# SAVINGS EFFECTS ON HOUSEHOLD CONSUMPTION EXPENDITURE AMONG WOMEN LIVING WITH HIV/AIDS IN UGANDA

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**Abstract**

Savings are key in smoothening household consumption. Unfortunately, in the face of HIV/AIDs, these are affected while catering to health-related expenses among others. With effective treatment and care, people living with HIV/AIDS now have a life expectancy comparable to the general population, making it essential to sustain their consumption to secure their future and that of their dependents. Empirical evidence on the causal impact of savings on household consumption expenditure remains limited. This study investigates this relationship by utilizing two waves of survey data from 3,200 women living with HIV/AIDS, collected through face-to-face interviews. The analysis employs rigorous causal inference techniques, specifically the instrumental variable Tobit regression, to establish a robust linkage between savings and consumption expenditure. The findings indicate that only 31% of the sampled women saved, primarily through Village Savings and Loan Associations (VSLAs) and other informal channels, with motivations ranging from healthcare, education, and asset accumulation to business investment, agriculture, and food security. Strong (*p*<0.001) significant influences of saving behavior on expenditures related to children’s education and business investment are observed, but no significant influence on food and health which are key for the well-being of the targeted sample. This study recommends designing strategies and programs that support improving the income security of the targeted populations in addition to financial inclusion.

Keywords: Savings, consumption expenditure, HIV/AIDs

* 1. **Background**

Achieving sustainable economic growth is one of the fundamental targets not only for developed countries but also for developing countries. Domestic savings have been fronted among the most influential determinants of economic growth for most African countries (Baris, 2020; Nagawa *et al.*, 2020; Ndirangu & Muturi, 2015). Savings are widely recognised as an important means to a sustainable cashflow management and consumption smoothening in the face of volatile and unpredictable incomes for the poor (Brune *et al.*, 2016; Karlan *et al.*, 2014). Additionally, savings enable households to maintain a stable lifestyle and save for other investments such as children’s education (Yao *et al.*, 2014). Both individual and household savings serve as cushions of security against future incidences or shocks (Carter *et al.*, 2015; Dupas & Robinson, 2013).

* 1. **HIV/AIDs and household savings**

In the face of HIV/AIDs pandemic, household savings are inevitably compromised. The most immediate effect of HIV is on human capital base, principally in terms of availability and allocation of labour (Asenso-Okyere *et al.*, 2010; Simtowe & Medagbe, 2011), thereby threatening the household productivity, sales and consequently savings. Firstly, the morbidity of an active member may result into reductions in the quality and quantity of labour allocated to productive activities both off-farm and on-farm (Wafula, *et al.*, 2013; Thirumurthy et al, 2011; ). In addition, family members may allocate their time to care for the sick which could otherwise have been invested into productive activities (Booysen and Bachmann, 2002). Secondly, expenditures for medical treatment and funeral costs represent foregone savings. In some cases, family assets such as land, livestock may be sold off and savings lost to compensate for foregone income (Wafula *et al.*, 2013). For low-income households or those slightly above the threshold, the loss of labour, income and increased expenditures on medical care may significantly reduce their savings and push them further into poverty and this compromises greatly on the household consumption smoothening.

Given the adverse effects of HIV/AIDs on household welfare, a number of interventions have been invested to combat the disease effects. These have mainly focused on treatment, nutrition and prevention of mother-to-child infections. Amidst successful care and treatment, life expectancy has noticeably improved to the extent that HIV is increasingly being considered as a chronic illness, in which a near-normal lifespan is achievable (Nakagawa *et al.*, 2013) even in sub-Saharan Africa (Bor *et al.*, 2013). A study on life expectancy of persons receiving combination ART in Uganda showed that those who adhere to effective antiretroviral treatment and care, experience a very similar life expectancy to the national average of 55 years (Mills *et al.*, 2011). With this evidenced longer life expectancy there is need for people living with HIV/AIDS to have improved savings to sustain their consumption for their future as well as that of their dependents.

