

Determinants of saving behavior among rural households in Tanzania: The case of Mtama District Council in Lindi Region

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ABSTRACT

The study was conducted in the Mtama District in the Lindi Region of Southern Tanzania in May 2024, with the general aim of assessing the determinants of saving behavior among rural households. The study intended to describe the determinants of household saving behavior. The study adopted the Life-Cycle Hypothesis (LCH), which explains how people save and consume throughout their lives. A cross-sectional research design was employed to collect data, and multistage and simple random sampling was used to select study wards and villages. The target population of the respondents was rural households in three wards on which four villages were used. A sample of 150 households was drawn to collect data related to socio-economic characteristics and saving behavior through open- and closed-ended questionnaires. Descriptive and inferential statistics (binary logistic regression) were used to analyze the data collected using Statistical Package for the Social Sciences (SPSS) software version 20.0. Results revealed that some variables significantly influenced household saving behavior at 5% and 1%, respectively. Based on the study findings, the study concludes that income, education level, household size, net dependents, and sex significantly influence household saving. The study recommends that formal financial institutions should provide mass education and sensitization programs in rural areas on the services they provide and extend the services of formal institutions to rural areas to encourage the rural population to use commercial banks. This is because education is a significant factor influencing rural community saving.

Keywords: Households, Mtama District Council, Lindi Region, Rural Households, Saving Behavior

I. INTRODUCTION

The low formal savings rate in sub-Saharan Africa (SSA) has been attributed to several factors, including poor and irregular income and limited access to financial services. Most people still do not have access to financial services, such as savings or bank accounts, according to Chowa et al., (2012). The savings philosophy of developing nations is also influenced by a wide range of issues, including low interest rates, lack of financial services, difficulty accessing financial institutions, lack of incentives to save, and insufficient income (Obayelu, 2012). Since most African households keep most of their savings in terms livestock like cattle, store them in grains and similar products, or keep most of their assets in non-financial forms (80% of all assets), most of the population is unaware of their status of savings. A variety of community-based financial intermediation schemes, such as village savings and lending societies, have been put in place to increase access to financial services because many people in developing nations struggle to secure funding (Borko, 2018).

Governments in Sub-Saharan Africa (SSA) are currently working on expanding savings and credit cooperatives and other semi-formal microenterprises that aim to increase the public's involvement in savings for transformation; however, poor households have virtually no access to formal financial institutions (Omar & Inaba 2020). Nonetheless, strengthening the financial, social, and human resources of the most marginalized communities is the main aim of saving for change. Members of a savings group have a reliable cash flow management and financial security, which increases their resilience to economic shocks to the economy (Habumuremyi *et al.*, 2019).

Therefore, savings are essential for every area of the economy, from the government to individual levels. Savings encourage and support financial independence, which in turn affects the stability of the national economy. Additionally, prior studies have suggested that retirement planning and savings are closely connected (Yang et al., 2012). Because they have enough money to survive, people who reach retirement age do not have to worry about their future (Chand et al., 2023). Savings also have a significant and beneficial effect on national development. Additionally, savings reveal a person's financial well-being. However, empirical findings are conflicting and unclear on the issue of savings. Two groups of scholars have varied opinions about the true factors that influence savings. Life-cycle Theory is supported by the first group's findings of a positive causal relationship between disposable household income and savings. For example, Wakabayashi and Mackellar (1999) examined longitudinal data for China from 1993 to 1998 and applied the Life-cycle Theory as a fundamental model. They found a favourable correlation between savings and

discretionary household income, which supports the idea of a lifecycle. Similarly, according to Horioka and Wan (2007), savings are significantly positively and statistically affected by household disposable income.

There are at least two problems in the literature that are currently available on savings. Firstly, few previous studies (De Vos *et al.*, 2020) have attempted to evaluate the factors that influence saving at the macro-level. Few studies have been conducted at the household level. Additionally, most of these studies have focused on evaluating the macro-level factors that influence saving. Secondly, previous studies such as that conducted by Borko (2018) have not examined rural saving exclusively by separating it from urban saving. Therefore, it is evident that the current study, which aims to examine the determinants of saving among rural households is necessary to unpack the existing conflicting findings.

1.1 Research Objective

To examine determinants of household saving behavior among rural households in a study area.

