

Training vs. informal financial services for the promotion of financial literacy and inclusion in Uganda

Colin Agabalinda and William F. Steel

Abstract: *Financial education aims to promote financial inclusion by increasing understanding and use of formal financial services. Despite such training, participation in informal financial practices remains high relative to formal ones in countries like Uganda. A cross-sectional sample survey of economically active urban financial service users is used to test whether financial education through formal training is associated with financial literacy (FL) and FL is associated with increased use of financial services, especially formal ones. The findings indicate that formal financial training is significantly associated with FL, and that higher FL is associated with higher use of both formal and informal financial services. The unexpectedly strong association of the use of informal financial services with financial literacy suggests that informal financial services may have a more complementary role than a simple model of financial formalization would imply. The study suggests that promoting informal financial services may be more efficient in raising financial literacy and inclusion than financial training.*

Keywords: financial inclusion, financial literacy, informal finance, formal finance, training

Introduction

FINANCIAL INCLUSION IS A MULTI-DIMENSIONAL, pro-client concept, encompassing better access, products, and use of financial services. The focus is on accounts in regulated formal financial institutions, although studies in many countries, including Uganda, also recognize informal financial inclusion to reflect the dualism in the financial sector. A wide range of supply-side initiatives is employed to improve the outreach of formal financial institutions, while financial education is seen as a solution to addressing demand-side barriers to formal financial inclusion. Conceptually, it is believed that through financial education, individuals can acquire financial literacy; that is, the knowledge, skills, and attitudes necessary to make beneficial use of formal financial services to improve their wellbeing. The motivation for this study was to empirically assess the relationship between financial education, financial literacy, and use of financial services in a setting where financial services are readily available.

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Research has highlighted low financial literacy levels around the world, especially among vulnerable population groups, making it a priority for policymakers (Lusardi, 2019). Lusardi saw a need for financial education in workplaces, schools, and communities, targeting specific subgroups. Studies have found positive correlations between financial education and increased financial literacy. The Organisation for Economic Co-operation and Development (OECD)'s Programme for International Student Assessment found that, on average, only 10 per cent of 15-year-olds achieved maximum proficiency on a five-point financial literacy scale, and thus advocated for rigorous financial education programmes, including teacher training and high school curricula (OECD, 2017).

The Government of Uganda has implemented microfinance and rural finance programmes to increase the outreach and usage of financial services for the improved wellbeing of the population. However, the Finscope (2018) national survey on the access and use of financial services found that 76 per cent of Ugandan adults still struggle to meet their current financial obligations and lack a clear strategy for their future financial security. The survey report acknowledges a prevalence of financial illiteracy and low uptake of available formal financial services, with only 20 per cent of Ugandan adults having an account with a formal financial institution. On the other hand, the survey reveals a high incidence of informal financial services usage, with 56 per cent of the adult Ugandans using informal financial services either exclusively or alongside formal financial services.

Financial education interventions such as the Bank of Uganda's Strategy for Financial Literacy in Uganda (2013) aim to promote personal financial discipline, optimal utilization of formal financial services, avoidance of over-indebtedness, and effective planning for old age. The strategy aims to promote financial education training through tailored courses delivered to students in schools, employees at the workplace, rural communities through outreach programmes, and the general public through the media. Whether the current approach can effectively support increased use of formal financial services is an important question with implications for policymakers and financial sector practitioners. The current study sought to explore the relationships between financial education, financial literacy, and financial inclusion (informal as well as formal). The study tested the presumption that the provision of financial education through formal training interventions improves the levels of financial literacy and facilitates a shift toward the use of formal financial services.

Further, the study explored the association between individuals' financial literacy (including their behaviour, as well as knowledge, skills, and attitudes) and their participation in alternative financial mechanisms for savings, loans, and insurance that are often provided by unregulated institutions and individuals. Primary data was collected in pursuit of two main objectives: first, to establish whether exposure to formal financial education was positively associated with financial literacy; and second, to investigate the linkage between financial literacy and the utilization of both formal and informal financial services within a developing country context. Sample respondents were selected from economically active adults in Kampala, where formal financial services are relatively available compared to more rural

areas. The following section presents a literature review, followed by a section on the methodology used for variable measurement, data collection, and analysis. The final sections discuss the results and provide a conclusion.

Literature review

Financial education and financial literacy

Some literature has suggested that financial education could enhance financial literacy, which in turn would improve the financial wellbeing and wealth of households (Walstad et al., 2010; Hastings et al., 2012). In contrast, other researchers have suggested that financial education programmes had a limited impact on self-assessed financial literacy (Mandell and Klein, 2009) and a limited impact on financial behavioural outcomes. Studies in support of the latter proposition cited content, context, and participant-related factors and ineffective financial education methods, such as large numbers of participants (Bruhn et al., 2014). Some scholars have argued that the positive impact recorded in some tailored interventions is short term, while proponents of financial education argue that the quality of the training is what determines their effectiveness (Holzmann et al., 2013). In a randomized evaluation to compare the impact of two distinct programmes in the Dominican Republic, Drexler et al. (2014) found that simplifying training programmes would most likely improve their effectiveness, especially among less sophisticated individuals.

