

**DIGITAL TECHNOLOGY USE, MODE OF SAVING, DISPOSABLE INCOME AND SAVING AMONG HOUSEHOLD HEADS IN RURAL AREAS OF UGANDA**

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**ABSTRACT**

**Background:** Savings can be one of the channels to fight poverty among people living in rural areas. Saving is an important macroeconomic variable that can promote economic development through improving the country's gross domestic product. This study investigated how digital technology use, mode of savings, disposable income influences the saving of the household head in rural areas of Uganda.

**Methodology:** FinScope 2018 secondary dataset was used. A sample of 578 household heads living in rural areas and available during the interview were selected for this study. A binary logistic regression model was adopted.

**Results:** Results show that household heads with some primary (not P.7) were 1.872 (OR=1.872, p=0.029, CI=(1.064-3.295)), some secondary completed (not P.6) were 2.391 (OR=2.391, p=0.017, CI=(1.166-4.902)), and completed P.7 were 2.365 (OR=2.365, p=0.019, CI=(1.150-4.863)) times more likely to save compared to those who had never gone to school respectively. Again, household heads who had disposable income were 2.486 times more likely to save compared to those who never had (OR=2.486, p=0.000, CI= (1.694-3.649)). With the mode of savings, household heads who were saving with village savings and loan associations (VSLA) were 5.897 times more likely to save compared to those who used banks. Also, household heads who had access to mobile phones were 1.696 times more likely to save compared to those who had access to computers (OR=1.696, p=0.066, CI= (0.966-2.977)).

**Conclusions and recommendations.** Education level, disposable income, VSLA, and access to mobile phone support household head savings in rural areas. Financial and digital education should be encouraged to improve the saving culture among people in rural areas

**Keywords:** Savings, digital use, rural areas, disposable income, household head, Uganda

## **Introduction**

Brugiavini and Weber, in Chapter 2 of their book, *Household Saving: Concepts and Measurements* (2003) define “saving” as an account to social security wealth. Saving is also a choice variable among different households. Savings are important in economic development because an increase in savings leads to an increase in investment, which increases a country’s GDP (Mohd & Verma, 2019). Low savings in an economy mean unfavourable economic growth, poor job creation, and hence poor quality of life among people living in a low saving rate economies compared to economies with higher saving rates.

Saving services that can be provided through different financial services and can help people escape from poverty. Some of these services can be through use of digital financial services like mobile money services, use of payment cards as well as other digital technologies that are user-friendly in terms of offering transactions from different ends. Different scholars, for example Lindner (2015), Chandrasekhar & Ghosh (2022), Abera (2018) and Bongomin et al. (2018), among others, state that saving has been considered one of the factors affecting growth to lead developing countries to the path of development. In developing countries, savings are important factors in a household’s welfare. In like regard, without saving, households have few other mechanisms to smooth out unexpected variations in their income. For individuals and households, savings provide a cushion of security against future contingencies whereas national savings provide the funds needed for developmental efforts. In addition, saving enables households to maintain a relatively stable lifetime level of living. The same factors have been mentioned in the 2017 Global Findex survey through the World Bank (World Bank, 2017).

The 2017 Global Findex is the third and latest survey round the globe that belongs to the Global Findex database that has been run by the World Bank since its launch in 2011. Other similar first and second surveys were done in 2011 and 2014 respectively (World Bank, 2017). This global most comprehensive database highlights on various components of financial inclusion, for example, how adults save, borrow, make payments, manage risks, access to, and use of, formal and informal financial services, use of financial technology like mobile phones, internet and how to conduct financial transactions (Demirgüç-Kunt et al., 2020; World Bank, 2017). All the components in this database are meant to support means of enhancing financial inclusion, more so through improving the saving culture among people.

Saving among rural households in developing nations, notably in Sub-Saharan Africa, remains extremely low and trailing behind other regions of the world (Bhat et al., 2022). When several sources are combined, it is estimated that just 20% of Sub-Saharan African households have

money saved in formal financial institutions (Mossie & Tadele, 2018). This is a result of the countries' high unemployment rate, low income levels, the involvement of a significant segment of the population in the informal economy, and the economy's lacklustre performance (Abera, 2017).