II. LITERATURE REVIEW

2.1 Theoretical Review

The study adopted one theory for guiding and informing this study concerning determinants of saving behaviors by rural communities

2.1.1 The Life-Cycle Hypothesis (LCH)

The study adopted The Life-Cycle Hypothesis (LCH); a theory of economics that explains how people save and consume throughout their lives. The theory was developed by Franco Modigliani and Richard Brumberg in 1954. It recommends that people should not only consider their current income when planning their spending and saving, but also their anticipated lifetime income (Modigliani & Cao, 2004). To maintain their quality of life during retirement, when they will dissave (consume their savings), people save during their years of high income. As a result, wealth accumulates in a "hump-shaped" pattern, rising throughout the working years and falling after retirement (Martini & Spataro, 2024). Modigliani noted that one of the most important motives for saving is the need to retire from one's job. Therefore, people will save so that when they become aged or do not wish to work, they will have money to spend. The theory was adopted to guide this study on examining the determinants household saving behavior in Lindi Region.

2.2 Empirical Review

2.2.1 Determinants of saving behaviors by rural communities

Most studies have identified economic and financial issues as key determinants of household savings. Income is a crucial factor that influence saving habits, and households with permanent or transitory income save more (Yang *et al.* 2012). The level of education has also been identified as a determinant of financial decisions on saving (Feyissa & Gebbisa, 2021 and Mchumi, 2017). Moreover, household size has been identified as another determinant of saving among African households (Markos, 2015). Fukuyama (2001) argued that culture influences economic behavior as it has an impact on production and organization as well as the creation of institutions. Saving is essential for households in which credit markets and insurance are not well-developed with weak social coverage against financial crises and other shocks.

Mideksa (2024) investigated the factors influencing saving behavior in Nigeria from a microeconomic viewpoint. Both the standard and two-stage least squares approaches were used in their analysis. The results of the study showed that factors including household size, occupation, geography, and age demographics have a substantial impact on household savings in Nigeria. Additionally, it was discovered that factors including the living circumstances of the household, marital status, and availability of infrastructure were important aspects that determine households' decision to save. Furthermore, the findings demonstrate the importance of regional dynamics, geographic variables, and household socioeconomic traits in determining Nigerians' saving habits. A similar study by Asfaw *et al.* (2023) investigated the intensity and behavior of saving among pastoral and agro-pastoral groups in the Afar Regional State of Ethiopia and found that household income, education and marital status of respondents significantly influenced saving behavior. In a related study, Sisay (2023) evaluated the saving status of rural households in Ethiopia and found that more than half of the population did not save money in formal financial institutions. Furthermore, the study employed binary logistic regression analysis and a mixed-method approach to investigate the factors influencing rural family saving behavior in Metekele, Beneshangu Guzu State in Ethiopia. The findings showed that rural households' saving habits were primarily determined by economic and demographic factors. Also, similar findings were reported by other studies in Ethiopia. Similarly, Zwane *et al.* (2016) investigated the factors influencing household saving habits in South Africa between 2008 and 2012 using panel data estimation techniques. The study found that several factors, such as income, age distribution, educational attainment, and work status, significantly influenced household saving behaviors.

Additionally, they found a negative causal relationship between household size and saving activity, suggesting that larger households had fewer opportunities to save due to high expenditure levels.

A study by Sisay (2023) on “Rural households saving status and its determinant factors: Insight from southwest region of Ethiopia” showed Savings was discovered to be influenced by several demographic, socioeconomic, and institutional factors, as both the logit and linear regression model results demonstrated. Among those factors, education level of the household head, distance from financial institutions, farm income, financial literacy, and participation in non-farm activities were found to affect both decisions to save and intensity of saving significantly and positively except distance from financial institutions, which is negatively correlated with both. Likewise, both sex of the household head and participation in off-farm activities positively influenced household saving behavior.

III. METHODOLOGY

3.1 Research Design

The study adopted cross section research design as it enabled to collect data at single unit of study area and at one point of time.

3.2 Study Area

This study was done in Mtama district in Lindi region in Tanzania, The study was undertaken in May 2024 in Mtama District because 70% of people in Lindi Region justification for study area is based on inadequate formal financial services both formally and semi-formally (Finscope Tanzania, 2023) as well as being one among the districts with low household size of about an average of 3.8 (United Republic of Tanzania [URT], 2022). The main economic activities undertaken in the area are agriculture, bee keeping, livestock keeping, fishing and entrepreneurship (URT, 2022). The district is occupied by a vegetation savannah type characterized by different dominant grasses, trees and bushes with an average annual rainfall rate between 800 – 1,000 mm with one rainy season, which normally falls between the months of November and April.

