The Levels of Financial Literacy in Kampala, Uganda: A comparative analysis using objective and subjective measures

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Abstract

The study presents a comparative analysis of objectively measured and subjectively measured financial literacy in Kampala, Uganda. Financial literacy levels were measured and compared by the demographic characteristics of age, gender, employment status, level of education, and access to financial education. Survey data from a sample of n = 351 adults proportionately selected the five administrative divisions of Kampala in Uganda was analysed using descriptive statistics, Exploratory Factor Analysis (EFA), and the Analysis of Variance (ANOVA). The findings reveal a high level of self-assessed financial literacy and a low level of objectively measured financial literacy among respondents. On the overall, respondents have a limited understanding of basic concepts of interest rate, inflation, and securities, thus suggesting overestimated levels of financial literacy among people in Kampala. The study finds the overestimation problem more prominent among younger people, and those employed in the formal sector. Further, financial literacy (both objectively and subjectively measured) is higher among men than women; and also higher among the respondents that have had prior financial education. Our findings have vital implications for policy and practice: First, is that financial education is a useful tool in promoting financial literacy. Second, financial education programs in Uganda need to proactively target women, persons aged 35 yrs and above, and self-employed persons operating in the informal sector. Third, there is an urgent need for financial educators to promote awareness on the need for financial education, especially among segments with overestimated levels of financial literacy.

Keywords: Financial literacy, financial education, objective & subjective measures

1.0 Introduction

The term "financial literacy" is widely used to refer to an individual's awareness and knowledge regarding financial products, skills necessary to calculate interest rate payments, and general capability to manage money (Zu & Zia, 2012). Other definitions include attitudes toward the usage of financial instruments (Orton,2007); and individual confidence in dealing with financial institutions (OECD, 2013; Remund, 2010; Huston, 2010). Financial literacy is, therefore, thought to be very important for improved individual financial decision-making. Financially literate people can save, invest, plan for retirement, participate in stock markets, and ultimately accumulate wealth. (Yoshihiko & Rahim, 2016). However, people that lack financial literacy indulge in suboptimal decisionmaking that could negatively impact personal welfare. In a meta-analysis of 126 impact evaluation studies, Kaiser & Menkhoff (2017) highlighted a multitude of suboptimal financial behaviors, including over-indebtedness, inefficient methods of saving, insufficient retirement savings, a weak composition of investment portfolios, and inability to make meaningful participation in financial markets. Similarly, they suggest that financially illiterate people in developing countries suffer risk exposures due to a lack of adequate insurance and other financial instruments. Therefore improving the levels of financial literacy among populations is an essential priority for both developed and developing countries.

Financial literacy for households is a concern for governments and policymakers because financial markets have become more sophisticated, riskier, and globalized (Lusardi and Mitchell 2011a). In the developed countries, for instance, OECD (2016) reports that one out of ten US households filed for bankruptcy in 2003, while personal bankruptcies in Austria rose by 11%, and there is an increase in personal bankruptcies in many OECD countries that arise from misuse of credit cards. Similarly, in developing countries, despite the

growing automation of financial transactions, more than half of the population remains unbanked due to a lack of financial literacy. Countries like Uganda have developed and implemented national strategies for financial literacy that aim to equip people with knowledge, skills, and confidence to manage their financial lives under their economic circumstances (Bank of Uganda, 2013). However, the country's efforts to promote financial literacy, have not adequately benefitted from in-country studies the levels of financial literacy, especially among the different socio-demographic groupings in the country. Understanding people's levels of financial literacy can help policymakers and financial educators achieve better results. Moreover, Yoshihiko & Rahim (2016) have argued that finding an appropriate measure for financial literacy is the most is very important for studies on the financial literacy determinants.

There have not been adequate studies to determine individual levels of financial literacy in Uganda. A few studies such as Bongomin et al. (2017) examined the components of financial literacy, while Bongomin et al. (2016) assessed the mediating effects of social capital on the relationship between financial literacy and financial inclusion. Kasalirwe & Lokina (n.d) evaluated the levels of financial literacy and its impact on investment choices in Uganda. Other studies, such as Messy & Monticone (2012), evaluated specific financial education programs. However, most of these studies have used using single measures, either subjective, objective or like in the latter case, indirect measures to test for behavioral changes among respondents after exposure to financial education. The more prominent nationwide surveys on access and usage of financial services in Uganda, such as Finscope (2008, 2013 and 2018), have not explicitly measured financial literacy.

Therefore this study sought to achieve two objectives: First, to assess the level of financial literacy among people in Kampala, Uganda. Secondly, to compare the levels of financial literacy across different population segments by age, gender, level of education, and employment status. In so doing, the study aims to provide policymakers and financial educators an empirical foundation for financial education interventions among different demographic segments of the Ugandan society.

2.0 Measuring Financial Literacy

2.1 Rationale
There are many facets of financial literacy: In developed economies with sophisticated financial markets, it is an essential tool for consumers to navigate through a multitude of complex financial instruments for borrowing, saving, and investment and retirement planning. However, low-income developing economies, it is a tool to equip people with knowledge skills and confidence to make use of available financial products lest they fall prey to scams, exploitative loan sharks, and fraudsters (OECD, 2016). Financially literate individuals are more likely to engage financial service providers to develop market-oriented products that are most suited for their needs, which ultimately spurs economic growth. Financial literacy is, therefore, very crucial for consumers in developed countries to ensure that they have sufficient savings and investments to sustain their income in retirement, as well as to avoid indebtedness that often results in bankruptcy and foreclosures. On the other hand, in countries with undeveloped financial markets, it is a primary financial inclusion tool for promoting the utilization of essential banking and non-banking services such as savings, credit, and insurance. Financial literacy is, therefore, a valuable safeguard to protect poor people from the risk of scammers and exploitative practices that often throw them in abject poverty. It is, therefore, critical to measure financial literacy among populations of countries to be able to address the identified gaps continuously.