A meta-analysis of the relationship of financial literacy and education to financial behaviours in 168 papers covering 201 prior studies conducted by Fernandes et al. (2014) concluded that interventions to improve financial literacy explain only 0.1 per cent of the variance in financial behaviours studied, with weaker effects in low-income samples. However, more recent studies on the effects of financial education on financial literacy have used randomized controlled trials and natural experiments. For instance, in their meta-analysis of 126 impact evaluation studies, Kaiser and Menkhoff (2017) found that financial education significantly impacted financial literacy and, to some extent, financial behaviour. However, they acknowledge the heterogeneity of intervention impacts across different segments. They argue that financial education is less effective for low-income clients, especially in low- and lower-middle-income economies. This is because specific behaviours like debt handling cannot easily be influenced through mandatory financial education, but instead require a high-intensity financial education that is moreover offered at a 'teachable moment'. Contrasting the exposure to financial education with exposure to informal financial services can provide a basis to assess a more practical approach to achieving financial inclusion.

In Uganda only a handful of studies have evaluated the impact of specific interventions on financial literacy, mainly by looking at the behavioural outcomes of the target beneficiaries. For instance, a quasi-experimental study by Niwaha et al. (2016) on a financial literacy training intervention with rural micro- and small entrepreneurs in Western Uganda concluded that such training could only be effective if it is centred on practical financial behaviours, rather than knowledge.

The hypothesis to be investigated (against the null hypothesis of no significant difference) is:

H1 *Financial education delivered through formal training is significantly positively associated with financial literacy*

Financial literacy and usage of financial services

Understanding financial literacy as a key driver in access to and use of financial services has been a major preoccupation among researchers, financial service providers, and policymakers. A study by Lusardi and Tufano (2009) concluded that inadequate financial literacy was associated with the low usage of financial services. Similarly, Peachey and Roe (2004) argued that the growing diversification and sophistication in the wide range of financial products requires increasing the capacity of potential users to be able to understand and use them for their benefit, thus underscoring the association between the two.

Financial knowledge, skills, and attitudes are essential for favourable financial outcomes in developing as well as more developed economies, regardless of age, gender, education, employment status, and ethnicity (Sabri and Falahati, 2012). In a review of studies conducted between 1993 and 1997, Chen and Volpe (1998) concluded that most people who experienced financial problems lacked adequate financial knowledge on savings, expenditures, and investment. As increasing attention has been paid to making financial systems more inclusive, policymakers have turned to financial education to enable previously excluded people to better access and utilize financial services (Wachira and Kihui, 2012; Atkinson and Messy, 2013; Grohmann et al., 2017).

Stuart (2012) examined the effects of an eight-week financial education course on low-income households' financial attitudes and behaviours in Uganda. He concluded that the training led to increased knowledge, skills, and attitudes around financial literacy, but that these did not always translate into direct behavioural change in terms of using formal financial services. His study further revealed some evidence that the training led to increased savings using less formal mechanisms such as savings groups, and that this could have a significant role to play in 'nudging' members towards making better financial decisions. This suggests that people who participate in informal financing mechanisms learn vital skills for managing money, acquiring cash flow, and budgeting, and can build a credit history.

Many studies have found that financial knowledge does influence individuals to behave in more financially responsible ways (Hogarth and Hilgert, 2002; Robb and Woodyard, 2011; Zakaria et al., 2012 as cited by Mien and Thao, 2015) and can explain variations in savings, investment, and credit behaviour (Idris et al., 2013). The studies contend that individuals who lack interaction with formal financial institutions are likely to miss out on knowledge of available financial products for saving and retirement and thus face a lack of future financial security (Lusardi and Mitchell, 2011). However, most such studies have been conducted in developed countries, with a focus on the utilization of formal financial services. Nonetheless, the findings are supported by a plethora of studies which have

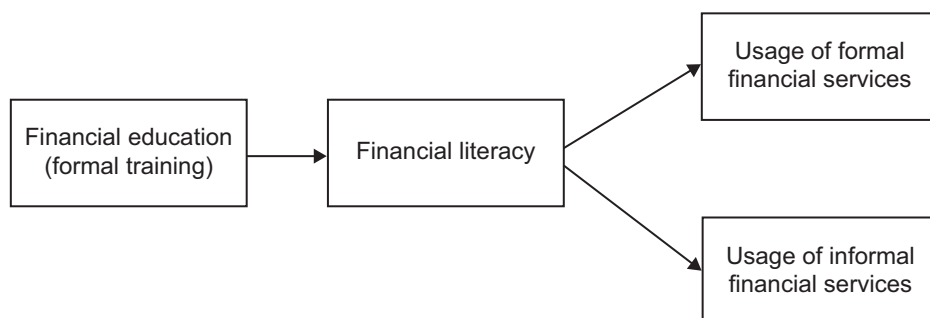


Figure 1 Conceptual framework

examined informal/alternative financial services and practices, especially among immigrant and minority communities (Hogarth et al. 2004; Rhine and Greene, 2013; Barcellos et al. 2015; Robb et al. 2015; Blanco et al. 2017).