3.3 Target Population

The target population of the respondents were rural households in three wards on which four villages were used.

3.4 Sampling Procedure and Sample Size

Sampling method used was multistage sampling which included to select wards and villages from the Mtama District Council. The unit for inquiry was Mtama District where the sample were drawn from three (3) wards which were Namupa, Mtua and Nyengedi from which four village were selected, namely Kilimahewa A, Nyangamara, Namupa and Ruo. Probability sampling technique was applied in this study. Then, simple random sampling was used to select the heads of households regardless of their gender since they were the ones who made financial decisions; hence, each household head had an opportunity to be interviewed. Sample size was determined using the formula of $n = \frac{N}{1 + N(e)^2}$ (Kothari 2004) as shown in Table 1.

Whereas.

n = Sample size

N = Total households

e = Standard Error

Table 1

Distribution of Sample Size

Village	Total households	Sample size (n)
Kilimahewa A	403	36
Nyangamara	980	38
Namupa	901	38
Ruo	799	38
Total	3083	150

3.5 Data Collection Instruments and Procedure

The researcher collected data from the field through survey interviews with questionnaire tool. Primary data were collected directly from the heads of households (respondents) based on the socio-economic characteristics of the respondents and the saving behavior of the households.

3.6 Data Analysis

The data obtained were analysed through descriptive and inferential statistics through statistical product for service solution (SPSS) software version 20.0 to come up with the study results. The mean, frequency, percentages, minimum, maximum and standard deviation were used to analyze the findings, while in inferential statistics, a binary regression model was used to analyse the determinants of household saving behavior.

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \varepsilon_i$$

Where Y = household j with a probability of 1 for household saving and 0 for not saving at a given time, X_1 = sex of respondent, X_2 = age of respondent, X_3 = education level of respondents, X_4 = consumption level of household, X_5 = income of respondent, X_6 = household size, X_7 = net dependency, X_8 = attitude, and β_0 = constant/intercept., β_1 --- β_8 = coefficients of vectors of regression parameters., ε_i = stochastic/random error term. The probability of household j is likely to fall into either saving or not saving due to X_i 's factors, which are given by the odds of sex, age, education, consumption, income, household size, net dependency, and attitude as follows:

$$\Pr(S=1) = 1 - (\Pr(NS)).$$

$$\Pr(S=1) = 1 - f \{ \beta_0 + \beta_1\text{sex} + \beta_2\text{age} + \beta_3\text{education} + \beta_4\text{consumption} + \beta_5\text{income} + \beta_6\text{hold size} + \beta_7\text{net dependence} + \beta_8\text{attitude} \}.$$

IV. FINDINGS & DISCUSSION

4.1 Demographic Characteristics of Respondents

This section describes the characteristics of the respondents based on their age, sex, household size, level of education, income and occupation.

4.1.1 Age of respondents

The findings of this study in Table 2 show that the minimum and maximum ages were 20 years and 80 years respectively. The average age was 44 years, with a standard deviation of 14.1. The results showed that out of 150 respondents, 42.7% of the respondents were in the age group of 20-39 years, followed by the age group of 40-59 (38.7%), and only 28 respondents (18.7%) were above the age of 60 years old. This implies that most of the respondents were at their productive age compared to those above 60 years of age who were elderly and unproductive. The result of this study corresponds with those of the 2012 housing and population census which revealed that few people in Tanzania were above 60 years of age (National Bureau of Statistics [NBS], 2012).

4.1.2 Sex of Respondents

The findings in Table 2 revealed that out of the 150 respondents sampled, 79 respondents (52.7%) were males and 71 females (47.3%). This implies that most of the households in the study area were headed males compared to those that were headed by females. This reflects the African culture while economically, males are more productive than females which causes them to depend much on males in family matters.

4.1.3 Education Level

The distribution of the respondents by education level is shown in Table 2, which reveals that 60.7% of the respondents had at least attended primary school level of education, which was identified to be the basic level for all people (education for all) to reduce ignorance. 6.7% of the respondents had tertiary level of education which were mainly certificate and diploma levels, while 5.3% had attended secondary level of education, and 27.3% of respondents had not attained formal education. This implies that, the rate of attending secondary school and tertiary education was less than that of those who had attained primary school level of education (12% vs 60.7%). This might have been caused by low income and negative cultural practices. The result showed that 72.7% were able to write and read compared to 27.3% who lacked literacy skills in the study area.