In African households, saving is a tradition (albeit a modest one given the level of wealth) and is often done through informal channels. They frequently use informal financial mechanisms like the 'tontine' (pooling of funds in a sum that is redistributed alternately to the members of the group). Animals and metals represent the majority of today's savings in rural areas, and knowledge of the neighbouring saving institutions encourages people to save so that they can choose the rate of interest from the amount (Gonosa et al., 2020).

The saving culture in Uganda, like in most of African countries, is still very low and very poor. Only 16% of Uganda's 47 million inhabitants, which make up the country's rural bulk of 80%, have access to basic financial services. The income standard is fundamentally unpredictable and promotes more consumption than saving, which has prolonged for decades and is still seen as a big problem and will be if no economic measures are put into consideration (World bank, 2017; UKEssys, 2018; Gonosa et al., 2020). It is against this background that this study investigated how digital technology use, mode of saving, and disposable income influence saving among household heads in rural areas of Uganda.

## **Materials and Methods**

**Data source:** This study utilized secondary data of Finscope 2018 obtained from <http://catalog.data.ug/dataset/finscope2018#:~:text=This%20dataset%20shows%20the%20levels,holds%20responses%20from%203002%20respondents> (Namubiru & Ssenabulya, 2018). It is a nationally representative dataset that shows "the level of access to and use of financial products and services by Ugandans". This dataset covers various areas, for example, household welfare indicators, sources of income, remittances, use of services like mobile money, formal banks and many others. The dataset has responses from 3002 participants. FinScope 2018 dataset is an open dataset licensed under creative commons attribution and can be directly downloaded from: <http://catalog.data.ug/dataset/9230cd8f-49b4-484e-bfad2f07401ebf3/resource/127c5b54-3f78-4b56-a69b-6dd533adbdf0/download/finscope-2018.csv>

**Sample size:** This study considered only participants from rural areas. From the questionnaire, a participant was asked a setting he/she was from, that is, "what setting?" This question had two responses "urban/rural" and only participants from rural areas were selected. Also, another criterion that was considered when selecting the sample size was if a participant was a household head and available during the time of the interview, that is, the following questions were asked

from the questionnaire, “Name of household head” followed by “Available during the time of interviewing?” The latter question had two responses “yes/no” so only household heads who were available during the time of the interview were selected. In other words, a participant selected to form our sample size was supposed to be a household head available during the time of the interview and was supposed to be from a rural setting. The household head was irrespective of gender. Some of the reasons that were given in cases where the household head was not available included: away for work; travelled to a long work trip; works in town and comes back late in the evening; travelled to town; his mother is sick; and, went to the hospital, among other social concerns.

Out of a total of 3,002 participants from the dataset, 1,363 were from urban areas and 1,639 were from rural areas. Of the 1,639 from rural areas, 1,061 household heads were not available during the time of the interview and only 578 household heads were available during the time of interview. Thus, this study considered a sample size of 578 household heads who were available during the time of the interview and were from a rural setting.

### **Variables considered for the study**

#### **Outcome variable**

The outcome variable of the study is saving, Table 1 shows how it was asked in the questionnaire.

**Table 1: Outcome variable of the study**

<b>Variable</b>	Description	Coding	Data type
<b>savings</b>	In the past 12 months - did you save or put money aside for this purpose?	1. yes 0. no	Nominal

#### **Independent variables of the study**

This study considered socio-demographic factors (age, highest level of education, marital status, gender), model of saving (at home, bank, on your phone, saccos, family members/friends, saving groups/village savings and loan associations (VSLA)), digital technology use (access to mobile phone, access to internet, access to computer, own a mobile phone, own a sim card) and having disposable income as the independent variables of the study as shown in Table 2.

