involving complex relationships between and among variables (Hoyle, 1995). SEM surpasses the traditional regression models by including multiple independent and dependent variables to test associated hypotheses about relationships among observed and latent variables.

According to Byrne (2010), SEM is a powerful collection of multivariate analysis techniques, which specifies the relationships between variables through the use of two main sets of equations: measurement equation and structural equation. Measurement equations test the accuracy of proposed measurements by assessing the relationships between latent variables and their respective indicators. The structural equations drive the assessment of the hypothesized relationships between the latent variables, which allow testing the statistical hypotheses for the study. Additionally, SEM considers the modeling of interactions, nonlinearities, correlated independents, measurement error, correlated error terms, and multiple latent independents each measured by multiple indicators.

Past studies have indicated that mediation effect is present in a relationship between variables if the impact of the predictor variable goes through a third variable known as a mediator to cause a variation on the outcome variable (see for e.g. Okello *et al.*, 2016).

Therefore, to test whether mediation effect exist between the predictor variable and the outcome variable, Baron and Kenny (1986) suggest four conditions that should be satisfied before carrying out the mediation test. They argue that to establish mediation, the following conditions must hold: the independent variable must affect the mediator variable; the independent variable must be shown to affect the dependent variable; the mediator variable must affect the dependent variable; the independent, mediator, and dependent variables must be related. Indeed, two effects are tested: the direct effect of independent variable on

the outcome variable, and the mediated effect of independent variable through mediator onto the outcome variable.

Thus, if all these conditions hold in the predicted direction, then the effect of the independent variable on the dependent variable must be less in the third condition. However, perfect mediation hold if the independent variable has no effect when the mediator is controlled. Hair *et al.* (2010) argue that a condition of full mediation is achieved when the direct effect becomes non-significant in the presence of the indirect effect, whereas partial mediation occurs when the direct effect is reduced but remains significant. Similarly, existence of mediation can also be explained by *p*-values and model fit indices. Preacher and Hayes (2010) recommend that the *p*-value should be significant at $p < 0.05$ for full mediation, while Hair *et al.* (2010) advocate for excellent model fit-indices between the competing models (direct and indirect models).

SEM bootstrap method was adopted to test for the mediation of collective action in the relationship between financial intermediation and financial inclusion. SEM bootstrap method was adopted because all the relevant paths are directly and indirectly tested and none are omitted. Besides, complication of measurement errors, correlated measurement errors, and feedback are incorporated directly into the model (see for e.g. Baron and Kenny, 1986). Furthermore, Hair *et al.* (2010) also argue that the use of SEM can help researchers to assess the contribution of each indicator variable in representing its associated construct and measure and how well the combined set of indicator variables represents the construct. In addition, SEM can also assess both measurement properties and test key theoretical relationships in one model. AMOS (Arbuckle, 2003) was adopted and bootstrapped bias-corrected confidence intervals were requested. A three-variable path diagram, including error terms for the endogenous mediator and dependent variables, and bootstrap estimates of indirect, direct, and total effects through the AMOS output submenu were generated. The results for test of mediating role of collective action in the relationship between financial intermediation and financial inclusion are discussed in the next section.

4. Results

Demographic characteristics

The results revealed that most poor households (36.8 percent) were headed by households' heads who were in the 26–33 years old age bracket, while 25.5 percent were headed by those who were in the 34–41 years old age bracket. Further, the results also showed that 23 percent of the households were headed by those who were in the 42–49 years age bracket, and 9.5 percent of the households were headed by households' heads who were in the 18–25 years old age bracket. Besides, only 5.3 percent of the households were headed by those who were 50+ years old. This implies that most poor households in rural Uganda are headed by individuals who are in the 26–33 years old age bracket. This could be explained by the argument that in the current African societies Uganda inclusive, most family responsibilities have shifted to the younger generation since they comprise the largest percentage of the population.

Similarly, the results indicated that most (63.5 percent) of the poor households, heads who participated in the study were male and 36.5 percent were female. This means that most poor households surveyed were headed by male household heads. This could be explained by the argument that traditionally, decisions in most households located in Africa and, specifically in rural Uganda where the poor live are made by men.

Additionally, the results also showed that 65 percent of the households lived in permanent houses, while 20 percent lived in semi-permanent houses with 15 percent living in temporary buildings. This means that most poor households in rural Uganda reside in permanent buildings. This can be explained by the fact that most poor households in rural Uganda have members who can generate some income that can help them to set up permanent structures.

Furthermore, the findings also revealed that most (60.5 percent) poor households use individual pit latrines, while 38.8 percent use community pit latrines. Besides, 0.5 percent of the poor households use other sources of toilet facility and 0.3 percent use the bush. This implies that most poor households use individual pit latrines. This could be explained by existence of several water and sanitation projects funded by donors under the auspice of Ugandan Government to avoid the outbreak of diseases caused by poor human waste disposal.

More so, the results also indicated that the biggest number (46.8 percent) of poor households use paraffin lantern as their source of lighting, while 27 percent use small kerosene lamp. In addition, the results also revealed that 25.5 percent of the poor households use other sources of lighting like solar and only 0.8 percent use firewood for lighting. This means that most poor households in rural Uganda use paraffin lanterns for lighting due to availability of cheap paraffin in most villages.

Further analysis of the results also indicated that 62.5 percent of the relationship officers who participated in the study were in the 26–33 years old age bracket, while 20 percent were in the 42–49 years old age bracket with 17.5 percent in the 18–25 years old age bracket. This implies that most relationship officers were in the 26–33 years old age bracket. This could be based on the argument that most financial institutions like banks employ mostly the average young workforce.

Finally, the results showed that most of the relationship officers had worked for the MDI for a period of five years, while 27.5 percent had worked for 11–15 years and only 7.5 percent had worked for the MDI for 6–10 years and more than 15 years respectively.

Descriptive statistics and correlational results

The results of the descriptive statistics indicated that the mean scores were further from the standard deviation, showing that the model fitted well with the observed data. The mean and standard deviation figures for the variables under study ranged from mean = 3.34, SD = 0.879 (financial intermediation); mean = 3.88, SD = 0.584 (collective action); and mean = 3.85, SD = 0.640 (financial inclusion). Further, the correlation results also revealed that all the variables under study are positively associated with financial inclusion for each direct path. Therefore, financial inclusion is related to both financial intermediation and collective action. The descriptive statistics and correlation results are indicated in Table I.

Confirmatory factor analysis

Prior to constructing the SEM model, CFA measurement models were constructed to show the relationships between the latent and manifest variables under study. CFA was used to test whether measures of a construct are consistent with a researcher's understanding of the nature of that construct. The results from the confirmatory factor analysis using AMOS are discussed below.