In Kenya, a study by Wachira and Kihui (2012) found a positive but not significant link between financial literacy and access to financial services among the formal, semi-formal, and informal financial access strands. Their study acknowledged that financial inclusion among the financially literate population remains low, implying that financial literacy is yet to achieve its intended objective. A study by Shibia and Kieyah (2016) of the effect of financial literacy on individual choices across the financial access strands in Kenya found that financial literacy scores increased with increasing level of formality, suggesting that increasing financial literacy made people more likely to use formal financial services – both directly, and through substituting formal for informal financial services, which are considered to be inferior. That is, while financial literacy is expected to raise the use of financial services generally, the positive effect on informal financial services is likely to be offset by the substitution effect. Thus, the current study seeks to test the following additional hypothesis:

H2 *Financial literacy has a stronger association with the use of formal financial services than informal financial services.*

A conceptual model based on the literature review is shown in Figure 1.

Methodology

Population and sample

The target population for the study included Ugandan adults aged 18 years and above, living in Kampala. The justification for choosing Kampala is that it is a highly urbanized and densely populated district, with a wide variety of formal and informal financial services and the presence of financial literacy training (Finscope, 2018). This ensured that use of financial services was a matter of choice rather than accessibility. Kampala City comprises five urban divisions of Kampala, namely Central, Kawempe, Makindye, Lubaga, and Nakawa. According to the Uganda Bureau of Statistics (2017), the population of Kampala constituted 884,126 Ugandan adults

Table 1 Study population and targeted sample

No	Administrative division	Male		Female		Total population	Total sample
		Population	Sample	Population	Sample		
1	Central Division	23,996	10	24,187	11	48,183	21
2	Kawempe Division	91,687	40	103,670	45	195,357	85
3	Makindye Division	109,177	47	120,984	53	230,161	100
4	Lubaga Division	101,288	44	118,289	51	219,577	95
5	Nakawa Division	92,364	40	98,484	43	190,848	83
Totals		418,512	182	465,614	202	884,126	384

Source: Uganda Bureau of Statistics (2017). Totals have been rounded.

aged 18 years and above. Table 1 presents the adult population of the Kampala district for each of the five administrative divisions.

Following Krejcie and Morgan (1970), a representative sample of 384 participants was targeted, considering a 95 per cent confidence interval and a 5 per cent margin of error. First, the adult population was distributed by gender according to the five geographical divisions of Kampala District. Then participants were proportionately selected from each division, as presented in Table 1. A total of 351 valid responses were obtained, representing a response rate of 91.4 per cent, which was considered representative (Keeter et al., 2006).

Measurement of variables

A survey instrument was designed and administered with measures for the study variables. The first section of the survey instrument was designed to capture respondents' demographic characteristics. This section also asked whether the respondent had attended formal financial literacy (FL) training and who the provider was. The second and third sections of the survey instrument measured financial literacy and financial services (both formal and informal).

The use of financial services was measured using items adapted from the OECD/INFE (2018) Toolkit for financial inclusion studies (Demirgüç-Kunt et al. 2017). The Toolkit provides a basis for assessing use of financial services such as savings, loans, payments/transfers, insurance, and investment. Similarly, the measures for financial literacy used self-assessed measures adapted from the Toolkit on knowledge, skills, attitudes, and behaviours in performing financial product-related tasks, anchored on a five-point Likert scale with responses ranging from 'strongly disagree' to 'strongly agree'. An additional measure, adopted in many studies to operationalize financial literacy, uses objective test questions suggested by Lusardi and Mitchell (2006) on the consumer's understanding of interest rates, inflation, and risk/return associated with investments. The current study constructed a variable that combines subjective self-assessed measures and the objective test questions to obtain an aggregated value of financial literacy. Table 2 summarizes the sources used for the measurement of variables.

Table 2 Measurement of variables and their sources

<i>Variable</i>	<i>Constructs</i>	<i>Sources of measurement scales</i>
<i>Formal financial education</i>	<ul style="list-style-type: none"> • Yes/No 	
<i>Financial literacy</i>	<ul style="list-style-type: none"> • Knowledge • Skills • Attitudes • Behaviours • 3 basic test questions 	2018 OECD/INFE Toolkit; also used in studies such as Okello et al. (2017) Lusardi and Mitchell (2006)
<i>Usage of financial services</i>	<ul style="list-style-type: none"> • Usage of formal services • Usage of informal services 	Demirgüç-Kunt and Klapper (2013); Demirgüç-Kunt et al. (2017)

Analysis

The Statistical Package for Social Scientists (SPSS) was used to capture data and conduct the missing value analysis and generate the background characteristics. Further SPSS was used to generate the correlation and regression analysis to establish relationships between study variables. SMART-PLS Software was then used to test the study hypotheses using Structural Equation Modelling (SEM). Hypothesis H1 was tested by regressing 'formal financial training' on the respondents' level of financial literacy, and H2 was tested with correlations and SEM to establish path coefficients and the strength of the relationships.