According to OECD (2016), two problems affect the promotion of financial literacy world over: first, is the general lack of adequate financial knowledge to enable people to navigate contemporary complex markets; and second, is the individual's general beliefs that they are more financially literate than they are in the real sense. The latter problem explains why the same individuals may obtain higher financial literacy scores when subjectively self-assessed measures are used and yet get lower scores using objective criteria that test actual knowledge and skills in financial matters.

2.2 Subjective Vs. Objective Measures
The US Financial Literacy and Education Commission of 2007 and the Organization for Economic Co-operation and Development (OECD) define financial literacy as the individual's ability to use their knowledge and skills to make decisions that enable them to achieve maximum financial well-being.

Subjective self-assessed measurement items derive from this definition. Studies that use subjective-self assessed measures, however, employ varying numbers of statement items on specific knowledge, skills, attitudes, and behaviors concerning specific or general financial products and services for which individual respondents respond. On the other hand, objective measures test for the individuals' knowledge and understanding of the implications of interest, inflation, risks/returns, as well as their to apply this knowledge and numeric ability to make some computations in their day-to-day financial decision making. Such studies also may vary in the number of questions (both basic, advanced, or a combination of both) used: for instance, Van Rooij, Lusardi, and Alessie (2011) used five questions, while Yoshihiko & Rahim (2016) used four questions. Stango and Zinman (2009) used only one question, and Lusardi and Mitchell (2007, 2008, 2011) used the three big questions.

Financial literacy surveys conducted at national levels earlier in countries such as the United States, the United Kingdom, Japan, Australia, and Korea used two distinct approaches in defining and measuring financial literacy (OECD, 2005). In Korea and the U.S, the surveys utilized the Jump$tart Coalition designed a questionnaire to measure personal financial literacy among high school. They found a decline in scores to as low as 40.1% in Korea and 48.3% in the U.S (Mandell, 2009). However, the approach used in financial literacy surveys in Japan, the United Kingdom, and Australia used self-assessed measurement items designed to test individual attitudes to financial services, decisions, and information. In Japan, the study found that respondents reported lower self-assessed knowledge on interest rates, risks, and returns of investment, as well as consumer protection regulations. However, in Australia, the financial literacy survey utilized telephone interviews using both subjective and objective questions, thus enabling researchers to compare the subjective scores with the objective measures (OECD, 2005). According to the US National study on financial capability conducted in 2009, less than 10% of the sampled respondents provided correct answers to the three basing financial literacy questions on compound interest, inflation, and risk diversification (FINRA, 2009, Lusardi, 2010). However, the self-assessed measure revealed that 40% of the respondents rated themselves highly. Likewise, over 60% of respondents in a similar study in the UK failed at least one of the three questions (Atkinson et al., 2006), and yet many respondents overly expressed confidence regarding their knowledge and skills in handling financial matters. In the Netherlands, 15% of the respondents reported that they did not require and extra information on the issues, however when subjected to an objective measure, they were found to have very minimal levels of financial knowledge (Cent1Q, 2007).

A more recent survey on financial literacy is the OECD/INFE International Survey of Adult Financial Literacy Competencies, conducted in at least 30 countries used the OECD/INFE toolkit to collect data from 51,650 adult respondents aged between 18 and 79 years in 30 languages (OECD, 2016). The kit includes a questionnaire with both objective and subjective measures used to create scores on the respondent's knowledge, attitudes, and behaviour as indicators of their levels of financial literacy. Since 2010, the OECD has used similar measures to collect financial literacy data in over 30 countries including Albania; Austria; Belarus; Belgium; Brazil; British Virgin Islands; Canada; China; Croatia; Czech Republic; Estonia; Finland; France; Georgia; Hong Kong, Hungary; Jordan; Korea; Latvia; Lithuania; Malaysia; the Netherlands; New Zealand; Norway; Poland; Portugal; Russia; South Africa; Thailand; Turkey and United Kingdom (OECD, 2016). The measures used for financial literacy in the surveys utilized both subjective self-assessed statements and objective test questions focusing on subsets of knowledge, attitudes, behaviours, and applied numeracy. The findings reveal a generally low level of financial literacy among most countries, albeit with considerable variations in the levels of objective knowledge, and subjectively assessed type of behaviours and attitudes across different population groups and social-demographic segments.

The various measurement approaches used in multiple financial literacy surveys have enabled countries to develop more appropriate financial inclusion and literacy strategies in those countries, however, very few studies examined levels of financial literacy among segments of the population in Uganda. The current study uses both subjective and objective measures to obtain a more nuanced picture of financial literacy levels within demographic sections of the Kampala community in Uganda. The study aims to shed light on the extent of the financial literacy gaps, facilitate further investigations, and contribute towards a comprehensive policy response towards the promotion of financial literacy in the country.

3.0 Methodology

The study used a cross-sectional research design survey conducted among a population of people living in Kampala, Uganda. The total population of the district comprised 884,126 adults aged 18 Years and above. Therefore, based on the Krejcie and Morgan (1970) table for sample determination, a sample of n = 384 was targeted to ensure proportionate selection of respondents from the five administrative divisions of Kampala, District as per the Uganda Bureau of Statistics (UBOS) 2017 Kampala report. The study used a simple random sampling technique to proportionately identify study participants from each of the administrative divisions of Kampala. The survey used a questionnaire to collect data on the demographic characteristics, as well as objective and subjective measures of financial literacy among the sampled individual users of financial services who constituted the unit of analysis.