The results from the study revealed the existence of a relationship between the latent and manifest variables of financial intermediation since the observed data fitted well to the measurement model. Thus, the measurement model validation was achieved and tenable for SEM. The following model fit indices were achieved: $(\chi^2) = 80.588$ (DF = 67, probability level = 0.123); IFI = 0.971 further above the recommended 0.95; TLI = 0.959 above the

Table I. Descriptive statistics and correlation results

	1	2	3	Mean	SD
(1) Financial intermediation	1			3.34	0.879
(2) Collective action	0.146*	1		3.88	0.584
(3) Financial inclusion	0.439**	0.247**	1	3.85	0.640

Notes: *$p < 0.05$; **$p < 0.01$

recommended 0.95; CFI = 0.970 above the recommended 0.90; and RMSEA = 0.032 as indicated in Figure A1.

Furthermore, the results also indicated that the latent and manifest variables of collective action were related as revealed by the model fit indices. The observed data fitted well to the measurement model combing the latent and manifest variables under collective action with $\chi^2 = 12.543$ (DF = 11, probability level = 0.324); IFI = 0.985 above the recommended 0.95; TLI = 0.967 above the recommended 0.95; CFI = 0.983 above the recommended 0.90; and RMSEA = 0.027 as indicated in Figure A2.

More so, the CFA results also showed that there was convergent validity between the latent and manifest of financial inclusion. The results confirmed that the observed data under latent and manifest of financial inclusion fitted well to the measurement model generated. The results revealed $\chi^2 = 25.133$ (DF = 29, probability level = 0.671); IFI = 1.019 further above the recommended 0.95; TLI = 1.031 way above the recommended 0.95; CFI = 1.000 further above the recommended 0.90; and RMSEA = 0.000 as indicated in Figure A3.

Test for mediation using SEM bootstrap approach

The main purpose of the study is to establish the mediating role of collective action in the relationship between financial intermediation and financial inclusion of the poor in rural Uganda. Therefore, SEM bootstrap approach through AMOS was adopted to establish the mediating role of collective action in the relationship between financial intermediation and financial inclusion of the poor in rural Uganda. Prior to constructing SEM to test for the mediation effect, CFA measurement models for the different variables were constructed to show how and the extent to which the observed variables are linked to their underlying latent factors based on a sound theoretical foundation.

Thus, in the process of constructing the SEM mediated model, two models were constructed to show the direct and indirect effects of financial intermediation on financial inclusion. The first model had a direct path from financial intermediation to financial inclusion. The second model had indirect path from financial intermediation through collective action to financial inclusion. Indeed, in the first model, we assume that financial intermediation has a direct effect on financial inclusion. While in Model 2, we assume that financial intermediation has an indirect effect on financial inclusion through collective action. Hence, the two models were generated and the results are indicated in Figure A4.

In addition, Hair *et al.* (2006) also recommend that when SEM is adopted to test for mediating effect, two competing models should be generated. The models with both direct and indirect effect of the predictor variable should be constructed. Thus, two competing models were constructed with the first model having the direct path and the second model having both direct and indirect path. The total, direct, and indirect effects of financial intermediation on financial inclusion were established with different model fit indices. However, Hair *et al.* (2006) argue that the mediated model should be a better model with better model fit indices when compared to the non-mediated model. Therefore, the results indicated in Table II attest to this argument.

Furthermore, in order to establish that the SEM model constructed through bootstrap approach fits well to the observed data, Preacher and Hayes (2010) also suggest that the p-value should be significant at $p < 0.05$ for full mediation. Besides, Hair *et al.* (2010) recommend that the mediated model generated within the competing model should have better model fit-indices when compared to the non-mediated model.

In the same vein, the results from the SEM mediation revealed that the non-mediated (direct) and mediated (direct and indirect) models had a better representation of model fit based on good fit-indices and squared multiple correlations. The constructed SEM model indicated that Model 2 (mediated model) had better good fit-indices as compared to Model 1 (non-mediated model). This implies that Model 2 is better than Model 1 since the model fit

	Non-mediated model	Mediated model
Collective act←financial intermediation	Not estimated	0.222***
Financial inclusion←financial intermediation	0.303***	0.681***
Financial inclusion←Collective action	0.262***	0.393***
CMIN	31.401	22.960
Degrees of freedom (Df)	24	9
Probability (P)	0.006	0.143
Incremental fit index (IFI)	0.885	0.975
Tucker–Lewis index (TLI)	0.798	0.963
Comparative fit index (CFI)	0.879	0.971
Root mean square error of approximation (RMSEA)	0.088	0.039
Squared multiple correlations		
Financial inclusion	0.381	0.610
Collective action	–	0.357

Notes: $n = 440$. ***$p < 0.0001$

Table II. SEM competing models for mediation by collective action

indices improved when the mediator variable was added into the model. The SEM results in Model 2 indicated that collective action significantly mediates the relationship between financial intermediation and financial inclusion with bootstrap results ($\beta = 0.087$; $p < 0.05$) as indicated in Table III. This means that inclusion of collective action in the relationship boost the impact of financial intermediation on financial inclusion of poor households in rural Uganda by 8.7 percent. Therefore, this confirms our hypothesis (*H1*) of the study, which stated that collective action mediates the relationship between financial intermediation and financial inclusion of the poor in rural Uganda.

Furthermore, the results also showed that collective action significantly affect ($\beta = 0.393$, $p < 0.001$) financial inclusion of the poor in rural Uganda as indicated in Model 2. This is in line with *H3* of the study. This means that a change in collective action results into an improvement in the level of financial inclusion of poor households in rural Uganda.

More so, the results also revealed that financial intermediation has a significant effect ($\beta = 0.593$, $p < 0.001$) on financial inclusion of the poor in rural Uganda as indicated in

Standardized total effects	Financial intermediation	Collective action			
Collective action	0.222***	0.000			
Financial inclusion	0.681***	0.393***			
Standardized direct effects	Financial intermediation	Collective action			
Collective action	0.222***	0.000			
Financial inclusion	0.593***	0.393***			
Standardized indirect effects	Financial intermediation	Collective action			
Collective action	0.000	0.000			
Financial inclusion	0.087***	0.000			
Bootstrap mediation results	Point estimates	SE	Lower bounds	Upper bounds	*P*
Financial intermediation ← Financial inclusion	0.298	0.130	0.397	0.951	0.013
Collective action ← Financial inclusion	0.108	0.187	0.239	0.602	0.052

Notes: $n = 440$. ***$p < 0.0001$

Table III. SEM for total, direct and indirect effects

model 2. This confirms our hypothesis (*H2*) of the study. This implies that increased level of financial intermediation by banks can lead to financial inclusion of the poor in rural Uganda.