4.1.4 Respondents' Income

As indicated in Table 2, majority of the respondents had an income of less than TZS 1,000,000 per annum which accounted for 88 respondents (58.7%), followed by 32 respondents (21.3%) whose income ranged from TZS 1,000,000-2,000,000 per annum while 30 respondents had an income of more than TZS 2,000,000 which is equivalent to 20.0% per annum. This implies that most rural people had low income with a maximum of two meals per day, as they earned less than TZS 1,000,000 per annum due to much dependence on farming (agriculture) as the major economic activity compared to entrepreneurs and employed people in the formal sector who had an income of more than TZS 1,000,000 per annum. The mean income of the respondents in the study area was TZS 1,434,700 per annum which was slightly higher than the national average individual income of TZS 1,186,200 per annum (URT, 2022)

4.1.5 Household Size

The findings in Table 2 revealed that 101 respondents (67.4%) had 3-6 household members, followed by 35 respondents with less than three household members (23.3%) and 14 respondents had more than six household members which accounted for 9.3%. The aspect of having many members in some households in the study area might have been caused by the African culture of valuing extended families for labor provision.

The average household size in the study area was 4.0 which is slightly greater than that of the region and district of 3.8 and 3.7 respectively but slightly lower than that of the Tanzanian mainland and national average household size of 4.8 (URT, 2022).

Table 2

Demographic Characteristics of Respondent (n=150)

Variable	Ward			%
	Mtua	Namupa	Nyengedi	
Sex of respondent				
Male	37	26	16	52.7
Female	37	12	22	47.3
Age (Years)				
20-39	25	20	19	42.7
40-59	28	14	16	38.7
60-79	21	4	3	18.7
Education Level				
No-formal	25	7	9	27.3
Formal education				
Primary level	42	23	26	60.7
Secondary level	4	3	1	5.3
Tertiary level	3	5	2	6.7
Income (Tshs)				
<1000000	50	22	16	58.7
1000000-2000000	12	8	12	21.3
>2000000	12	8	10	20.0
Household size (Numbers)				
<3	21	8	6	23.3
3-6	49	27	25	67.4
>6	4	3	7	9.3

4.2 Determinants of Household Saving Behavior

The aim of this study was to assess the determinants of saving behaviour at the household level in Mtama District. To address this objective, respondents were interviewed by the researcher using open-ended questions. An econometric model was designed to facilitate the analysis and determine the determinants of household savings. Logistic regression (binary) was used to determine the influence and significance of predictor variables towards saving behaviour using MLE. The model was well-fitted to this study because the variables were correlated, and the chi-square results showed that the parameters were statistically different from zero at 5% ($p < 0.05$).

4.2.1 Sex

Sex was a dummy variable whereby 1 stands for female and 0 for male. The sex variable is very important for household decision-making on whether to save or not. The study findings in Table 3 revealed that gender of respondents positively influenced household saving behavior because it was found to be statistically significant at $p < 0.05$. For a unit increase in the number of females, the odds ratio (OR) for saving was expected to increase by 2.57 for the variation of females who were found to save more than the males. This result is consistent with the results obtained by Butelmann and Gallego (2001); Feyissa and Gebbisa (2021) in Ethiopia, who found that the sex of the respondent was influential in the household decision to save but insignificant in the study by Sahudin *et al.* (2024).

4.2.2 Income

Income was a continuous variable measured in Tanzanian Shilling (TZS). The results revealed that, income was the most important determinant of household saving habits, rather than attitude. The findings in Table 3 shows that households with higher income had a higher probability of saving compared to households with lower income and were found to be statistically significant at $p < 0.05$. As income increases, the odds ratio (OR) for savings was expected to be

1.000 or 100%. This means that, income is an important variable in households' saving decisions as the increase in income will lead to an increase in saving in the long run because the average propensity to consume (APC) falls as income rises in the long run. The results are in line with Permanent Income Hypothesis (PIH) as well as with the results obtained by other studies in the world such as Mchumi (2017) in a study conducted in Tanzania and Chowa et al (2012) who also found that households with higher income had a higher chance of saving.