3.1 Measurement of Variables:

The subjective aspect of financial literacy was measured using the dimensions of Knowledge, Skills, Attitudes and Financial Behavior mainly adapted from the OECD/INFE toolkit and customized to suit the Ugandan context as presented in Appendix 1. The objective aspect of the Financial Literacy was, on the other hand, measured using Lusardi & Mitchel (2006) big three questions on the interest rate, inflation rates, and the Risk/ Return on securities, customized to suit the Ugandan study context as presented in Appendix 2.

3.2 Reliability and Validity:

The subjective measurement scales were subjected to reliability tests to ensure consistency of data and credible results. Further, the measurement items in the questionnaire were subjected to validity tests to ensure accurate measurement of the constructs (Heale and Twycross, 2017). The study utilized SMART-PLS to test for reliability (using composite reliability), as well as convergent validity (using the average explained) and collinearity (using the variance inflation factors) consistent with Hair et al. (2010). Table 1 shows the results: -

Table 1 - Reliability and Validity

	Composite Reliability	**Average Variance Extracted (AVE)**	**Variance Inflation Factor (VIF)**
Financial Literacy			
Attitudes	.831	.712	1.233
Behavior	.798	.665	1.130
Knowledge	.868	.688	1.665
Skills	.830	709	1.213

The results showed that the assessment of the financial literacy subjective measurement instrument was acceptable. These ranged from the composite reliability, whose minimum value was .798, against .700, which is considered acceptable. Additionally, the AVE was also satisfactory and above the minimum recommended .500, showing that the instrument had reasonable and adequate convergent validity. Finally, the results in Table 1 showed that the Variance Inflation Factor (VIF) was acceptable since the maximum allowed for is 5.000. The instrument, therefore, passed the collinearity test since these dimensions of Financial Literacy had no VIF values above 5.000. The results for the discriminant validity of the research instrument are presented in Table 2 using the Fornell-Larcker Criterion.

Table 2 - Discriminant Validity-Fornell-Larcker Criterion – Financial Literacy

Financial Literacy	**Attitudes**	**Behavior**	**Knowledge**
Attitudes	.844		

Behaviour	.526	.816		
Knowledge	.404	.406	.829	

The results show that the Square root of the AVE for the Dimension of Attitudes was .844 and was higher than the value of the correlation that the Attitudes have with Behavior (.526) and Knowledge (.404). Thus the measurement items for the Attitudes dimension had a higher shared variance than those used to measure the Behavior and the Knowledge dimensions. The data collection exercise realized a total of 351 questionnaires representing a response rate of **91.4**%. The study used exploratory factor analysis (EFA), analysis of variance (ANOVA), and descriptive statistics to analyze the data.

4.0 Findings

The study sought to assess and compare financial literacy among demographic segments of the population in Kampala, Uganda. The study used objective and subjective measures to evaluate the levels of financial literacy. Table 3 presents the results of the exploratory Factor analysis (EFA) used to examine the validity of self-assessed financial literacy measurement items.

Table 3 - Exploratory Factor Analysis Results - Financial Literacy

	Knowledg	*Behavio*	*Attitudes*	*Skills*
I am financially capable of making good use of financial products and services	.791			
I can prepare a personal budget	.716			
I am knowledgeable about financial products and services offered by various financial institutions	.728			
I understand inflation, and I am able to factor it in my financial decisions	.729			
I am careful in my expenditures, and I always stick to my budget		.719		
I save regularly according to my savings plans		.750		
Before I buy something, I carefully consider whether I can afford it		.606		
I set long term financial goals and strive to achieve them		.590		
I am always interested in getting information on financial issues			.641	
I always compare prices before making choices on financial products and services			.675	

I am very interested in dealing with banks and other regulated financial institutions			.731	
I have the ability to accurately determine costs and benefits from financial transactions				.576
I have the ability to compute interest rates				.615
Eigen Values	**3.135**	**2.265**	**1.742**	**1.374**
Variance %	**41.802**	**15.099**	**11.611**	**9.158**
Cumulative %	**41.802**	**56.901**	**68.512**	**77.670**
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.841		
Bartlett's Test of Sphericity				
Approx. Chi-Square		1388.267		
Df		105		
Sig.		.000		

The EFA results presented in Table 3 suggest that the main dimensions of financial literacy, in terms of increasing variance explained, include: - knowledge, behavior, attitudes, and skills. Together they comprise 77.670% of the financial literacy (self-assessed) variable.

4.1 Subjective (Self-Assessed) Measure of Financial Literacy

The results reveal the dimensions with the least, and the highest variance explained of the financial literacy. The knowledge dimension was the one that had the highest value, with a "variance explained" of 41.802%. The findings show that all the financial literacy items had loadings that were above .500. The most defining factors of this knowledge dimension were; "*the capacity of the individual to make effective use of the financial services*" (.791) and "*the capacity of an individual to both understand inflation and exploit the same in their financial decisions*" (.729). The skills dimension had the least "variance explained" among the four aspects of financial literacy (9.158%). Two outstanding issues arising from the skills dimension of the factor analysis results were; "*the capacity to accurately determine costs and benefits from financial transactions*" (.576) and "*the capacity to compute interest rates*" (.615).

Further, Table 3 shows that that the KMO was greater than 0.500, and this indicates that for the sample employed in this study, Factor analysis was a very suitable tool (Since the KMO threshold for this is 0.500). Additionally, Bartlett's test of Sphericity was statistically significant, an indication that the components identified in the rotated factor model, are dimensions of the same global construct. To fully establish the level of financial literacy from the subjective perspective, the study explored the descriptive of the dimensions for financial literacy, as presented in Table 4.