Additionally, the results also indicated that financial intermediation and collective action are significantly related ($\beta = 0.222$, $p < 0.001$). Collective action resulting from trust, reciprocity, and obligation based on sanctions in group lending promotes repayment among the poor in rural Uganda. This supports our hypothesis (*H4*) of the study.

5. Discussion

The study focused on establishing the mediating role of collective action in the relationship between financial intermediation and financial inclusion of the poor in rural Uganda. The results were generated based on SEM bootstrap approach and the discussions below are based on the hypotheses developed under this study.

The results from the study revealed that collective action significantly mediates the relationship between financial intermediation and financial inclusion of the poor in rural Uganda. Morris *et al.* (2006) suggest that collective action created by trust, obligation, and reciprocation that create social cohesion and gives meaning to and sustains cooperation, influence economic and social outcomes such as access to financial services from banks (see also Woolcock, 1998; Rankin, 2002; Sanyal, 2009; Woolcock, 1998). Ostrom (2004) suggests that informal collective action of local networks of poor people can organize and coordinate local action that leads to achievement of specific short-term purposes such as access to banking services. Accordingly, banks require lower-income households to meet lenders' requirements for formal physical collateral. Thus, the poor who lack physical collateral rely on their social safety nets such as social collateral based on collective action to access financial services from the banks (Conroy, 2005). Collective action potentially reduces transaction cost and information asymmetry among the poor guided by locally devised and simple rules that rely on effective monitoring and sanction systems, which results into benefits for all members (Meinzen-Dick *et al.*, 2004; Ostrom, 1990; Wade, 1988). Indeed, collective action helps financial intermediaries such as banks to monitor, sanction, and provide information about group members in lending.

Besides, the results showed that collective action significantly affect financial inclusion of the poor in rural Uganda. This is in line with hypothesis (*H3*) of the study. Coleman (1990) argues that social sanction created by trust force people to behave cooperatively in the society. Hence, it can be deduced that having feelings of shame, incredibility, and being socially excluded in the case of violating collective agreement will encourage individuals to honor their obligations, which promotes loan repayment among the poor (see for e.g. Yunus, 2005; Armendariz de Aghion and Morduch, 2005; Atemnkeng, 2009; Karlan, 2007; Cassar *et al.*, 2007).

Similarly, the results revealed that financial intermediation has a significant effect on financial inclusion of the poor in rural Uganda. Chandan and Mishra (2010), Kendall *et al.* (2010), and Demirguc-Kunt and Klapper (2012) observe that opening up of numerous bank branches and the entering of other financial services, providers in the financial market can pave way for provision of varieties of financial products that suits the economic status of the poor.

Furthermore, the results also indicated that financial intermediation and collective action are significantly related. This supports hypothesis (*H4*) of the study. Group formation for collective action facilitate access to credit as a result of interaction among the poor (Anderson *et al.*, 2002; Folgheraiter and Pasini, 2009; Ito, 2003; Khan, 2009; Marr, 2006; Swain and Wallentin, 2009). The members of the group screen each other and decide with whom to associate. Being rational individuals, the group members will associate in a combination that allows them to minimize the cost of monitoring and the risk of repaying their peers' loans (Hermes *et al.*, 2005).

6. Conclusions

Conclusively, the results revealed that collective action significantly mediates the relationship between financial intermediation and financial inclusion of the poor in rural Uganda. This confirms hypothesis (*H1*) of the study. Indeed, this is scanty and lacking in literature and theory. Further, the results also indicated that collective action significantly affect financial inclusion of the poor in rural Uganda. This is in line with hypothesis (*H3*) of the study. In addition, the study also found that financial intermediation has a significant effect on financial inclusion of the poor in rural Uganda, thus, supporting hypothesis (*H2*) of the study. Finally, the results indicated that financial intermediation and collective action are significantly related. This supports hypothesis (*H4*) of the study.

7. Recommendations

Policy makers and managers of financial institutions should consider the role of collective action in promoting economic development, especially in developing countries. They should create structures such as grass root association that promote collective action among rural poor households in order to support collective goal achievements such as access to scarce resources like financial services. This is justified by the fact that collective action limits transaction cost arising from information asymmetry in financial markets.

The governments in developing economies should review and amend existing laws that promote the formation of self-help groups under the guise of collective action, which may lead to long-term economic outcomes. Indeed, policy-makers, community leaders, and program facilitators should center on the willingness to participate in a collective response. The majority of people in rural areas seem so willing to participate, however, they need the structure and the invitation to become involved or engaged. Policy makers who focus on inclusive and participatory programs can promote collective action among the rural poor households.

Furthermore, policy makers should also ensure that a conducive environment is created for operation of financial intermediaries. The government should give licenses to more financial intermediaries to enable them serve the under-banked and unbanked poor households in rural areas since there are limited presence of formal financial institutions in such areas.

In addition, managers of financial institutions should also develop financial products such as group loans that promote collective action through collective consumption. Financial products that are accessed and used through groups promote trust, obligation, and reciprocity among the rural poor who have a collective goal to achieve. This reduces the problem of default rampant in lending.

8. Limitations

The study used quantitative data collected through cross-sectional research design. Further studies through use of an interview could be adopted in future. Methodologically, the study adopted the use of SEM bootstrap approach to establish the mediating effect of collective action. However, it ignored the Sobel's test and MedGraph methods that could have been applied. Additionally, the study focused only on semi-formal financial institutions, therefore, ignoring formal and informal financial institutions. Hence, future studies may consider use of data collected from formal and informal institutions.

References

ACCION (2011), "What's the vision? What would it take for Mexico to achieve full inclusion by the year 2020?", Center for Financial Inclusion, Financial Inclusion, ACCION International, Washington, DC.

AFI Financial Inclusion Data Working Group (2011), "Measuring financial inclusion: a core set of indicators", Alliance for Financial Inclusion Financial Inclusion Data Working Group Paper, available at: www.afiglobal.org

Allen, F., Arletti, E., Cull, R., Jun Qian, J. "Q.J."., Senbet, L. and Valenzuela, P. (2011), "Improving access to banking: evidence from Kenya", *Policy Research Working Paper Series 6593*, The World Bank, Washington, DC.

Anderson, C., Locker, L. and Nugent, R. (2002), "Microcredit, social capital, and common pool resources", *World Development*, Vol. 30 No. 1, pp. 95-105.

Anderson, J.C. and Gerbing, D.W. (1988), "Structural equation modeling in practice: a review and recommended two-step approach", *Psychology Bulletin*, Vol. 103 No. 3, pp. 411-423.

Arbuckle, J.L. (2003), *Amos 5.0 Update to the Amos User's Guide*, Small Waters Corporation, Chicago, IL.

Arbuckle, J.L. (2009), *Amos 18.0 User's Guide*, Amos Development Corporation, Crawfordville, FL.