* 1. **Saving motives and household behaviour**

Households are rational in their saving decisions. Studies show that individuals or households have reasons why they save. Empirical studies show that setting goals for saving is an important driver for saving behaviour (Ülkümen & Cheema, 2011). As such a number of scholars have gone ahead to report the importance of specific motives on household saving behaviour . Fisher & Anong (2012) examined how saving motives were related to saving habits among US households and observed that precautionary and retirement motives increased the likelihood of saving regularly or irregularly as compared with not saving, but only retirement motive separated savers from irregular savers. Lee & Hanna (2015) examined the association between saving motives and saving behaviour in the US from the perspective of Maslow’s hierarchy. Their study found out that retirement motive was the most popular and self-actualization was the least and the two motives had the strongest association with saving behaviour . Fisher & Montalto (2010) explored the relationship between saving motive and saving behaviour among US households using the perspective theory and found out that emergency and retirement motives were found to significantly increase the likelihood of saving regularly. The study recommended that it is important for financial professionals to consider household saving motives and health status when making recommendations related to financial inclusion. (Dung, 2019) on the other hand investigated the impacts of long-term saving motives on fostering household participation and contribution to savings in Vietnam. Profit making investments (business) emerged as the strongest motive fostering household participation in saving mechanisms while other long-term motives had little or no impact. It was further observed that education investment encouraged household’s contribution to savings.

A number of studies have looked at determinants of saving motives. Empirically, a wealth of literature has linked precautionary savings to age, household size, dependency ratio, employment rate and incomes. Yao *et al.* (2014) examined the effect of age on saving motives of urban consumers in China using the lifecycle model. Findings recorded 3 most common motives; emergency, education and retirement and it was observed that saving motives had a clear life-cycle pattern. Samant & Sudarsan (2019) assessed the determinants of precautionary saving motives and the results indicate that age, family size and dependency ratio were key determinants of precautionary savings. Le Blanc (2016) studies motives and saving behaviour in 15 euro-countries and found out that precautionary saving motive was the most common followed by retirement. Determinants of savings included age, employment status and income or wealth status. Satsios & Bassim (2018) investigated the effect of gender, age, education, children and monthly income on saving motives of Pomak households. Results indicated that age and gender were key influencing factors of saving motives.

* 1. **Saving and household consumption expenditure**

Consumption expenditure by households is one of the fundamental components of Gross National Product and Gross Domestic Product and is generally considered as a major variable in determining a country’s economic growth. The situation of low savings is more serious in developing countries where there is more exposure to heavy shocks without sufficient insurance or mitigation measures (Drexler *et al.*, 2014; Sayinzoga *et al.*, 2016) Particularly in Uganda, current trends show that gross domestic savings measured as a percentage of GDP have remained below the desired targeted points of 19%, standing at 17.3% in 2021 (World Bank, 2022) and the trend has not been any better over the last decade. This has attracted a lot of interest over the years to understand the barriers to experiencing improved savings and whether saving behaviour can improve household welfare. For the first part of the knowledge gap, a lot of empirical evidence has been generated on factors that could improve saving behaviour such as financial access (Patel *et al.*, 2015), social capital (Burlando & Canidio, 2017; Musinguzi, 2015; Okello *et al.*, 2016), financial capabilities (Chowa *et al.*, 2014; Jamison *et al.*, 2014; Supanantaroek *et al.*, 2017) and financial incentives (Chowa *et al.*, 2012; Mpiira *et al.*, 2014; Wang *et al.*, 2018). On the later, existing rigorous evidence albeit limited, shows that is it possible to engage in saving activities to produce positive welfare effects thereby promoting economic growth. There have been studies that show the positive impact of saving behaviour in developing countries. Majority of the studies have looked at the impact of financial inclusion measured by access to savings (formal or informal) on household welfare outcomes. Mwansakilwa *et al.* (2017) used PSM to estimate the impact of participation in VSLA on welfare measured by consumption expenditure. The results indicated large positive and significant consumption effects of participation in VSLAs. (Jawara, 2020) assessed the impact of access to formal savings on household wellbeing. Using the PSM and kernel ridge regression methods, the author found out that household access to formal savings had a positive and significant impact on total household expenditure, ownership of durable assets and education spending but an insignificant positive effect on health spending. Danquah *et al.* (2021) used a bivariate probit model to establish the effect of access to savings on household welfare. The results indicated that rural households with basic access to financial services were significantly more likely to be non-poor than those without such access. All the above studies are outside Uganda.

For Uganda, a recent study by Kiiza & Omiat (2021) used a PSM and switching regression model to examine the impact of saving with SACCOs on household welfare. Their results showed that saving with SACCOs had positive effects on household food security measured by HDDS and Food Consumption Score (FCS), non-food expenditures and school enrolment rates in Uganda. A study by Oxfam (2013) assessed the participation of saving group on household welfare and found an impact in improving the freedom from hunger’s food security index which dropped by 4 percentage points implying that such initiatives help households in smoothening consumption over seasonal periods of greater food insecurity. Prina (2015) used a field experimental design to assess the impact of financial access to household welfare. The study found reallocation of expenditures across categories such as more spending on education and nutritious foods as well as higher ability to cope with shocks. All the above studies focus on access to savings and clearly show the impact of access on different welfare outcomes. A recent study by Vixathep *et al.* (2022) assessed the impact of saving on welfare of households using a single impact equation introduced by Coleman (1999) and found that savings contributed to enhance households’ welfare measured by quality of life and wellbeing.