4.2.3 Household Size

Household Size was a continuous variable measured in numbers. Household size was found to positively affect household saving behaviour as it increases household consumption. In African societies, most families are extended compared to the nuclear ones, thus household size was found to be statistically significant on household decision to save at $p < 0.05$ as demonstrated by the findings in Table 3. As the household size decreases, the odds of saving was expected to become 2.152. This result is inconsistent with the results of a study conducted in Ethiopia by Sisay (2023) among rural households but was found significant in urban areas. Similarly, the findings obtained from a study done in rural Nigeria (Kwara State) by Obayelu (2012) and Alves and Cardoso (2010) in Portugal found that household size was not significant in determining the decision on saving.

4.2.4 Net Dependents (Independent-Dependent)

Net dependency was another predictor variable studied, which was a continuous variable, obtained from household members who were working minus those who were not working (people who worked and people who did not work). The results in Table 3 revealed that net dependency was another determinant of household saving habits, since households within net dependency had a higher probability of not saving compared to their counterparts and was statistically significant at $p < 0.01$. A unit increase of net dependency was likely or expected to reduce (OR) the household decision to save by 0.35. Households with few net dependents tended to save more compared to families with many people who did not work, as consumption tended to be higher compared to income. This result is consistency with the study by Mideksa (2024) who found that the dependency ratio was a determinant of household saving behavior. The proportion of household members who are working and those who not working determine the household saving capacity and behaviour as the marginal propensity to save (MPS) is high compared to income.

4.2.5 Education Level

Education is important for performing or adopting an action because it provides knowledge and awareness of a certain issue or decision that a person needs to make. Education level was found to have significantly influenced household decisions to save, as shown by the results in Table 3. Household heads with higher levels of education had a higher probability of saving than those with lower education at $p < 0.05$. The increase in the number of more educated households in the study area was likely to increase (OR) the probability of household heads to save by 2.695. The result implies that more educated people were aware of the importance of saving and are assumed to have better jobs with high income compared to low educated people. These findings are consistent with the results obtained by other studies such as Obayelu (2012), Butelmann and Gallego (2001), Alves and Cardoso (2010) but a study conducted by in Ethiopia on the determinants of household saving among cooperative members negated the importance of education on household saving behaviour.

4.2.6 Age

The study results in Table 3 revealed that age negatively influenced household saving behavior because its coefficient interaction was -0.02 and not significant at $p < 0.05$. The p-value observed was 0.254, meaning that it was greater than ($p < 0.05$) but consistent with the Life Cycle Hypothesis (LCH) where a person is expected to save up to the point and then start declining in saving as the person ages. This implies that as the age of the respondent increases, saving decreases due to the inability of a person to work or in retirement age where one is not productive. The results are consistent with the findings of Markos (2015) in a study done in Ethiopia, and Mchumi (2017) in a study done in Tanzania but are inconsistent with the results in a study by Alves and Cardoso (2010) who found that age was influential on household saving behavior whereby the rate of saving decreases as the age increases.

Table 3*Logistic Regression for Determinants of Rural Household Saving Behavior*

Variable	Beta	Std. Error	Wald	df	Sig.	Exp(B)
Sex	0.944	0.435	4.712	1	0.03**	2.57
Age	-0.02	0.017	1.4	1	0.237	0.981
Edctn	0.991	0.433	5.255	1	0.022**	2.695
Consumptn	0.000	0.000	1.307	1	0.253	1.000
Income	0.000	0.000	3.888	1	0.049**	1.000
Hholdsize	-0.776	0.319	5.785	1	0.016**	2.152
Hhntwork	-1.037	0.374	7.699	1	0.006***	0.355
Constant	-4.207	1.627	6.689	1	0.01	0.015

** and *** significant at 5% and 1% respectively.

-2log likelihood	151.09
χ^2	55.546
Cox & Snell R ²	0.308
Nagelkerke R ²	0.411

The fitness of the model is explained by the value of -2 log likelihood implying that the predictor variable is likely to influence household saving behaviour by 151.09 and the probability of saving to occur was at 41% with the explanatory variables presented (Nagelkerke R square=0.411 and Cox & Snell R square=0.30).

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

Based on the study findings, the study concludes that income, education level, household size, net dependents and sex significantly influenced household saving behavior in the study area. The results are in line with the theories that have developed to explain people's habits of saving such as Permanent Income Hypothesis (PIH) and Life-cycle Hypothesis.

5.2 Recommendations

The study recommends that formal financial institutions should provide mass education and sensitization programs in rural areas on the services they provide and extend formal institutions in rural areas to encourage rural communities to use commercial banks in their financial issues, specifically, savings. This is largely because education has been projected as a determinant that has a significant influence on rural community saving habits.

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