Ardic, O.P., Heimann, M. and Mylenko, N. (2011), "Access to financial services and the financial inclusion agenda around the world: a cross-country analysis with a new data set", World Bank Policy Research, Working Paper No. 5537, Washington, DC, available at: www.cgap.org/sites/default/files/CGAP-Access-to-FinancialServices-and-the-Financial-Inclusion-Agenda-around-the-World-Jan- 2011.pdf

Armendariz de Aghion, B. and Morduch, J. (2005), *The Economics of Microfinance*, MIT Press, Cambridge, MA.

Atemnkeng, J.T. (2009), "Does social capital determine poverty? Evidence from Cameroon Household Survey", *Presentation at the Global Network for Economics of Learning, Innovation, and Competence Building Systems (GLOBELICS) Conference: UNU-MERIT and CRES, UCAD, Maastricht and Dakar, October 6-8*.

Ayyagari, M., Demirgüç-Kunt, A. and Maksimovic, V. (2007), "Firm innovation in emerging markets: role of governance and finance", World Bank Policy Research Working Paper No. 4157, Washington, DC.

Bank of Uganda (2015), "Annual supervision report", Statistics Department, Kampala, December.

Baron, R.M. and Kenny, D.A. (1986), "The moderator–mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations", *Journal of Personality and Social Psychology*, Vol. 51 No. 6, pp. 1173-1182.

Beck, T., Demirgüç-Kunt, A. and Levine, R. (2007), "Finance, inequality, and the poor", *Journal of Economic Growth*, Vol. 12 No. 1, pp. 27-49.

Beck, T., Demirguc-Kunt., A. and Martinez Peria, M.S. (2008), "Banking services for everyone? Barriers to bank access and use around the world", *World Bank Economic Review*, Vol. 22 No. 3, pp. 397-430.

Beck, T.H.L., Lundberg, M. and Majnoni, G. (2006), "Financial intermediary development and growth volatility: do intermediaries dampen or magnify shocks?", *Journal of International Money and Finance*, Vol. 25 No. 7, pp. 1146-1167.

Besley, T. and Coate, S. (1995), "Group lending, repayment incentives, and social collateral", *Journal of Development Economics*, Vol. 46 No. 1, pp. 1-18.

Bhanot, D., Bapat, V. and Bera, S. (2012), "Studying financial inclusion in northeast India", *International Journal of Bank Marketing*, Vol. 30 No. 6, pp. 465-484.

Bowles, S. (1998), "Endogenous preferences: the cultural consequences of markets and other economic institutions", *Journal of Economic Literature*, Vol. 36 No. 1, pp. 75-111.

Byrne, B.M. (2010), *Structural Equation Modeling with AMOS*, 2nd ed., Routledge, New York, NY.

Cassar, A., Crowley, L. and Wydick, B. (2007), "The effect of social capital on group loan repayment: evidence from field experiments", *The Economic Journal*, Vol. 117 No. 517, pp. F85-F106.

Chandan, K. and Mishra, S. (2010), "Banking outreach and household level access: analyzing financial inclusion in India", unpublished MPhil Thesis, Indira Gandhi Institute of Development Research (IGIDR), Mumbai.

Chibba, M. (2008a), "Poverty reduction in developing countries: no consensus but plenty of solutions", *World Economics*, Vol. 9 No. 1, pp. 197-200.

Chibba, M. (2008b), "Monetary policy in small emerging market economies: the way forward", *Macroeconomics and Finance in Emerging Market Economies*, Vol. 1 No. 2, pp. 299-306.

Chibba, M. (2008c), *Financial Inclusion and Development: Concepts, Lessons Learned and Key Pillars*, Mimeo.

Chibba, M. (2009), "Financial inclusion, poverty reduction and the millennium development goals", *European Journal of Development Research*, Vol. 21 No. 2, pp. 213-230.

Churchill, G.A. and Iacobucci, D. (2004), *Marketing Research: Methodological Foundations*, 9th ed., Thomson South-Western, Mason, OH.

Čihák, M., Demirgüç-Kunt, A., Erik, F. and Levine, R. (2012), "Benchmarking financial systems around the world", Working Paper No. 6175, The World Bank Policy Research, Washington, DC.

Claessens, S. (2006), "Access to financial services: a review of the issues and public policy objectives", *Oxford Journals*, Vol. 21 No. 2, pp. 207-240.

Coleman, J.S. (1990), "Social capital", in Ritzer, G. (Ed.), *Foundations of Social Theory*, Belknap Press, Cambridge, pp. 111-115.

Conroy, J. (2005), "APEC and financial exclusion: missed opportunities for collective action?", *Asia-Pacific Development Journal*, Vol. 12 No. 1, pp. 53-79.

Dasgupta, P. (2002), "Economic progress and the idea of social capital", in Dasgupta, P. and Serageldin, I. (Eds), *Social Capital: A Multifaceted Perspective*, The World Bank, Washington, DC, pp. 325-424.

De Vellis, R.F. (2003), *Scale Development: Theory and Applications*, 2nd ed., Sage, Thousand Oaks, CA.

Demirguc-Kunt, A. and Klapper, L. (2012), "Measuring financial inclusion: the Global Findex database", Working Paper No. 6025, The World Bank Development Research Group Policy Research, Washington, DC.

Desai, M.R. and Joshi, S. (2012), "Collective action and community development: evidence from women's self-help groups in rural India", paper was delivered at the Annual Meeting of the American Political Science Association, Boston, MA, April 5-7.

Dev, M. (2006), "Financial inclusion: issues and challenges", *Economic and Political Weekly*, Vol. 41 No. 41, pp. 4310-4313, doi: 10.2307/4418799.

Diamond, D.W. and Dybvig, P.H. (1983), "Bank runs, deposit insurance, and liquidity", *Journal of Political Economy*, Vol. 91 No. 5, pp. 401-419.

Dutta, S. and Dutta, P. (2011), "The effect of literacy and bank penetration on financial inclusion in India: a statistical analysis", Tezpur University, Napaam.

Fehr, E. and Gächter, S. (2000), "Fairness and retaliation: the economics of reciprocity", *Journal of Economic Perspectives*, Vol. 14 No. 3, pp. 159-181.

Folgheraiter, F. and Pasini, A.A. (2009), "Self-help groups and social capital: new directions in welfare policies", *Social Work Education*, Vol. 28 No. 3, pp. 253-267.

Financial Sector Deepening Uganda (2016), *Financial Inclusion Brief*, FSDU and DFID Quarterly Brief, Kampala.

Goldsmith, R.W. (1969), *Financial Structure and Development*, Yale University Press, New Haven, CT.

Gorton, G. and Winton, A. (2002), "Financial intermediation", in Constantinides, G., Harris, M. and Stulz, R. (Eds), *The Handbook of Economics and Finance*, North Holland, Amsterdam, pp. 553-604.