Table 4 - Financial Literacy Descriptive

	N	Min	Max	Mean	SD
Knowledge	351	1.00	5.00	4.04	.69
Behavior	351	1.50	5.00	4.00	.75
Attitudes	351	1.33	5.00	4.06	.69

Skills	351	1.00	5.00	3.88	.89
Global Variable Attributes				**4.00**	**.76**

The results from the descriptive in Table 4, indicate that using the self-assessed measures, the respondents' lowest ratings on financial literacy are in the skills dimension; however, the aspects of attitudes, knowledge, and behaviors are somewhat above average with (Mean ≈ 4.00). This statistic implies that respondents generally have a higher self-assessed perception of their knowledge, behaviors, attitudes, and skills.

4.2 Objective (Test-Based) Measure of Financial Literacy

The objective measure used was based on the big three questions testing the respondents' knowledge of interest rates, inflation rates, and risk/return associated with financial securities, as well as numeric abilities to apply the knowledge in business decision making. Each of the three questions had three multiple choice answers, including a correct one, a wrong one, and one where they exercised the option to state that they were not sure (See Appendix 2). Table 5 shows the respondents' performance in answering the three questions indicating the pass/fail rate for each of the questions answered by the 351 respondents.

Table 5 - Overall Rating on Objective Financial Literacy Scores

	Count	*%*
Passed All	45	12.8
Passed 1	102	29.1
Passed 2	174	49.6
Failed All	30	8.5
Total	**351**	**100.0**

The results presented in Table 5 indicate that only 12.8% of the respondents passed all the three questions, implying a high level of basic financial literacy. In comparison, 8.5% failed all the questions suggesting that they suffered a total lack of basic financial literacy. However, 49.6% of the sampled respondents answered two of the questions correctly, suggesting they have a moderate level of financial literacy, while 29.1% provided at least one correct answer indicating a low level of financial literacy using the objective measures.

4.3 Comparing Results: Objective Vs. Subjective

Overall, the study found a higher level of subjectively self-assessed financial literacy among the study sample with an overall mean score of 4.0%. However, the findings reveal a low level of objectively measured financial literacy given the small number of participants (45 out of 351) who passed all three questions, as well as the presence of some respondents who could not answer a single question correctly (30 out of 351). This finding suggests that people in Kampala, Uganda, have a higher perception of their financial knowledge than is the case. In other words, many people who consider themselves to have a higher level of financial literacy than they possess in reality. The finding suggests a need, not just for the provision of financial education, but more importantly, a need to create awareness of the need for financial education among people because they may not be aware of their ignorance in the first place.

Table 6 shows that the more significant percentage of respondents (81.8%) were able to make the correct computation on interest rate earned on the money they kept in a savings account, followed by question two (49.6%) on the inflation rate calculations before making a savings decision. Item three on the risk or return on the securities had the lowest percentage (35.5) of respondents getting the correct answer. The finding collaborates findings of Kasalirwe & Lokina (n.d) who found low levels of objectively measured financial literacy among households in Uganda;

Table 6 - Objective Financial Literacy Scores for each Measure

Question	*Pass*		*Fail*	
	No	**%**	**No**	**%**
Qn 1 – Interest Rate Computation	287	81.8	64	18.2

Qn 2 – Inflation Rate Computation	174	49.6	177	50.4
Qn 3 – Risk/Return on Securities	124	35.3	227	64.7

The results suggest that people in Kampala have more knowledge of the computation of interest rates and the application of inflation rates than they do on financial securities. A possible explanation for this finding is that essential financial services such as savings and credit are the most commonly assessed and utilized financial services in Uganda, both formally and informally (Finscope, 2018). Therefore many people are likely to be better informed on matters of interest rate and inflation because they have a direct effect on the services they frequently use. On the contrary, there is limited use of the more advanced financial instruments and securities that would only be strictly formally accessed.

4.4 Financial Literacy among Demographic Segments

The study used results from the Analysis of Variance (ANOVA) on the subjective measures, as well as percentage scores obtained from the objective test to compare the levels of financial literacy across the demographic groupings. The text below presents a summary comparison of the averages levels of subjectively measured financial literacy with the percentage scores obtained from the objective test questions across the different demographic characteristics.

Comparison by Gender - The results in Table 7 showed that the males had a relatively higher mean (Mean = 4.027, SD = .589) than that of the females, suggesting that the males have a higher level of subjectively self-assessed financial literacy than females.

Table 7 - ANOVA results for Gender by Subjectively Measured Financial Literacy

	N	Mean	SD	Std. Error	F	Sig.
Male	177	4.027	.589	.044		
Female	174	3.989	.555	.042	.404	.525
Total	351	4.008	.572	.031		

Further, Table 8 presents the objective scores by gender.

Table 8 – Objectively Measured Financial Literacy Scores by Gender

Response Category	Male	Female	Total
% of Correct Items	51.3%	48.7%	100.0

The results in Table 8 show that the males have a higher level of objectively measured financial literacy, having registered a higher percentage of correct responses on all the three questions (51.3%) than the females (48.7%). The results, therefore, show that men have a higher level of financial literacy (both objective and subjective) than women.

Comparison by Employment Status **-** Table 9 shows the levels of financial literacy by type of employment (formally employed vs. informally self-employed) using the subjective measure.

Table 9 - ANOVA - Subjectively Measured Financial Literacy by Employment Status

	N	Mean	SD	Std. Error	F	Sig.
Employed	154	4.054	.512	.041		
Self Employed	197	3.972	.614	.044	1.804	0.180
Total	351	4.008	.572	.031		

ANOVA tests show that people employed in the formal sector registered a slightly higher mean score (Mean = 4.054, SD = .512) for self-assessed financial literacy than those that are self-employed (Mean = 3.972, SD = .614) in the informal sector. In other words, the employed persons have a higher perception of their

financial literacy when compared to their self-employed counterparts in the informal sector. Table 10 presents objective scores on the three test questions to facilitate the comparison.