**Table 2. Descriptions of independent variables**

<b>Variable</b>	<b>Description</b>	<b>Coding</b>	<b>Data Type</b>
Age	Age group	0. Below 21 1. 21-25 2. 26-35 3. 36-45 4. 46-60 5. Above 60	Nominal
gender	Respondent gender.	1. female 0. male	Nominal
Education level	Highest level of education completed?	1. Never went to school 2. Some primary completed (not P7) 3. Some secondary completed (not S6) 4. Specialized training or diploma 5. Specialized training/certificate 6. Completed P7 7. Completed S6 8. Completed degree and above 9. Don't know	Nominal
Marital status	Marital status – are you currently...?	1. Cohabiting 2. Divorced 3. Married (polygamy) 4. Married (monogamy) 5. Widowed 6. Single	Nominal
Access to a mobile phone	Which of the following do you have access to? Mobile phone	1. yes 0. no	Nominal
Access to internet	Which of the following do you have access to? Internet	1. yes 0. no	Nominal
Access to computer	Which of the following do you have access to? Computer	1. yes 0. no	Nominal
Own a mobile phone	Do you personally own a mobile phone	1. yes 0. no	Nominal

	(i.e., handset)?		
Own a sim card	Do you own a SIM card that you can use at any time?	1. yes 0. no	Nominal
<b>Disposable income</b>	Do you have money of your own that you can do with as you wish?	1. yes 0. no	Ordinal
<b>Mode of saving</b>	Please tell me with which of the following do you feel that your SAVINGS are?	1. Bank 2. SAACCOs 3. At home 4. Savings group/village savings and loan associations (VSLA) 5. On your phone 6. Family members/friends	Nominal

**Data analysis**

Descriptive analysis was done using frequency tables and percentages. A chi-square test was used to test for the relationship between socio-demographic, digital technology use, mode of saving and disposable income factors and saving of the household head. A binary logistic regression was adopted at multivariate stage to determine the odds of savings among household heads in rural areas of Uganda as shown in Equation 1:

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 X_1 + \dots + \beta_n X_n \text{-----Equation 1}$$

Where, p- is the probability that household head will save, 1-p – probability that the household head will not save,  $\beta_0$  - represents intercept,  $\beta_1 \dots \beta_n$  - coefficients of explanatory variables i.e.,  $X_i$ , for  $X_i$  – represent predictor variables, i - 1, 2, 3...n. The data was analysed using Stata version 15 and R programming language version R4.2.2.

**Results**

Here, we see the distribution of respondents according to socio-demographic, mode of savings, digital technology use, and disposable income factors

From Table 3, the majority of the household heads were males (70.6%) and others were females. Also, the majority were between the ages of 36 and 45 (26.47%). This was followed by those in

age ranges 46-50 (23.18%), 26-35 (22.6%), above 60 (17.99%) and 21-25 (7.44%) respectively. Regarding education level, the majority had completed some primary (not P7) (47.75%); 17.82% never went to school; 16.78% had some secondary completed (not S6); 13.84% completed P7; and 1.38% completed S6 while the same percentage had a specialized training/certificate. Again, a vast majority (61.76%) of the household heads were Married (Monogamy) (61.76%); another 14.19% were also Married (Polygamy); 12.98% were widowed; 6.06% were cohabiting; 4.15% had separated; and lastly, 0.87% were single.

**Table 3. Distribution of socio-demographic factors**

<b>Variable</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Age group</b>		
Below 21	13	2.25
21– 25	43	7.44
26 – 35	131	22.66
36 – 45	153	26.47
46 -60	134	23.18
Above 60	104	17.99
<b>Highest level of education</b>		
Completed P7	80	13.84
Completed S6	8	1.38
Never went to school	103	17.82
Some primary completed (not P7)	276	47.75
Some secondary completed (not S6)	97	16.78
Specialized training or diploma	6	1.04
Specialized training/certificate	8	1.38

<b>Marital status</b>		
Cohabiting	35	6.06
Divorced/Separated	24	4.15
Married (Monogamy)	<b>357</b>	61.76
Married (Polygamy)	82	14.19
Single	5	0.87
Widowed	75	12.98
<b>Gender</b>		
Female	117	20.24
Male	461	79.76