Grootaert, C. and Van Bastelaer, T. (2002), "Conclusion: measuring impact and drawing policy implications", in Bastelaer, T.V. (Ed.), *The Role of Social Capital in Development*, Cambridge University Press, Melbourne, pp. 341-350.

Gropp, R., Kok Sørensen, C. and Lichtenberger, J. (2007), "The dynamics of bank spreads and the financial structure", Working Paper Series No. 714, European Central Bank.

Gurley, J.G. and Shaw, E.S. (1960), *Money in a Theory of Finance*, The Brookings Institution, Washington, DC.

Hair, J.F., Anderson, R.E., Tatham, R.L. and Black, W.C. (2010), *Multivariate Data Analysis*, 7th ed., Prentice Hall, Englewood Cliffs, NJ.

Hair, J.F. Jr, Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L. (2006), *Multivariate Data Analysis*, 6th ed., Prentice-Hall International, Englewood Cliffs, NJ.

Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H. and McElreath, R. (2001), "Cooperation, reciprocity and punishment in fifteen small-scale societies", Working Paper No. 01-01-007, Santa Fe Institute, New Mexico.

Hermes, N., Lensink, R. and Mehrteab, H.T. (2005), "Peer monitoring, social ties and moral hazard in group lending programmes: evidence from Eritrea", *World Development*, Vol. 33 No. 1, pp. 149-169.

Hoyle, R. (1995), "The structural equation modeling approach: basic concepts and fundamental issues", in Hoyle, R.H. (Ed.), *Structural Equation Modeling: Concepts, Issues, and Applications*, Sage, Thousand Oaks, CA, pp. 1-15.

Ibrahim, S. (2006), "From individual to collective capabilities: the capability approach as a conceptual framework for self-help", *Journal of Human Development*, Vol. 7 No. 3, pp. 397-416.

Ito, S. (2003), "Microfinance and social capital: does social capital help create good practice?", *Development in Practice*, Vol. 13 No. 4, pp. 322-331.

Jackson, D.L., Gillaspy, J.A. and Purc-Stephenson, R. (2009), "Reporting practices in confirmatory factor analysis: a review and some recommendations", *Psychological Methods*, Vol. 14 No. 1, pp. 6-23.

Johns, R. (2010), "Likert items and scales", *Survey Methods Factsheet 1*, available at: www.surveynet.ac.uk/sqb/datacollection/likertfactsheet.pdf (accessed October 28, 2015).

Johnson, S. and Nino-Zarazua, M. (2009), "Financial access and exclusion in Kenya and Uganda", Bath Papers in International Development No. 1, Centre for Development Studies, University of Bath, Somerset.

Joshi, D.P. (2006), *Social Banking: Promise, Performance and Potential*, Foundation Books, New Delhi.

Karlan, D.S. (2007), "Social connections and group banking", *Economic Journal*, Vol. 117 No. 517, pp. F52-F84.

Kendall, J., Mylenko, N. and Ponce, A. (2010), "Measuring financial access around the world", Policy Research Working Paper No. 5253, The World Bank Financial and Private Sector Development Financial Access Team, The World Bank, Washington, DC, March.

Khan, S. (2009), "Poverty reduction efforts: does microcredit help?", *SAIS Review*, Vol. XXIX No. 2, pp. 147-157.

Kumar, C. and Mishra, S. (2011), "Banking outreach and household level access: analyzing financial inclusion in India", *13th Annual Conference on Money and Finance in the Indian Economy, Mumbai, February 25-26*.

Lahiri-Dutt, K. and Samanta, G. (2006), "Constructing social capital: self-help groups and rural women's development in India", *Geographical Research.*, Vol. 44 No. 3, pp. 285-295.

Lapenu, C. and Zeller, M. (2002), "Distribution, growth, and performance of the microfinance institutions in Africa, Asia and Latin America: a recent inventory", *Savings and Development*, Vol. XXVI No. 1, pp. 87-111.

Levine, R. (1997), "Financial development and economic growth: views and agenda", *Journal of Economic Literature*, Vol. 35 No. 2, pp. 688-726.

Likert, R. (1932), "A technique for the measurement of attitudes", *Archives of Psychology*, Vol. 140 No. 1, pp. 44-53.

McKinnon, R.I. (1973), *Money & Capital in Economic Development*, The Brookings Institution, Washington, DC.

Marr, A. (2006), "The limitations of group-based microfinance and ways to overcome them", *Small Enterprise Development*, Vol. 17 No. 3, pp. 28-40.

Marshall, G. (1998), *A Dictionary of Sociology*, Oxford University Press, New York, NY.

Mathews, K. and Thompson, J. (2008), *The Economics of Banking*, Wiley, Chichester.

Mayoux, L. (1995), "From vicious to virtuous circles? Gender and micro-enterprise development", Occasional Paper No. 3, United Nations: United Nations Research Institute for Social Development, Geneva.

Meinzen-Dick, R., Di Gregorio, M. and McCarthy, N. (2004), "Methods for studying collective action in rural development", *Agricultural Systems*, Vol. 82 No. 3, pp. 197-214.

Merton, R.C. and Bodie, Z. (1995), "A conceptual framework for analyzing the financial system", in Crane, D.B. and others (Eds), *The Global Financial System: A Functional Perspective*, Harvard Business School Press, HA, pp. 3-31.

Mishkin, F. (2007), "Housing and monetary transmission mechanism", Federal Reserve Board Finance and Economics Discussion Series, No. 40, Federal Reserve Bank of Kansas City, Jackson, KS, available at: https://doi.org/10.3386/w13518

Mishkin, F.S. and Eakins, S.G. (2009), *Financial Markets and Institutions*, 6th ed., Chapter 14, Pearson, Boston, MA, pp. 17-18.

Morduch, J. (2000), "The microfinance scchism", *World Development*, Vol. 24 No. 4, pp. 617-629.

Morris, S., Woodworth, W. and Hiatt, S. (2006), "The value of networks in enterprise development: case studies in Eastern Europe and Southeast Asia", *Journal of Developmental Entrepreneurship*, Vol. 11 No. 4, pp. 345-356.

Munene, J.C., Schwartz, S.H. and Kibanja, G.M. (2005), *Escaping from Behavioural Poverty in Uganda: The Role of Culture and Social Capital*, Fountain Publishers, Kampala.

Nissanke, M. and Stein, H. (2003), "Financial globalization and economic development: toward an institutional foundation", *Eastern Economic Review*, Vol. 29 No. 2, pp. 219-244.

Okello, G.C.B., Ntayi, J.M. and Munene, J.C. (2016), "Institutional frames for financial inclusion of poor households in Sub-Saharan Africa", *International Journal of Social Economics*, Vol. 43 No. 11, pp. 1096-1114, available at: http://dx.doi.org/10.1108/IJSE-06-2014-0110

Olson, M. (1965), *The Logic of Collective Action: Public Goods and the Theory of Groups*, Harvard University Press, Cambridge, MA.