Table 10 – Objectively Measured Financial Literacy by Employment Status

Response Category	Employed	Self Employed	Total
% of Correct Items	48.4	51.6	100.0

The results show that self-employed respondents provided a more significant percentage (51.6%) of correct responses to the three questions on basic financial literacy. In comparison, their employed counterparts in the formal sector provided a smaller percentage of correct answers (48.4%). This finding implies that the latter category of people has a more exaggerated sense of financial literacy than they have, while their self-employed counterparts are more financially literate.

Comparison by Level of Education - ANOVA results in Table 11 present the subjectively measured levels of financial literacy among the respondents by their level of education.

Table 11 - ANOVA for subjectively measured financial literacy by Level of Education

	N	Mean	SD	Std. Error	F	Sig.
Below Secondary	15	3.559	.558	.144	8.693	.000
Secondary	56	3.791	.593	.079		
Diploma	106	3.933	.517	.050		
Degree	136	4.152	.526	.045		
Post Graduate	38	4.200	.634	.103		
Total	351	4.008	.572	.031		

The results presented in Table 11 suggest that subjectively self-assessed levels of financial literacy increase with a respondent's level of education. Respondents with lower levels of education have lower mean scores, while those with higher levels of education have higher mean scores. For instance, the postgraduates have the highest mean (Mean = 4.200, SD = .634), while those with formal education below secondary school have the lowest mean score (Mean = 3.559, SD = .558). Table 12 presents the scores from the objective test questions by respondent levels of education to facilitate the comparison.

Table 12 - Objectively Measured Financial Literacy by Level of Education

Response Category	Below Secondary	Secondary	Diploma	Degree	Post Graduate	Total
% of Correct Items	3.1	13.7	29.7	42.2	11.3	100.0

The results in Table 12 show that a higher percentage (42.2%) of correct responses to the three financial literacy test questions was provided by Degree holders, followed by Diploma Holders as giving the second most significant percentage of correct answers (29.7%). Ironically, only 11.7% of the correct responses were provided by the most qualified respondents with postgraduate qualifications. This finding implies that the

most qualified respondents have the highest self-assessed perception of being financially literate but, in reality, are less financially literate than they know.

Comparison by Exposure to Financial Education – The study sought to establish whether respondents who had prior exposure to formal financial literacy training had higher levels of financial literacy than their counterparts who had not previously attended a financial literacy training. Table 13 presents the results on the self-assessed subjective measure by previous respondent exposure to financial education.

Table 13 - ANOVA for Subjectively Measured Financial Literacy by Financial Education

	N	Mean	SD	Std. Error	**F**	**Sig.**
Yes	244	4.099	.536	.034	21.378	.000
No	107	3.801	.599	.058		
Total	351	4.008	.572	.031		

The results show that respondents who had attended a financial literacy course had a significantly higher mean (Mean = 4.099, SD = .536, p <. 05), than their counterparts who had no prior financial education. This finding suggests that financial education increases an individual's level of self-assessed financial literacy. Table 14 presents the scores obtained from the objective measure.

Table 14 - Objectively Measured Financial Literacy by Financial Education Training

Response Category	Yes	No	Total
% of Correct Items	70.8	29.2	100.0

The findings from the objective measure are consistent with those from the subjective assessment, indicating that a higher percentage (70.8%) of correct responses to three questions on basic financial literacy by respondents who had prior exposure to financial education. This finding underscores the effectiveness of financial education in enhancing levels of financial literacy among participants. Participants with previous exposure to financial literacy training will most likely have a higher level of self-assessed as well as a higher level of objectively measured financial literacy as opposed to those who have no prior training.

Comparison by Age group – The subjective assessment revealed that respondents in the 36 – 50 year age bracket had a higher mean score of financial literacy. However, the financial literacy scores obtained using the objective measure showed that respondents in the 18- 35 year age bracket had higher levels of financial literacy, as summarized in Tables 15 and 16, respectively.

Table 15 - ANOVA results for Subjectively Measured Financial Literacy by Age Group

	N	Mean	SD	Std. Error	F	Sig.	
18 - 35 Yrs	261	4.006	.566	.035			
36 - 50 Yrs	77	4.061	.543	.062	1.770	0.172	
51 - 60 Yrs	13	3.740	.803	.223			
Total	351	4.008	.572	.031			

Table 16 - Objectively Measured Financial Literacy by Age Group

Response Category	18 - 35 Yrs	36 - 50 Yrs	51 - 60 Yrs	Total

% of Correct Items	76.1	20.1	3.8	100.0

As indicated in Table 15, the highest mean score (Mean = 4.061, SD = .543) of subjectively measured financial literacy shows among respondents in the 36 – 40 year age bracket. Therefore respondents in the 36 – 50 year age bracket have higher levels of self-assessed financial literacy, while the younger respondents in the 18 – 35 year age bracket have higher objectively assessed scores (76.1%) in financial literacy as indicated in Table 16.

5.0 Discussion and Conclusion

The study found averagely higher levels of self-assessed financial literacy as opposed to significantly lower levels of objectively assessed financial literacy among respondents in Kampala, Uganda. Respondents indicated that they possessed knowledge on financial products, and were capable of making comparisons between then to select the most appropriate ones to utilize for their benefit. The subjective measure further suggested that they had positive attitudes and exhibited sound financial practices and behaviors. However, their poor performance on the three test questions revealed a lack of understanding of basic concepts interest rates, inflation rate computation, and numeric ability to apply them in financial decision making. Many respondents were unable to provide correct responses, and the objective measure further revealed that people in Kampala have a limited understanding of the risks and returns associated with basic financial securities. Similarly, the OEDC (2016) survey findings indicated that 67% of the Australian respondents claimed to be conversant with compound interest; only 28% provided correct answers on the same concept. The same survey also, for instance, revealed that 71% of Japanese adults lack knowledge on investments in securities such as equities and bonds, suggesting a knowledge gap among even people in countries with better developed financial markets.