**Distribution of household savings, model of savings, digital technology use and disposable income**

Table 4 shows that 54.15% of household heads had saved or put money aside in the past 12 months; 34.26% of them had saved in banks; 23.01% had saved in form of cash at home; 22.84% had saved in Saving groups/VSLA; 11.76% saved on the phone; 4.15% saved with family members/friends; and only 3.98% saved with SACCOs. On digital technological use, the majority of the household heads (72.66%) had access to mobile phones and about 95.33% of them reported no internet access. The majority (99.13%) reported that they had no access to computers; only 55.88% owned mobile phones; and only 59.52% owned sim cards. In addition, at least 56.92% had money of their own that they could use as they wished.

**Table 4: Showing the distribution of household savings, mode of savings, digital technological use, and disposable income**

Variable	Frequency	Percentage
<b>Household savings</b>		
No	265	45.85
Yes	313	54.15



<b>Mode of savings</b>		
At home	133	23.01
Bank	198	34.26
On your phone	68	11.76
SACCOs	23	3.98
Family members/friends	24	4.15
Saving group/Village Savings and Loan Associations (VSLA)	132	22.84
<b>Digital technological use</b>		
<b>Access to mobile phones</b>		
No	158	27.34
<b>Yes</b>	<b>420</b>	<b>72.66</b>
<b>Access to internet</b>		
No	551	95.33
Yes	27	4.67
<b>Access to computer</b>		
No	573	99.13
Yes	5	0.87
<b>Own a mobile phone</b>		
No	255	44.12
Yes	323	55.88
<b>Own a sim card</b>		
No	234	40.48

Yes	344	59.52
<b>Disposable income</b>		
No	249	43.08
Yes	329	56.92

**Relationship between socio-demographic factors and saving by household head**

Here we studied the relationship between socio-demographic factors and saving by household head.

From Table 5, it is only the education level that shows significant relationship with saving by household head. The rest of other socio-demographic factors are not significantly related to saving by household head.

**Table 5: Showing relationships between the socio-demographic factors and household saving**

Socio-demographic factors	Household head saving		Chi-square	p-value
	No	Yes		
<b>Education level</b>			<b><math>\chi^2= 26.232</math></b>	<b>p= 0.000</b>
Never went to school	68	35		
Some primary completed (not P7)	124	152		
Some secondary completed (not S6)	33	64		
Specialized training or diploma	1	5		
Specialized training/certificate	4	4		
Completed S6	31	49		
Completed P7	4	4		
<b>Marital status</b>				

Cohabiting	16	19	<b><math>\chi^2= 0.2786</math></b>	<b>p= 0.998</b>
Divorced/Separated	12	12		
Married (Monogamy)	163	194		
Married (Polygamy)	37	45		
Single	2	3		
Widowed	35	40		
<b>Gender</b>				
No	212	249	<b><math>\chi^2= 0.0178</math></b>	<b>p= 0.894</b>
Yes	53	64		
<b>Age group</b>				
Below 21	7	6	<b><math>\chi^2= 7.1813</math></b>	<b>p= 0.208</b>
21 – 25	18	25		
26 – 35	50	81		
36 – 45	72	81		
46 -60	61	73		
Above 60	57	47		

**Relationship between mode of savings, digital technological use, disposable income and saving by household head**

Here, we studied the relationship between mode of saving, digital technological use, disposable income, and saving by household head.

Table 6 shows that there is significant relationship between accessing a mobile phone (p=0.000), access to internet (p=0.017), owning a mobile phone (p=0.000), owning a sim card (p=0.000), disposable income (p=0.000) and saving by household head.