Ongore, V.O. and Kusa, G.B. (2013), "Determinants of financial performance of commercial banks in Kenya", *International Journal of Economics and Financial Issues*, Vol. 3 No. 1, pp. 237-252.

Ostrom, E. (1990), *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press, Cambridge.

Ostrom, E. (1998), "A behavioral approach to the rational choice theory of collective action", *American Political Science Review*, Vol. 92 No. 1, pp. 1-22.

Ostrom, E. (2000), "Social capital: a fad or a fundamental concept?", in Dasgupta, P. and Sarageldin, I. (Eds), *Social Capital. A Multifaceted Perspective*, The World Bank, Washington, DC, p. 196.

Ostrom, E. (2004), "Understanding collective action", in Meinzen-Dick, R. and Gregorio Di, M. (Eds), *Collective Action and Property Rights for Sustainable Development, 2020 Vision for Food, Agriculture And The Environment*, Focus 11, IFPRI International Food Policy Research Institute, Washington, DC, p. 1.

Ostrom, E. and Ahn, T.K. (2009), "The meaning of social capital and its link to collective action", in Svendsen, G.T. and Svendsen, G.L.H. (Eds), *Handbook of Social Capital – The Troika of Sociology, Political Science and Economics*, 1st ed., Edward Elgar Publishing Limited, Cheltenham, pp. 17-35.

Preacher, K.J. and Hayes, A.F. (2010), "Quantifying and testing indirect effects in simple mediation models when the constituent paths are nonlinear", *Multivariate Behavioural Research*, Vol. 45 No. 4, pp. 627-660, doi: 10.1080/00273171.2010.498290.

PRIDE MDI (2015), "Human Resources Report", Kampala.

Ramakrishnan, R.T.S. and Thakor, A. (1984), "Information reliability and a theory of financial intermediation", *Review of Economic Studies*, Vol. 51 No. 3, pp. 415-432.

Rankin, K. (2002), "Social capital, microfinance and the politics of development", *Feminist Economics*, Vol. 8 No. 1, pp. 1-24.

Rau, N. (2004), "Financial Intermediation and Access to Finance in African Countries South of the Sahara", Forum Paper, African Development and Poverty Reduction: The Macro-Micro Linkages, Lord Charles Hotel, Somerset West, October 13-15.

Rojas-Suarez, L. and Gonzales, V. (2010), "Access to financial services in emerging powers: facts, obstacles and policy implications", Background Paper for the Perspectives on Global Development, Shifting Wealth Center for Global Development, Washington, DC.

Rosengard, J.K. and Prasetyantoko, A.A. (2011), "If the banks are doing so well, why can't i get a loan? Regulatory constraints to financial inclusion in Indonesia", *Asian Economic Policy Review*, Vol. 6 No. 2, pp. 273-296.

Sanyal, P. (2009), "From credit to collective action: the role of microfinance in promoting Women's social capital and normative influence", *American Sociological Review*, Vol. 74 No. 4, pp. 529-550.

Schumpeter, J. (1934), *The Theory of Economic Development*, Harvard University Press, Cambridge, MA.

Scott, R.W. (2001), *Institutions and Organizations*, 2nd ed., Sage and Development, Oxford University Press, Thousand Oaks, CA and Oxford, pp. 460-484.

Shaw, E. (1973), *Financial Deepening in Economic Development*, Oxford University Press, New York, NY.

Stiglitz, J.E. (1990), "Symposium on bubbles", *The Journal of Economic Perspectives*, Vol. 4 No. 2, pp. 13-18.

Swain, R. and Wallentin, F. (2009), "Does microfinance empower women? Evidence from self-help groups in India", *International Review of Applied Economics*, Vol. 23 No. 5, pp. 541-556.

Uganda Bureau of Statistics (2012), *National Household Survey, Uganda Bureau of Statistics, National Household Statistical Forecast Brief*, The Government of Uganda, Kampala.

Uganda Bureau of Statistics (2014), *Uganda National Housing Population Census: Enumeration Maps for National Population Census*, The Government of Uganda, Kampala.

United Nations (2006), *Building Inclusive Financial Sectors For Development*, Department of Economic and Social Affairs (also known as Blue Book), New York, NY.

Wade, R. (1988), *Village Republics: Economic Conditions for Collective Action in South India*, ICS Press, Oakland, CA.

Woolcock, M. (1998), "Social capital and economic development: towards a theoretical synthesis and policy framework", *Theory and Society*, Vol. 27 No. 2, pp. 151-208.

World Bank (2001), "World Development Report 2001/2002", Oxford University Press, Inc., New York, NY.

World Bank (2002), "World Development Report", Building Institutions for Markets, World Bank, Washington, DC.

World Bank Global Financial Development Report on Financial Inclusion (2014), "A survey on access to and use of financial services in 152 countries around the world", The Global Financial (Global Findex) Database, The World Bank, Washington, DC.

Wydick, B. (1996), "Credit access for household enterprises in developing countries under asymmetric information", Unpublished PhD dissertation, UC Berkeley, CA.

Yamane, T. (1978), *Statistics: An Introductory Analysis*, 2nd ed., Harper & Row, New York, NY.

Yaron, J., Benjamin, M.P. and Piprek, G.L. (1997), "Rural finance: issue, design, and best practices", *Environmentally and Socially Sustainable Development Studies and Monograph Series 14*, The World Bank, Washington, DC.

Yunus, M. (2005), *Banker to the Poor: Micro-Lending and the Battle Against World Poverty*, Public Affairs, New York, NY.

Further reading

Beck, T., Demirguc-Kunt, A. and Levine, R. (2009), "Financial institutions and markets across countries and over time data and analysis", Policy Research Working Paper No. 4943, The World Bank Development Research Group Finance and Private Sector Team, May.

Dăianu, D. (2014), "Poate creşte economia fără finanţare?", *Ziarul Financiar*, April 21.

Dasgupta, P. (2005), "Economics of social capital", *The Economic Record*, Vol. 81 No. 1, pp. S2-S21.

Drigă, I. (2006), "The role of the banking system in the sustainable development of the economy", *Annals of the University of Petroşani, Economics*, Vol. 6 No. 11, pp. 55-60.

Drigă, I. and Guţă, A.J. (2009), *Romanian Bank Lending during the Financial Crisis*, Revista Tinerilor Economişti, Craiova, pp. 22-27.

Ergungor, E.O. (2010), "Bank branch presence and access to credit in low to moderate income neighborhood", *Journal of Money, Credit and Banking*, Vol. 42 No. 7, pp. 1321-1349.

Field, A.P. (2005), *Discovering Statistics Using SPSS*, Sage, London.