A higher level of self-assessed financial literacy, as opposed to a much lower level of objectively assessed financial literacy within the same study respondents, is suggestive of a lack of self-awareness. Our findings reveal a tendency among people in Kampala, Uganda, to overestimate their financial knowledge. There is a potential danger for financially illiterate people to shun financial education programs because they think that they have adequate literacy when they do not. Likewise, research using subjective measures only could mislead policymakers and financial educators with overtly optimistic estimations of people's actual levels of financial literacy. People with low objective measures require to be sensitized such that their illiteracy is brought to their awareness for them to create more demand for financial education. The following section presents detailed comparisons of financial literacy levels using subjective and objective measures, among the various demographic groupings, the study can establish actual gaps in financial literacy and point out apparent deficiencies in self-awareness among each of the demographic segments as elaborated below: -

Gender – The study found that men on the overall reported higher levels of financial literacy than females using both subjective and objective measures. This finding is consistent with studies conducted elsewhere that found financial literacy to vary by gender include Kadoya and Khan (2016); Alessie et al. (2013); Hung, Yoong, and Brown (2012); Atkinson and Messy (2012); Van Rooij, Lusardi, and Alessie (2011); Sekita (2011); Lusardi and Mitchell (2008) as cited by Yoshihiko & Rahim (2016). The studies, however, did not find an adequate explanation for gender differences in financial literacy scores between men and women, suggesting a need for further research on gender considerations in financial literacy. Further, we recommend the need for proactive approaches in promoting financial literacy among women in Uganda.

Employment Status - As presented earlier, the formally employed people have higher levels of subjectively assessed financial literacy, but with low levels of objectively assessed financial literacy. At the same time, the reverse is true for those that are self-employed. In developing countries like Uganda, formally employed people often have peripheral involvement with formal financial institutions. Employers, therefore, make direct remittances of staff wages, salaries, and mandatory retirement savings to those institutions. On the contrary, self-employed people have direct exposure to financial institutions through experience. They must have to access financial services (formally and informally) on their own, thus acquiring practical knowledge and skills in the process. This gap in objectively measured financial literacy underscores the importance of work-place financial education programs that target formally-employed people who may lack exposure from self-driven interactions with the finance and business sector that their self-employed counterparts enjoy.

Level of Education – The finding of a significant variation in subjectively measured financial literacy among respondents by their levels of formal education with those with higher levels of education, registering higher self-assessed levels is unsurprising. The explanation for this trend is the knowledge, skills, and confidence that people acquire throughout the education process. However, what is quite surprising is that respondents with Bachelor's degrees registered higher levels of objectively assessed financial literacy than post-graduates, and those with lower levels of education. Nonetheless, studies have found that educated people tend to have better opportunities to course units on money management, and thus be more financially literate (Lusardi and Mitchell 2011b, 2014). The psychological theory that emphasizes cognitive ability provides an empirical relationship between education and financial literacy (Lusardi, Mitchell and Curto 2010).

Similarly, scholars such as Danes and Haberman (2007) provided evidence that suggested that curricula in financial planning were positively related to financial literacy among students. Therefore a policy and practical implication for this finding is the need for financial literacy programs to be introduced earlier at pre-university levels. Further, in line with the previous recommendation to introduce financial education at the workplace, it could also be extended to cover postgraduates who may most likely also be the working people.

Financial Education – An important finding that people who had received prior financial literacy training scored highly on both subjective and objective measures underscores the effectiveness of financial education in enhancing the levels of financial literacy among participants. This finding is consistent with previous research that established that financial education positively affected financial literacy (Joo and Grable, 2005; Kim et al., 2005; Robb and Woodyard, 2011; and Xiao et al., 2014). The national financial literacy strategy in Uganda highlights the need to provide financial education / financial literacy training to Ugandans as a means to promote financial literacy. The finding thus provides evidence to suggest that the

The finding that financial literacy (both objectively and subjectively measured) was consistently high among people who had received prior financial education justifies its importance. The finding suggests that financial education through training can play an essential role in promoting financial literacy in Uganda. The implication for policymakers and financial educators, however, is the need for them to design financial education/training programs that are supplemented by sensitization and awareness of the targeted beneficiaries on the need for financial education.

Age – The 18 – 35-year categories (considered youth in Uganda) reported a higher level of objectively measured financial literacy as opposed to the 36 – 50 year age bracket that had a higher level of subjectively measured financial literacy. Studies conducted elsewhere, such as Lusardi and Mitchell (2014) posited that there was a hump-shaped lifecycle of financial literacy. Other studies have established evidence of lower levels of financial literacy among younger and older people (Lusardi, Mitchell, and Curto 2010; Lusardi and Mitchell 2011b). They argued that older people might benefit from their experience and thus report higher levels of subjectively measured financial literacy. In contrast, as they age, they may experience a decline in cognitive abilities (Agarwal et al. 2009). Our findings suggest the need for increased financial education among the population aged 35 years and older to keep their cognitive abilities refreshed, as well as exposure to opportunities for the younger generation to attain more practical experience in financial matters.