**Table 6: Showing relationship between mode of savings, digital technological use, disposable income, and saving by household head**

	Household head Saving		Chi-square	p-values
	No	Yes		
<b>Digital technological use</b>				
<b>Access to mobile phone</b>			$\chi^2= 17.8561$	<b>p= 0.000</b>
No	95	63		
Yes	170	250		
<b>Access to internet</b>				
No	258	293	$\chi^2= 5.6946$	<b>p= 0.017</b>
Yes	7	20		
<b>Access to computer</b>				
No	263	310	$\chi^2= 0.0695$	<b>p= 0.792</b>
Yes	2	3		
<b>Own a mobile phone</b>				
No	140	115	$\chi^2= 15.0672$	<b>p= 0.000</b>
Yes	125	198		
<b>Own a sim card</b>				
No	133	101	$\chi^2= 19.1265$	<b>p= 0.000</b>
Yes	132	212		
<b>Disposable income</b>				
No	149	100	$\chi^2= 34.4931$	<b>p= 0.000</b>
Yes	116	213		

**Relationship between mode of saving and saving by household head**

Here, we studied the relationship between mode of saving and by household head

Table 7 shows that the relationship between the modes available for saving (i.e., bank, at home, SACCOs, VSLA, family members/friends, and on phone) and saving by household head is significant (p=0.000).

**Table 7: Showing relationship between mode of saving and saving by household head**

<b>Household head Savings</b>	Bank	SACCOs	At home	VSLA	On your phone	family members/friends	Chi-square	p-value
No	104	10	86	29	23	13	<b>χ<sup>2</sup>= 57.5121</b>	<b>p=0.000</b>
Yes	94	13	47	103	45	11		
Total	198	23	133	132	68	24		

**Determinants of saving among household heads in rural areas**

According to Table 8, household heads with some primary education (not P.7) were 1.872 (OR=1.872, p=0.029, CI=(1.064-3.295)); some secondary completed (not S.6) were 2.391 (OR=2.391, p=0.017, CI=(1.166-4.902)); and completed P.7 were 2.365 (OR=2.365, p=0.019, CI=(1.150-4.863)) times more likely to save compared to those who had never gone to school respectively. Again, household heads who had disposable income were 2.486 times more likely to save compared to those who never had (OR=2.486, p=0.000, CI= (1.694-3.649)). Regarding the mode of saving, household heads who were saving with village savings and loan associations (VSLA) were 5.897 times more likely to save compared to those who used banks. Also, household heads who had access to mobile phones were 1.696 times more likely to save compared to those who had access to computers (OR=1.696, p=0.066, CI= (0.966-2.977)).

**Table 8: Determinants of saving among household heads in rural areas**

<b>Variable</b>	Odds Ratio (OR)	p-value	[95% Confidence interval]
<b>Education level</b>			

Never went to school <sup>R</sup>	1			
Some primary completed (not P7)	1.872	0.029**	1.064	3.295
Some secondary completed (not S6)	2.391	0.017**	1.166	4.902
Specialized training or diploma	3.278	0.330	0.301	35.707
Specialized training/certificate	0.806	0.796	0.158	4.112
Completed P7	2.365	0.019**	1.150	4.863
Completed S6	0.867	0.860	0.179	4.205
<b>Disposable income</b>	2.486	0.000***	1.694	3.649
<b>Mode of saving</b>				
Bank <sup>R</sup>				
SACCOs	1.435	0.478	0.529	3.892
At home	1.007	0.978	0.601	1.689
Savings group/village savings and loan associations (VSLA)	5.897	0.000***	3.363	10.34
Family members/friends	1.818	0.058	0.980	3.370
On your phone	1.137	0.784	0.451	2.863
<b>Digital technological use</b>				
Access to computer	1			
Access to mobile phone	1.696	0.066	0.966	2.977
Access to internet	1.884	0.214	0.693	5.116
Own a mobile phone	0.765	0.571	0.304	1.928
Own a sim card	1.561	0.330	0.637	3.823

### **Discussion of findings**

Our results show that household heads with some level of education were more likely to save compared to those that had never gone to school. This can be attributed to the fact that education exposes someone to various types of knowledge. For example, someone can learn about saving at school, different ways of saving, how and when to save money, where to save money. Different books on financial inclusion can also help someone to learn how to save money. The results in this study are supported by Setiawan et al. (2022) whose results indicated that education affects current saving and spending behaviours of individuals since they want to contribute to their future saving and spending pattern. Financial education is very important to expose an individual to different concepts of savings, especially in rural areas where the education levels are still low.