Finscope (2013), "Unlocking barriers to financial inclusion", Uganda FinScope Survey III Key Findings, Synovate, Kampala.

Hermes, N., Lensink, R. and Mehrteab, H.T. (2006), "Does the group leader matter: the impact of monitoring activities and social ties of group leaders on the repayment performance of group-based lending in Eritrea", *African Development Review*, Vol. 18 No. 1, pp. 72-97.

Jöreskog, K.G. and Sörbom, D. (1989), *LISREL 7. A Guide to the Program and Applications*, SPSS Inc., Chicago, IL.

Kempson, E. (2006), "Policy level response to financial exclusion in developed economies: lessons for developing countries, paper presented at the conference", Access to Finance: Building Inclusive Financial Systems, World Bank, Washington, DC.

Merton, R.C. and Bodie, Z. (2004), "Design of financial systems: towards a synthesis of function and structure", *Journal of Investment Management*, Vol. 3 No. 1, pp. 1-23.

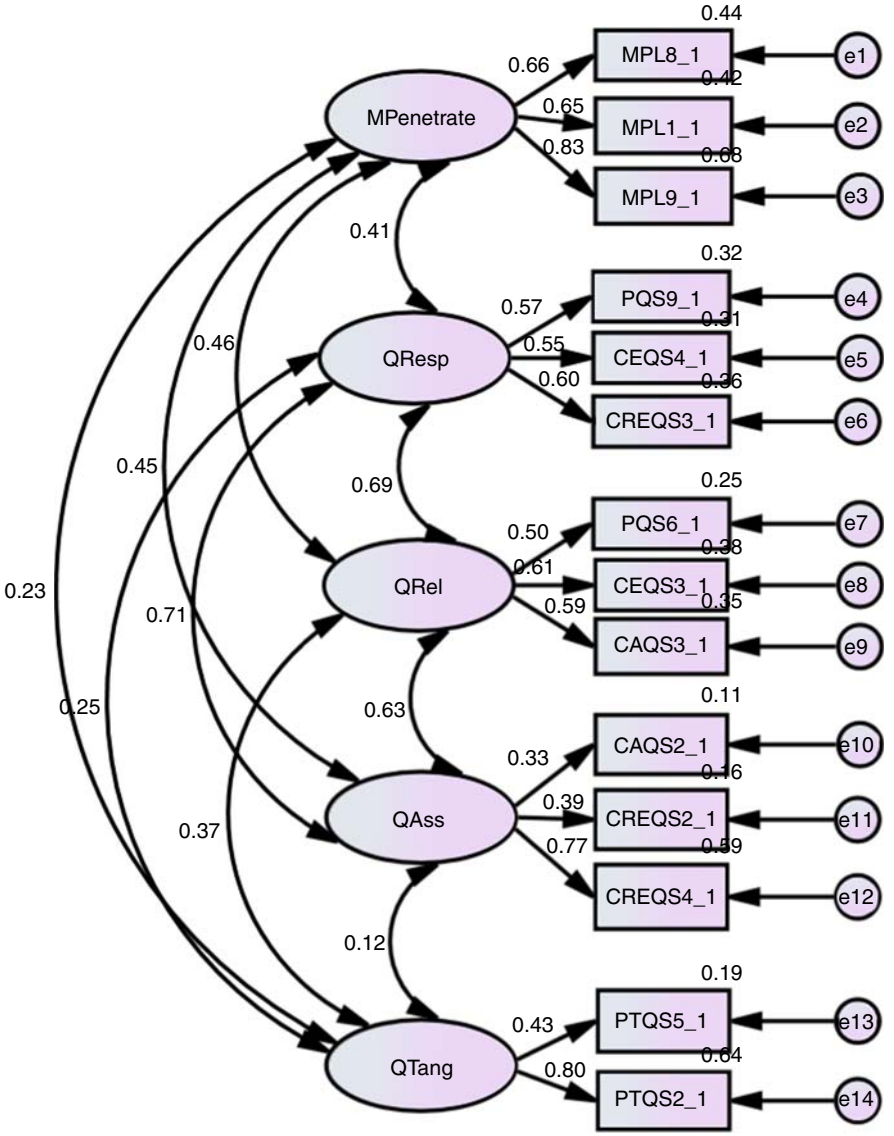
Mishkin, F.S. and Eakins, S.G. (2012), *Financial Markets and Institutions*, 7th ed., Pearson-Prentice Hall, Boston, MA.

Olsson, O. (1999), "A microeconomic analysis of institutions", Working Papers in Economics No. 25, Department of Economics Göteborg University.

Sarma, M. (2010), "Index of Financial Inclusion", Discussion Papers No. 10-05 in Economics, Centre for International Trade and Development, School of International Studies, Jawaharlal Nehru University, November.

Stiglitz, J.E. and Weiss, A. (1981), "Credit rationing in markets with imperfect information", *American Economic Review*, Vol. 71 No. 3, pp. 393-410.

Appendix



Notes: $\chi^2 = 80.588$; Degrees of freedom (df) = 67; Probability (P) = 0.123; Incremental Fit Index (IFI) = 0.971; Tucker–Lewis Index (TLI) = 0.959; Comparative Fit Index (CFI) = 0.970; Root Mean Square Error of Approximation (RMSEA) = 0.032