To ensure that the research instrument will generate quality data, the research questionnaire was examined for validity and reliability to ensure internal consistency and suitability. This was achieved by critically examining the measurement models, together with the accompanying validity and reliability measures. The measurement model for financial literacy showed that the four main dimensions of financial literacy account for 82.8 per cent of the global construct variance; the dimensions of formal financial services accounted for 89.2 per cent; while those for usage of informal financial services accounted for 94.2 per cent. For reliability, the study utilized composite reliability computations, which are considered to be more credible than the traditional approach of using the Cronbach Alpha coefficient. As presented in Table 3, all variables registered acceptable reliability levels (i.e. above 0.700), and the lowest composite reliability value was 0.798.

With respect to convergent validity, the average variance extracted values of at least .500, showing that more than 50 per cent of the variance for that specific variable has been captured. This was satisfied by all the constructs in Table 3. Finally, the data were tested for collinearity issues, and passed this test since the variance inflation factor for all the variables was less than 5.00, consistent with James et al. (2017).

Measurement model results

Measurement models were generated using SMART-PLS so as to give a more detailed understanding of the study constructs that had been measured subjectively. The most critical dimension of the financial literacy results, was financial

Table 3 Instrument reliability and validity

	<i>Composite reliability</i>	<i>Average variance extracted (AVE)</i>	<i>Variance inflation factor (VIF)</i>
<i>Financial literacy</i>			
Attitudes	.831	.712	1.233
Behaviour	.798	.665	1.130
Knowledge	.868	.688	1.665
Skills	.830	.709	1.213
<i>Usage of formal financial services</i>			
Digital services	.848	.736	1.291
Loans	.938	.834	2.952
Payments	.888	.665	1.847
Savings	.933	.777	3.126
<i>Usage of informal financial services</i>			
Loans	.903	.823	1.714
Savings	.895	.681	1.974

behaviour, as further elaborated in Table 4 (Behaviour → Financial literacy, Beta = .381, Sig. < .01).

The measurement model for the usage of formal financial services showed that digital services accounted for a higher variance of the construct for the Path digital services → Usage of formal financial services (Beta = .758, sig. < .01), as shown in Table 5. Finally, the results in Table 6 showed that loans account for the highest variance in the usage of these unregulated services for informal financial services (Beta = .977, sig. < .01).

These results imply that sample respondents were more likely to adopt informal financial services for loans than for savings or any other form of transaction.

Table 4 Financial literacy model estimates

	<i>Beta</i>	<i>Mean</i>	<i>STDEV</i>	<i>T statistics</i>	<i>P values</i>
Attitudes → Financial literacy	.225	.225	.031	7.274	.000
Behaviour → Financial literacy	.381	.382	.029	13.215	.000
Knowledge → Financial literacy	.167	.167	.035	4.780	.000
Skills → Financial literacy	.392	.392	.031	12.685	.000

Table 5 Model estimates for usage of formal financial services

	<i>Beta</i>	<i>Mean</i>	<i>STDEV</i>	<i>T statistics</i>	<i>P values</i>
Digital services → Usage of formal financial services	.758	.760	.026	29.620	.000
Loans → Usage of formal financial services	.694	.695	.021	32.345	.000

Table 6 Model estimates for usage of informal financial services

	<i>Beta</i>	<i>Mean</i>	<i>STDEV</i>	<i>T statistics</i>	<i>P values</i>
Loans → Usage of informal financial services	.977	.978	.010	101.131	.000
Savings → Usage of informal financial services	.063	.063	.015	4.125	.000
Transactions → Usage of informal financial services	.048	.048	.015	3.321	.001

Findings and discussion

Background characteristics

Results presented in Table 7 show a slightly higher share of male (50.4 per cent) than female respondents (49.6 per cent) and more informally self-employed respondents (56.1 per cent) than formally employed (43.9 per cent). The respondents' employment status was a screening characteristic to ensure that respondents were economically active and, thus, potential financial services users. As a result, the sample population was more likely to be employed than the national population (11 per cent), and more literate (99 per cent as against 78 per cent), and thus more likely candidates for financial literacy training to affect financial inclusion. As presented

Table 7 Sample demographic characteristics (percentage of the sample)

	<i>Count</i>	<i>Percentage</i>	<i>Cumulative percentage</i>
Gender			
Male	177	50.4	50.4
Female	174	49.6	100.0
Employment status			
Employed	154	43.9	43.9
Self-employed	197	56.1	100.0
Level of formal education attained			
None	2	0.6	0.6
Primary	13	3.7	4.3
Secondary	56	16.0	20.2
Diploma	103	29.3	49.6
Degree	136	38.7	88.3
Postgraduate	38	10.8	99.1
Other	3	0.9	100.0
Age bracket (years)			
18–35	261	74.4	74.4
36–50	77	21.9	96.3
51–60	10	2.8	99.1
Above 60	3	0.9	100.0

in Table 7, 38.7 per cent of the respondents were university graduates, followed by diploma holders (29.3 per cent), while only a small number of respondents (0.6 per cent) had not attained any formal education. The largest percentage (74.4 per cent) of the respondents were aged 18–35 years, followed by 21.9 per cent aged 36–50 years; only 0.9 per cent of them were above 60 years (skewed slightly younger than the national population).