Again, results in this study show that household heads who save through village saving and loan associations (VSLAs) are more likely to save compared to those in banks. This can be explained by the fact that financial institutions such as banks are very few in rural areas and are usually strategically located mainly in trading centres and villagers need to travel long distances to reach them; unless one has means of transport to help him/her to go the bank which is not the case of VSLAs. VSLAs are in villages where savers are, and they are usually built on trust among shareholders. Everyone in the VSLA is accountable and they feel part of the administration process and can bargain on the interest rate together. This result is in agreement with Richard Kwasi Bannor et al. (2020) whose study examined the factors that influence women to participate in Village Savings and Loan Associations and the savings contribution in the Kassena-Nankana West District of Ghana. Their study analysed the impact of VSLA participation on off-farm income and poverty. The empirical results showed a positive and significant relationship between VSLA participation and household improvement perception, home assets, source of water supply, sanitation facility, respect from family members and extension contact. They further illustrated that membership of other community-based associations has a positive influence on the number of shares women contribute in the VSLA as their savings.

Basing on a rural area setting, someone having access to a mobile phone is enabled to save money on his or her phone. Like in this study, household heads who had access to mobile phones were more likely to save compared to those who had computers. This can be attributed to the fact that they can easily access mobile phone savings, for example opening a mobile money account which can be used for money and business transactions. With a mobile money account, they can save money at their convenience any time they decide to. The current study is in agreement with Bongomin et al.(2018) who recommended that government should embark on awareness creation about the importance of mobile money, which is an affordable, convenient, and accessible platform for carrying out financial transactions as opposed to banks, which are expensive, and

yet have limited outreach in rural areas. Access to mobile phones should be encouraged among people in rural areas.

Household heads who had disposable income were more likely to save more than those who never had. This can be attributed to the fact that with disposable income, someone can easily save the money from what he/she has because you cannot save what you do not have. This is in line with theory of saving behaviour, where disposable income of households positively and statistically influences the saving practice. Disposable income would increase households' saving ability and enhance the probability of saving in different forms. This finding is in line with Ralarara and Masipa (2021) who concluded that the faster growth of income can increase household consumption and saving levels. They further elaborated that measures used to increase household savings such as disposable income and lower real returns are only effective in industrial countries; and thus, recommended that in formulating policies geared towards increasing savings, policy makers in developing countries should not simply adopt policies designed for industrial countries. Policies should be tailored to supporting people in their respective settings.

### **Conclusion**

This article has examined the relationship between digital technology use, mode of savings, disposable income and saving by household head from a broader perspective using a large nationally representative dataset in rural areas of Uganda. The study revealed that disposable income has a significant effect on saving by household heads.

The increase in financial institutions like banks, and other VSLA provided an opportunity to rural people to save more. This study concludes that people in rural areas still prefer informal ways of saving such as VSLAs or with family members/friends to formal ways such as bank deposits or investment. Hence informal ways of saving should be encouraged among the rural areas.

In addition, access to a mobile phone and education level influence a household head's saving culture. More campaigns on improving the saving culture should be tailored to improving education standards of people in rural areas. More access to and mobile phone services should be availed in rural areas.

### **Recommendations**

Results indicate that household heads with education were likely to save compared to those without education. Therefore, the government should institute measures to increase its funding of the education sector not only to primary, secondary, and tertiary institutions but also to the adult



education programme. Non-Governmental Organizations (NGOs) should also be encouraged to participate in the provision of education, especially in training and acquisition of the necessary skills for management of finances.

The government and concerned parties should provide more support towards the decision to save by facilitating and offering training on saving options, conducting regular review and monitoring to develop a clear policy on the importance of savings, specifically for households on the habit of regular savings; and VSLAs should be encouraged more strongly among rural areas.

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