Figure A1.
CFA measurement model for financial intermediation

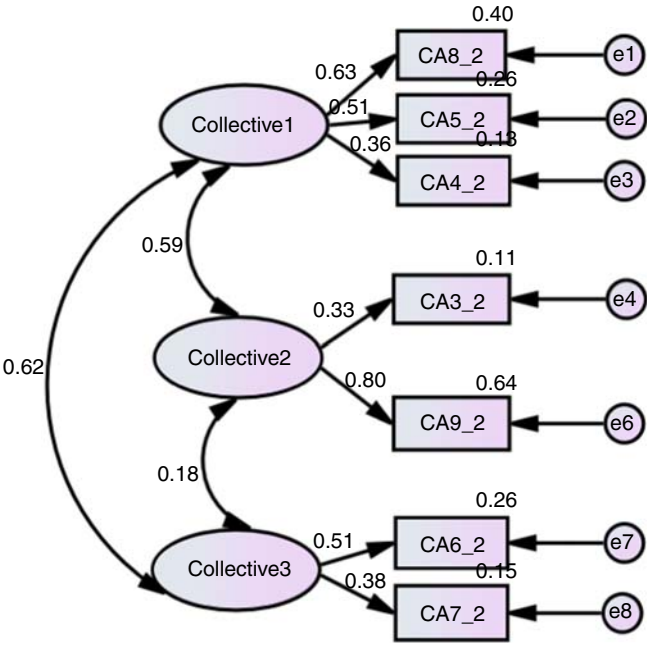
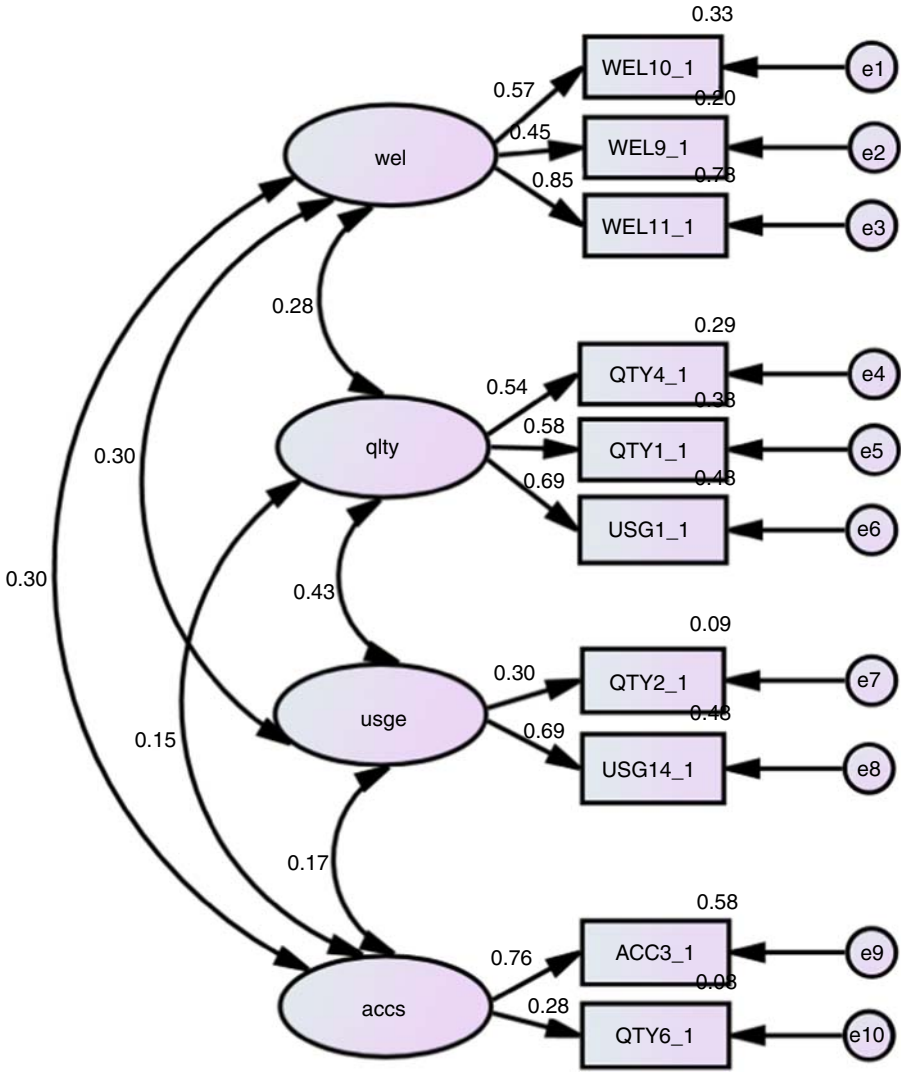


Figure A2.
CFA measurement model for collective action

Notes: $\chi^2 = 12.543$; Degrees of freedom (df) = 11; Probability (P) = 0.324; Incremental Fit Index (IFI) = 0.985; Tucker–Lewis Index (TLI) = 0.967; Comparative Fit Index (CFI) = 0.983; Root Mean Square Error of Approximation (RMSEA) = 0.027



Notes: $\chi^2 = 25.133$; Degrees of freedom (df) = 29; Probability (P) = 0.671; Incremental Fit Index (IFI) = 1.019; Tucker–Lewis Index (TLI) = 1.031; Comparative Fit Index (CFI) = 1.000; Root Mean Square Error of Approximation (RMSEA) = 0.000

Figure A3.
CFA measurement model for financial inclusion

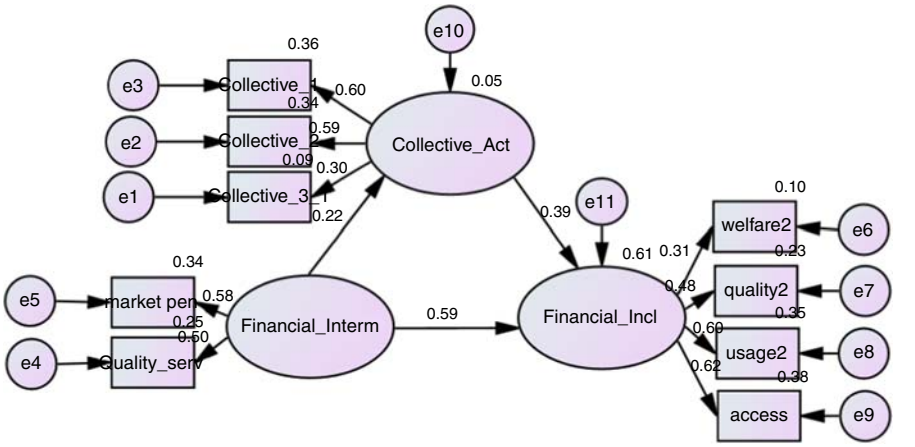


Figure A4.
Mediated model

About the authors

George Okello Candiya Bongomin holds a PhD, MSc (Accounting and Finance) and Bachelor's (B.COM) Degree in Commerce from Makerere University Kampala, Uganda. He is a Financial Management Specialist. His research interests are in financial inclusion, digital financing, development finance, business finance, rural finance (microfinance), behavioral finance, institutional economics, financial consumer protection, and business psychology. George Okello Candiya Bongomin is the corresponding author and can be contacted at: abaikol3@yahoo.co.uk

John C. Munene, PhD, is Professor of Psychology and Co-ordinator of PhD programs, Graduate and Research Centre, Makerere University Business School (MUBS), Kampala, Uganda. His research interests are in industrial and organizational psychology. He is an Organizational Psychology Consultant.

Joseph Mpeera Ntayi, PhD, is Professor of Procurement and Logistics Management and Dean, Faculty of Computing and Management Science, Makerere University Business School (MUBS), Kampala, Uganda. His teaching and research interests are in logistics, financial engineering, entrepreneurship, public procurement, managing contracts, business ethics, industrial marketing, purchasing, and supply chain management. He is an Entrepreneur and a Public Procurement and Marketing Consultant.

Charles Akol Malinga, MBA, is Director of Currency at Bank of Uganda (BoU) and a part-time Lecturer at Makerere University Business School (MUBS), Kampala, Uganda. He has rich experience in corporate finance, financial management, risk management, financial markets, and money and banking.