Financial education and literacy

Hypothesis 1 Attending financial education training is associated with financial literacy.

The approach to addressing financial illiteracy enshrined in the national financial literacy strategy mainly focuses on delivering a prescribed financial literacy curriculum through training. However, the Pearson (r) correlation tests presented in Table 8 for the relationship between financial literacy and formal financial training show no significant association between these two variables ($r = .074, p > .05$). This result suggests that formal training may not be the most effective means to promote financial literacy among the masses, suggesting that alternative, more cost-effective approaches to promoting financial literacy in countries like Uganda should be explored.

Financial literacy and usage of formal and informal financial services

Hypothesis 2 Financial literacy has a stronger association with the use of formal financial services than informal financial services.

The correlation results for H2 presented in Table 9 indicate a significant positive relationship between financial literacy and both the use of formal financial services ($r = .250^{**}, p < .05$) and the use of informal financial services ($r = .314^{**}, p < .05$). The link between financial literacy, usage of formal financial services, and usage of informal financial services was also estimated using the Structural Equation Model (SEM) presented in Table 10 and Figure 2. This finding implies that financial literacy is significantly associated with increased use of financial services generally. That is, the higher people’s levels of financial literacy, the higher their likelihood of saving, borrowing, and engaging in other financial services, whether formal or informal.

Table 8 Pearson correlation coefficients for training and literacy

		Formal financial training
Financial literacy	Pearson correlation	.074
	Sig. (2-tailed)	.167
	N	351

Source: Primary data

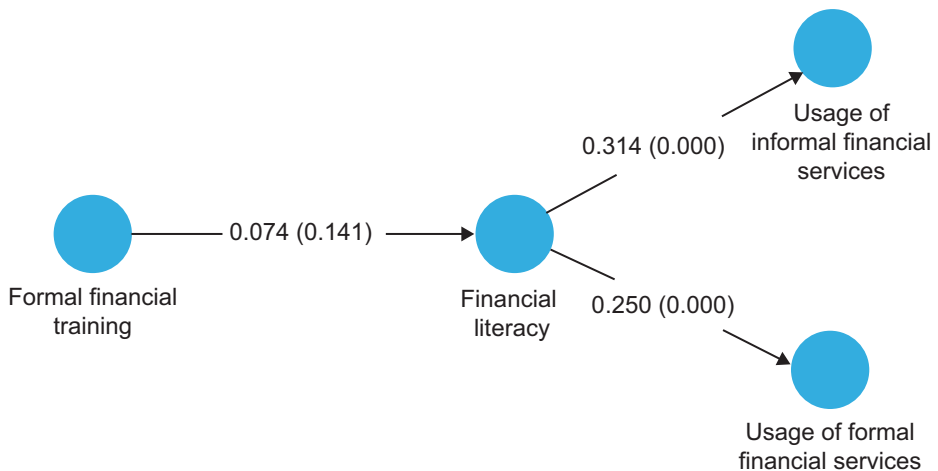
Table 9 Pearson (r) correlation coefficients for literacy and usage

	Mean	SD	1	2	3
Financial literacy-1	1.813	.757			
Usage of formal financial services-2	2.965	.829	.250**		
Usage of informal financial services-3	2.983	.968	.314**	.323**	

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

Table 10 Model estimates

	Beta	Mean	STDEV	T statistics	P values
Financial literacy → Usage of formal financial services	.250	.250	.050	5.027	.000
Financial literacy → Usage of informal financial services	.314	.314	.045	6.936	.000
Formal financial training → Financial literacy	.074	.075	.050	1.466	.143

**Figure 2** SEM for prediction of formal and informal financial services

However, contrary to H2, the correlation is stronger with the use of informal than formal financial services. This suggests that there is no significant substitution of formal for informal financial services, and/or that there is a feedback effect from using informal financial services to financial literacy (the cross-section data do not permit disaggregation). This result is consistent with an alternative model for the promotion of financial literacy based on the usage of financial services proposed by Lusardi and Mitchell (2011). They found that interaction with financial institutions was likely to increase individuals' knowledge of financial products. Thus, Figure 1 should be modified by the dotted arrows in Figure 3, representing a possible feedback loop.