In conclusion, we find that it is possible and necessary to apply subjectively self-assessed measures and objective test questions to the same study population and obtain meaningful information on the status of financial literacy within a developing country context. Financial education initiatives need to create awareness among individuals of their deficiencies in knowledge, skills, attitudes, behaviors as well as basic numeric capabilities that are necessary for the management of their day to day financial lives. The national financial literacy strategy should provide increased awareness campaigns, especially among demographic segments that have higher self-assessed but a lower objectively assessed level of financial literacy, such as the formally employed, and people above 35 years. However, there is a need to provide individualized coaching and practical exposure for people with higher objectively assessed and lower subjectively assessed levels of financial literacy, such as those in the below 35 years age category. Coaching and exposure to practical experiences would enable them to translate their knowledge into behaviors and attitudes that boost their self-efficacy at financial management.

The current study contributes to the existing literature in two ways. First, we are not aware of any other research that makes a comparison based on subjective and objective measures of financial literacy among the demographic segments of people in Kampala, Uganda. Secondly, we provide an empirical basis upon which policymakers, academics, and financial educators in Uganda can develop appropriate and more targeted financial education interventions.

Appendix 1- Financial Literacy Scale

Subjective Measure

Please indicate how much you agree or disagree with the following responses on financial literacy items below by ticking once for each statement to indicate your level of agreement

No	ITEMS	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
FK1	I am financially capable of making good use of financial products and services	1	2	3	4	5
FK2	I can prepare a personal budget	1	2	3	4	5
FK3	I am knowledgeable about financial products and services offered by various financial institutions	1	2	3	4	5
FK4	I understand inflation, and I am able to factor it in my financial decisions	1	2	3	4	5
FK5	On the overall, I have better knowledge about financial matters that most of my peers	1	2	3	4	5
FS6	I have the ability to accurately determine costs and benefits from financial transactions	1	2	3	4	5
FS7	I have the ability to compute interest rates	1	2	3	4	5
FA8	I am always interested in getting information on financial issues	1	2	3	4	5
FA9	I always compare prices before making choices on financial products and services	1	2	3	4	5
FA10	I am very interested in dealing with banks and other regulated financial institutions	1	2	3	4	5
FA11	Money is there to be spent. Saving is for those with plenty of money	1	2	3	4	5
FB12	I am careful in my expenditures, and I always stick to my budget	1	2	3	4	5
FB13	I save on a regular basis according to my savings plans	1	2	3	4	5
FB14	Before I buy something, I carefully consider whether I can afford it	1	2	3	4	5
FB15	I set long term financial goals and strive to achieve them	1	2	3	4	5

Appendix 2- Financial Literacy Scale

Objective Measure

1) Suppose you had 100,000/= in a savings account, and the interest rate was 2% per year. After five years, how much do you think you would have in the account if you left the money to grow?

a.) More than 102,000/=   b.) Exactly 102,000/=   c.) Less than 102,000/=

2) Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After one year, how much would you be able to buy with the money in this account?

a.) More than today   b.) Exactly the same   c.) Less than today

3) Please tell me whether this statement is true or false. "Buying a single company's stock usually provides a safer return than a stock mutual fund."

a.) True   b.) False   c.) Do not know

References

[1.] Agarwal, S., Driscoll, J. C., Gabaix, X., & Laibson, D. I. (2009). The Age of Reason: Financial Decisions over the Life-Cycle with Implications for Regulation. SSRN Electronic Journal. DOI:10.2139/ssrn.973790

[2.] Atkinson, A. and F. Messy (2012), "Measuring Financial Literacy: Results of the OECD INFE Pilot Study", OECD Working Papers on Finance, Insurance and Private Pensions, No. 15, OECD Publishing, Paris.

[3.] Bongomin O. C., Munene, J. C., Ntayi, M.J., 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, Vol. 43 Issue: 12, pp.1310- 1331, https://doi.org/10.1108/MF-04-2017-0117

[4.] Bongomin, O.C., Ntayi, J. M., Munene, J. C., & Nkote Nabeta, I. (2016). Social capital: mediator of financial literacy and financial inclusion in rural Uganda. Review of International Business and Strategy, 26(2), 291–312. DOI:10.1108/ribs-06-2014-0072

[5.] Bank of Uganda (2013) "Strategy for financial literacy in Uganda" Simplify Money, Magnify Life

[6.] Cent1Q (2007) Summary of financial insight among the Dutch: Available at: https://www.dnb.nl/en/binaries/OFS%20eng_tcm47-159433.pdf

[7.] Danes, S.M., and Haberman, H.R., (2007) "Teen financial knowledge, self-efficacy, and behavior: a gendered view" Journal of Financial Counseling and Planning Volume 18, Issue 2 2007

[8.] Danes, S.M., Huddleston-Casas, C. and Boyce, L. (1999), "Financial planning curriculum for teens: Impact evaluation", Financial Counseling and Planning, Vol. 10 No. 1, pp. 26-39.

[9.] FINRAIEF (2009). Financial Capability in the United States: National Survey – executive summary: Retrieved from http:www.finrafoundation.org/web/groups/foundation/@foundation/documents/foundation/p120535.pdf

[10.] FinScope (2008), Financial access and Use Country Survey, FinScope, Uganda.

[11.] Finscope Uganda (2013). Unlocking Barriers to Financial Inclusion. Uganda 2013 Finscope III Survey Report Findings: Economic Policy Research Center (EPRC), November 2013

[12.] FinScope (2018), financial access and Use Country Survey, FinScope, Uganda. http://fsduganda.or.ug/wp-content/uploads/2018/10/FinScope-Uganda-Survey-Report-2018.pdf

[13.] Hair, J.F., Black, W.C., Babin, B.J., & Anderson, R.E. (2010). Multivariate Data Analysis. Seventh Edition. Prentice-Hall, Upper Saddle River, New Jersey.