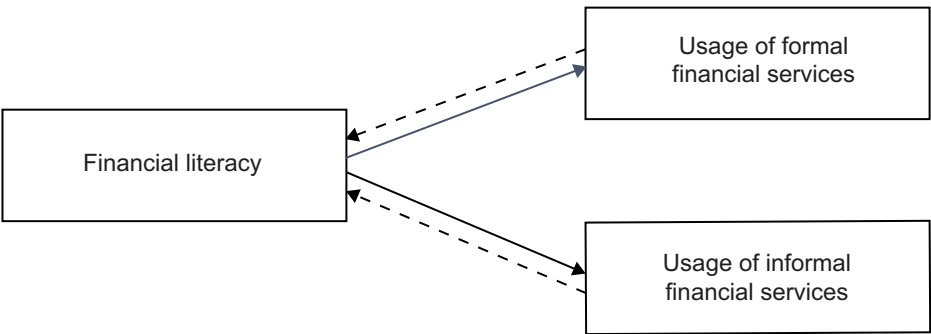


Figure 3 Alternative model with feedback

Conclusion and recommendation

The study findings suggest that, while formal financial literacy training is positively associated with increased use of financial services and hence financial inclusion, it is not necessarily the most efficient way of promoting financial literacy. Further, the increased uptake of formal financial services associated with financial literacy does not necessarily come at the expense of the use of informal financial services. On the contrary, the study findings suggest that increased use of informal (as well as formal) financial services is associated with increased levels of financial literacy, indicating a positive feedback loop. One implication is that the use of informal mechanisms for savings and credit provided people with knowledge and experience in handling financial matters, thus contributing to their financial literacy and thereby supporting increased use of formal as well as informal financial services. In other words, people who frequently accessed financial services for saving and borrowing from informal sources over time adopted discipline in regular savings, loan repayments, and proper use of these services.

This finding is consistent with Hendricks and Chidiac (2011), as well as earlier literature on microfinance, which argued that participation in informal financial mechanisms such as village savings and loan associations (VSLAs) enables people to better manage their finances and access services. Thus, promoting increased usage of informal financial services may improve people’s financial literacy, giving them greater confidence and capabilities to begin using formal financial services. Such an approach is further consistent with Triki and Faye (2013), who found that informal financial services usage acted as a springboard into a broader range of formal products such as student loans or life insurance.

One caveat to the conclusions drawn from this study is that financial education was measured with a single-item question as to whether the respondent had accessed financial education through a formal training programme. While the survey also asked a follow-up question regarding the source of the education, respondents’ understanding of financial education may vary considerably. Further research including more details on the nature of formal financial education such as duration of training and type of curriculum would strengthen the validity of this

measurement. Further, it may be noted that the study only involved a small, albeit representative sample of employed (including self-employed) people in the urban Kampala District of Uganda. A wider survey would make the findings more robust and generalizable. Further, a longitudinal study would allow for trend analysis among the study variables over a longer period and for disaggregating feedback and substitution effects to better understand the relationship between using informal and formal financial services.

With this caveat in mind, there are implications for policymakers and financial educators in countries like Uganda. The financial education initiatives funded by governmental and nongovernmental organizations are often assumed to be sufficient to promote financial literacy and enlist optimal participation, especially in formal financial services. In Uganda, the financial literacy strategy focuses on the delivery of training through five strands: schools, the youth, rural outreach programmes, workplaces, and the media (Bank of Uganda, 2013). These initiatives helped account for respondents' positive responses to the question on whether they had previously attended a formal FL training. However, the study findings suggest that perhaps a more comprehensive approach to improving financial literacy should include promotion of informal financial services, especially those with proven methodologies such as VSLAs as a more effective way to promote financial literacy and inclusion.

References

- Atkinson, A. and Messy, F.A. (2013) *Promoting Financial Inclusion through Financial Education: OECD/INFE Evidence, Policies and Practice* [online], OECD Working Papers on Finance, Insurance and Private Pensions No. 34 <<https://www.oecd-ilibrary.org/docserver/5k3xz6m88smp-en.pdf?expires=1596978466&id=id&accname=guest&checksum=64278EC56A972D1EBD7C8DD47D59ABE2>> [accessed 26 November 2020].
- Bank of Uganda (2013) *Strategy for Financial Literacy in Uganda: Simplify Money, Magnify Life* [online], Bank of Uganda, Kampala, Uganda <http://ugandabankers.org/wp-content/uploads/2019/10/Strategy-for-Financial-Literacy-in-Uganda_August-2013.pdf> [accessed 26 November 2020].
- Barcellos, S.H., Carvalho, L.S., Smith, J.P. and Yoong, J. (2015) 'Financial education interventions targeting immigrants and children of immigrants: results from a randomized control trial', *The Journal of Consumer Affairs* 50: 263–85 <<https://doi.org/10.1111/joca.12097>>.
- Blanco, L., Kenrik, D.O. and Mangione, C. (2017) *A Community-Based Randomized Controlled Trial of an Educational Intervention to Retirement Saving Among Hispanics* [online], School of Public Policy Working Paper 76, Pepperdine Digital Commons <<https://digitalcommons.pepperdine.edu/cgi/viewcontent.cgi?article=1075&context=sppworkingpapers>> [accessed 26 November 2020].
- Bruhn, M., Ibarra, G.L. and McKenzie, D. (2014) 'The minimal impact of a large-scale financial education program in Mexico City', *Journal of Development Economics* 108(C): 184–9 <<https://doi.org/10.1016/j.jdeveco.2014.02.009>>.
- Chen, H. and Volpe, R.P. (1998) 'An analysis of personal financial literacy among college students', *Financial Services Review* 7(2): 107–28.
- Demirgüç-Kunt, A. and Klapper, L. (2013) 'Measuring financial inclusion: explaining variation in use of financial services across and within countries', *Brookings Papers on Economic Activity* Spring: 279–340 <<https://doi.org/10.1353/eca.2013.0002>>.

Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S. and Hess, J. (2017) *The Global Findex Database: Measuring Financial Inclusion and the Fintech Revolution* [online], World Bank <<http://www.worldbank.org/globalfindex>> [accessed 26 November 2020].

Drexler, A., Fischer, G. and Schoar, A. (2014) 'Keeping it simple: financial literacy and rules of thumb', *American Economic Journal: Applied Economics* 6(2): 1–31 <<https://doi.org/10.1257/app.6.2.1>>.

Fernandes, D., Lynch, J.G. and Netemeyer, R.G. (2014) 'Financial literacy, financial education, and downstream financial behaviors', *Management Science* 60(8): 1861–83. <<https://doi.org/10.1287/mnsc.2013.1849>>.

Finscope (2018) *Finscope Uganda Topline Findings Report* [online] <<https://fsduganda.or.ug/wp-content/uploads/2018/10/FinScope-Uganda-Survey-Report-2018.pdf>> [accessed 26 November 2020].

Grohmann, A., Klühs, T. and Menkhoff, L. (2017) *Does Financial Literacy Improve Financial Inclusion? Cross Country Evidence* [online], DIW Berlin Discussion Paper No. 1682 <<http://dx.doi.org/10.2139/ssrn.3034178>>.

Hastings, J., Madrian, B. and Skimmyhorn, W. (2012) *Financial Literacy, Financial Education and Economic Outcomes* [online], NBER Working Paper Series <<https://doi.org/10.3386/w18412>>.

Hendricks, L. and Chidiac, S. (2011) 'Village savings and loans: a pathway to financial inclusion for Africa's poorest households', *Enterprise Development and Microfinance* 22: 134–46 <<https://doi.org/10.3362/1755-1986.2011.016>>.

Hogarth, J.M. and Hilgert, M.A. (2002) 'Financial knowledge, experience, and learning preferences: preliminary results from a new survey on financial literacy', paper published in the *Consumer Interest Annual, Proceedings of the American Council on Consumer Interests 2002 Annual Conference* [online] <https://www.consumerinterests.org/assets/docs/CIA/CIA2002/hogarth-hilgert_financial%20knowledge.pdf> [accessed 26 November 2020].

Hogarth, J.M., Anguelov, C.E. and Lee, J. (2004) 'Why don't households have a checking account?' *Journal of Consumer Affairs* 38(1): 1–34 <<https://doi.org/10.1111/j.1745-6606.2004.tb00463.x>>.

Holzmann, R., Mulaj, F. and Perotti, V. (2013) *Evaluation Studies of Programs to Enhance Financial Capability in Low and Middle-Income Countries: Summary (English)* [online], Financial Literacy and Education Russia Trust Fund, World Bank Group <<http://documents.worldbank.org/curated/en/932391468339044800/Evaluation-studies-of-programs-to-enhance-financial-capability-in-low-and-middle-income-countries-summary>> [accessed 26 November 2020].

Idris, F.H., Krishnan, K.S.D. and Azmi, N. (2013) 'Relationship between financial literacy and financial distress among youths in Malaysia: an empirical study' *Malaysian Journal of Society and Space* 9(4): 106–17 <http://journalarticle.ukm.my/6658/1/11oke.geografia-okt2013-faoziah_et_al-edam1.pdf> [accessed 13 May 2021].

James, G., Witten, D., Hastie, T. and Tibshirani, R. (2017) *An Introduction to Statistical Learning*, 8th edn, Springer Science Business Media, New York.

Kaiser, T. and Menkhoff, L. (2017) 'Does financial education impact financial literacy and financial behavior, and if so, when?' *The World Bank Economic Review* 31(3): 611–30 <<https://doi.org/10.1093/wber/lhx018>>.

Keeter, S., Courtney, K., Dimock, M., Best, J. and Craighill, P. (2006) 'Gauging the impact of growing nonresponse on estimates from a national RDD telephone survey', *Public Opinion Quarterly* 70(5): 759–79 <<https://doi.org/10.1093/poq/nfl035>>.

Krejcie, R.V. and Morgan, D.W. (1970) 'Determining sample size for research activities', *Educational and Psychological Measurement* 30: 607–10 <<https://doi.org/10.1177/001316447003000308>>.

Lusardi, A. (2019) 'Financial literacy and the need for financial education: evidence and implications', *Swiss Journal of Economics and Statistics* 155: 1 <<https://doi.org/10.1186/s41937-019-0027-5>>.

Lusardi, A. and Mitchell, O.S. (2006) *Financial Literacy and Planning: Implications for Retirement Wellbeing* [online], DNB Working Papers 078, Netherlands Central Bank, Research Department <<https://ideas.repec.org/p/dnb/dnbwpp/078.html>> [accessed 26 November 2020].

Lusardi, A. and Mitchell, O.S. (2011) 'Financial literacy and retirement planning in the United States', *Journal of Pension Economics and Finance* 10(4): 509–25 <<https://doi.org/10.1017/S147474721100045X>>.

Lusardi, A. and Tufano, P. (2009) *Debt Literacy, Financial Experiences, and Over Indebtedness*, NBER Working Paper No. 14808, National Bureau of Economic Research, Cambridge, MA.