[14.] Heale, R., & Twycross, A. (2017). What is a case study? Evidence-Based Nursing, 21(1), 7–8. DOI:10.1136/eb-2017-102845

[15.] Huston, S.J. (2010). Measuring financial literacy. The Journal of Consumer Affairs, 44(2), 296.

[16.] Joo, S.H. and Grable, J.E. (2005), Employee education and the likelihood of having a retirement savings program Financial Counselling and Planning, Vol. 16 No. 1, pp. 37-49.

[17.] Kaiser, T., & Menkhoff, L. (2017). Does Financial Education Impact Financial Literacy and Financial Behavior, and If So, When? The World Bank Economic Review, 31(3), 611–630. DOI:10.1093/wber/lhx018

[18.] Kasalirwe, F. & Lokina, R., (n.d) Financial literacy and household investment choices in Uganda. Available at: https://ucudir.ucu.ac.ug/bitstream/handle/20.500.11951/10/Kasalirwe%20and%20Lokina_Financial_literacy_and_household_investment_2016.pdf?sequence=1&isAllowed=y

[19.] Kim, J., Garman, E.T. and Quach, A. (2005), "Workplace financial education participation and retirement savings by employees and their spouses", Journal of Personal Finance, Vol. 4 No. 3, pp. 92-108.

[20.] Lusardi, A., & Mitchell, O.S. (2011). "Financial literacy around the world: an overview," Journal of Pension Economics and Finance, Cambridge University Press, vol. 10(04), pages 497-508.

[21.] Lusardi, A., and Mitchell, O.S., (2011a). "Financial Literacy and Planning: Implications for Retirement Well-Being." In Financial Literacy: Implications for Retirement Security and the Financial Marketplace, edited by Olivia S. Mitchell and Annamaria Lusardi, 17–39. Oxford and New York: Oxford University Press.

[22.] Lusardi, A., and Mitchell, O.S (2011b). "Financial Literacy and Retirement Planning in The United States." Journal of Pension Economics and Finance 10 (4): 509–25.

[23.] Lusardi, A., Mitchell, O. S., & Curto, V. (2009). Financial Literacy Among the Young. SSRN Electronic Journal. DOI:10.2139/ssrn.1476982

[24.] Lusardi, A. and Mitchell, O.S. (2014), "The economic importance of financial literacy: theory and evidence", Journal of Economic Literature, Vol. 52 No. 1, pp. 5-44.

[25.] Lusardi, A., & Mitchell, O. (2006). "Financial literacy and planning: Implications for retirement wellbeing" (Pension Research Council Working Paper, PRC WP 2006-1)
http://rider.wharton.upenn.edu/~prc/PRC/WP/PRC%20WP%202006-1.pdf

[26.] Lusardi, A., & Mitchell, O. (2007a). Baby boomer retirement security: The roles of planning, financial literacy, and housing wealth. Journal of Monetary Economics, 54(1), 205-224.167

[27.] Lusardi, A., & Mitchell, O. (2007b). Financial literacy and retirement preparedness: Evidence and implications for financial education. Business Economics, 42(1), 35-44.

[28.] Mandell, L. (2009). The financial literacy of young American adults: Results of the 2008 National Jump$tart Coalition survey of high school seniors and college students (Report for The Jump$tart Coalition for Personal Financial Literacy).
http://www.jumpstartcoalition.org/upload/2009_FinLit-Mandell.pdf

[29.] Messy, F. & Monticone, C. (2012). The Status of Financial Education in Africa, OECD Working Papers on Finance, Insurance and Private Pensions, No. 25, OECD
Publishing http://dx.doi.org/10.1787/5k94cqqx90wl-en

[30.] OECD (2005), Recommendation on Principles and Good Practices for Financial Education and Awareness, OECD Publishing, Paris.
http://www.oecd.org/daf/fin/financialeducation/35108560.pdf

[31.] OECD (2013). OECD/info toolkit to measure financial literacy and financial inclusion: guidance, core questionnaire, and supplementary questions. Retrieved from
http://www.oecd.org/finance/financialeducation/Toolkit-to-measure-fin-lit-2013.pdf

[32.] OECD (2016), "OECD/INFE International Survey of Adult Financial Literacy Competencies", OECD, Paris, www.oecd.org/finance/OECD-INFE-International- Survey-of-Adult-Financial-Literacy-Competencies.pdf

[33.] Remund, D.L. (2010). Financial literacy explicated: the case for a clearer definition in an increasingly complex economy. The Journal of Consumer Affairs, 44(2), 276.

[34.] Robb, C.A. and Woodyard, A. (2011), Financial knowledge and best practice behavior, Journal of Financial Counseling and Planning, Vol. 22 No. 1, pp. 60-70.

[35.] Stango, V., and Zinman, J., 2009. Exponential Growth Bias and Household Finance. Journal of Finance 64, 2807-2849

[36.] Van Rooij, M., Lusardi, A., & Alessie, R. (2011). "Financial literacy and stock market participation", Journal of Financial Economics, Vol. 101 No. 2, pp. 449-472.

[37.] Xiao, J.J., Ahn, S., Serido, J. and Shim, S. (2014a), "Earlier financial literacy and later financial behavior of college students", International

[38.] Yoshihiko, K., & Rahim, K.M.S., (2016) What determines financial literacy in Japan? ISER Discussion Paper, No. 982, Osaka University, Institute of Social and Economic Research (ISER), Osaka

[39.] Xu, L., and Zia, B. (2012). Financial literacy around the world: an overview of the evidence with practical suggestions for the way forward (English). Policy Research working paper; no. WPS 6107. Washington, DC: World Bank.

http://documents.worldbank.org/curated/en/264001468340889422/Financial-literacy-around-the-world-an-overview-of-the-evidence-with-practical-suggestions-for-the-way-forward