Mandell, L. and Klein, L.S. (2009) 'The impact of financial literacy education on subsequent financial behavior', *Journal of Financial Counseling and Planning* 20(1) [online] <<https://ssrn.com/abstract=2224231>> [accessed 13 May 2021].

Mien, N.T. and Thao, T.P. (2015) 'Factors affecting personal financial management behaviors: evidence from Vietnam', in *Proceedings of the Second Asia-Pacific Conference on Global Business, Economics, Finance, and Social Sciences* [online] <http://globalbizresearch.org/Vietnam_Conference/pdf/VL532.pdf> [accessed 26 November 2020].

Niwaha, M., Schmidt, O. and Tumuramye, P. (2016) 'Financial literacy and development: experimental insights from rural micro and small entrepreneurs (MSEs) in Western Uganda', *International Journal of Development Research* 6(02): 6758–64.

OECD (2017) *PISA 2015 Results (Volume IV): Students' Financial Literacy* [online], OECD Publishing, Paris <<https://doi.org/10.1787/9789264270282-en>> [accessed 26 November 2020].

OECD/INFE (2018) *Toolkit for Measuring Financial Literacy and Financial Inclusion* [online], Organisation for Economic Co-operation and Development, Paris, France <<http://www.oecd.org/financial/education/2018-INFE-FinLit-Measurement-Toolkit.pdf>> [accessed 26 November 2020].

Okello, G.C.B., Munene, J.C., Ntayi, J.M. and Malinga, C.A. (2017) 'Financial literacy in emerging economies: do all components matter for financial inclusion of poor households in rural Uganda?' *Managerial Finance* 43(12): 1310–31 [online] <<https://ideas.repec.org/a/eme/mfipps/mf-04-2017-0117.html>> [accessed 26 November 2020].

Peachey, S. and Roe, A. (2004) 'Access to finance' (unpublished study), World Savings Banks Institute and World Bank, Washington, DC.

Rhine, S.L. and Greene, W.H. (2013) 'Factors that contribute to becoming unbanked', *The Journal of Consumer Affairs* 47: 27–45 <<https://doi.org/10.1111/j.1745-6606.2012.01244.x>>.

Robb, C.A. and Woodyard, A.S. (2011) 'Financial knowledge and "best practice" behavior', *Journal of Financial Counseling and Planning* 22(1): 36–46.

Robb, C.A., Babiarz, P., Woodyard, A. and Seay, M.C. (2015) 'Bounded rationality and use of alternative financial services', *The Journal of Consumer Affairs* 49: 407–35 <<https://doi.org/10.1111/joca.12071>>.

Sabri, M.F. and Falahati, L. (2012) 'Estimating a model of subjective financial well-being among college students', *International Journal of Humanities and Social Science* 2(18) [online]

<<https://pdfs.semanticscholar.org/63f0/a9c2861cebeb57bf9847fe6a2169885b2718.pdf?ga=2.24440562.93674902.1606479010-1211421249.1606479010>> [accessed 27 November 2020].

Shibia, A.G. and Kieyah, J. (2016) 'Effects of financial literacy on individual choices among financial access strands in Kenya', *International Journal of Business and Economics Research* 5(1): 10–18 <<https://doi.org/10.11648/j.ijber.20160501.12>>.

Stuart, G. (2012) *Uganda Financial Education Impact Project* [online], Microfinance Opportunities <<https://www.microfinanceopportunities.org/download.php?download=aHR0cHM6Ly93d3c-ubWljcm9maW5hbmNlb3Bwb3J0dW5pdGllcy5vcmcvd3AtY29udGVudC91cGxvYWRzLzlwMTMvMTIvVWdhbmRhLUZpbmFuY2lhbC1FZHVjYXRpb24tSW1wYWN0LVByb2plY3QucGRm>> [accessed 27 November 2020].

Triki, T. and Faye, I. (eds) (2013) *Financial Inclusion in Africa* [online], African Development Bank, Tunis <https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Financial_Inclusion_in_Africa.pdf> [accessed 26 November 2020].

Uganda Bureau of Statistics (2017) *The National Population and Housing Census 2014: Main Report* [online], Kampala, Uganda <https://www.ubos.org/wp-content/uploads/publications/03_20182014_National_Census_Main_Report.pdf> [accessed 26 November 2020].

Wachira, M.I. and Kihui, E. (2012) 'Impact of financial literacy on access to financial services in Kenya', *International Journal of Business and Social Science* 3(19): 42–50 [online] <http://ijbssnet.com/journals/Vol_3_No_19_October_2012/5.pdf> [accessed 26 November 2020].

Walstad, W.B., Rebeck, K. and MacDonald, R.A. (2010) 'The effects of financial education on the financial knowledge of high school students', *Journal of Consumer Affairs* 44(2): 336–57 <<https://doi.org/10.1111/j.1745-6606.2010.01172.x>>.

Zakaria, R.H., Jaafar, N.I.M. and Marican, S. (2012) 'Financial behavior and financial position: a structural equation modeling approach', *Middle-East Journal of Scientific Research* 12(10): 1396–402.