Although some results indicate positive significant influences, others are mixed or inconclusive. For instance, access to savings increases household assets, consumption and expenditure on education, but only in rural areas and in poorer households (Maitra *et al.*, 2022). Zhang & Mallick (2019) found access to savings to increase consumption but the impact was stronger among urban households. However, not all studies show the same direction. For instance, some empirical studies using randomized evaluations or field experiments on the impacts of savings on school enrolment find no statistically significant impacts. Prina (2015) finds that for households who have access to bank savings accounts in Nepal, there is no statistically significant impact on school enrolment, but finds that the intervention raises investment in education, in the form of textbooks and school uniforms. Oxfam (2013)’s report on evaluation of the Saving for Change (SfC) program in Mali and found no statistically significant impact of saving on school enrolment or expenditure.

However, scanty rigorous evidence exists on the impact that saving behaviour could have on the well-being of households. A few researchers such as Kiiza & Omiat (2021) and (Odokonyero, 2012) have focused on only informal savings probably because the sector covers the biggest saving population. However, such results may not be easily generalized. The current study uses a rich dataset from four regions of Uganda to explore first the saving behaviour and secondly influence of saving behaviour on household welfare of women living with HIV in Uganda. The study differs from previous ones by; 1) focusing on a group of vulnerable individuals other than generalizing for the population. 2) previous studies looking at effect of saving behaviour have focused on financial inclusion specifically on access to informal savings while the current study considers contributions to both formal and informal savings on household welfare. Specific objectives under this study include; 1) to assess the drivers of saving behaviour among women living with HIV/AIDS; 2) to determine the effect saving behaviour on household consumption expenditures. The following hypotheses were tested:

Hypothesis 1: *Propensity to save is positively influenced by employment status, access to nutrition information, decision on household income, access to credit and social networks.*

From the lifecycle theory, saving is depicted to be positively related to income and so factors that increase income are expected to be positively related with saving behaviour. As such, employment status and access to credit which positively influence incomes (Augsburg *et al.*, 2015; Crépon *et al.*, 2015) are expected to have a positive relationship. However, the behaviour will depend on decision making power of the woman in the household. Women who have power to decide on utilization of income may have a positive influence on propensity to save if they choose to do so or otherwise decide to allocate the incomes elsewhere and thus result into a negative influence.

Social networks have been found to influence saving behaviour (Newman *et al.*, 2014). this is because these networks have been shown to increase access to resources and services such as information and credit which may boost household incomes and reduce vulnerability to economic shocks. Similarly, with improved knowledge on nutrition, one is expected to be more aware of the importance of nutrition on health and so maybe expected to save so that one is able to sustain consumption of nutritious foods. Previous studies have shown that education enables more information and management capabilities which may translate into more efficient saving (Chowa *et al.*, 2012).

Hypothesis 2: *Propensity to save has a positive relationship with consumption expenditure*

When propensity to save is high, incomes are expected to increase. The increase in household incomes may result into both increased level and diversity of consumption (Hone & Marisennayya, 2019). Previous studies have found saving behaviour to result into increased meals consumed per day and household expenditure (Ksoll *et al.*, 2016), on-farm input usage (Brune *et al.*, 2016) as well as generally food security and consumption smoothing (Beaman *et al.*, 2014). Consumption expenditure could also be influenced by demographic composition and heterogeneity in tastes. Such factors include household size, age of household head and education status (Chakrabarty & Mukherjee, 2022). For instance, with increased household size, consumption expenditure may increase but could be for certain expenditure items depending on household composition. Households with more children may spend more on children’s education or food.

* 1. **Theoretical framework**

Over time, a number of theories have been proposed to study consumption behaviour. These stem from Keynes’ theory of consumption commonly referred to as the absolute income theory. It points to the current absolute income as the key determinant of consumption both at individual and household levels (Ezeji & Ajudua, 2015). Keynes proposed a psychological law of consumption which states that consumption increases as income increases, just not as much as the increase in income.

Thus, the Keynesian proposition of the consumption function is illustrated as follows;

Where; is consumption expenditure in time t; Co represents the autonomous consumption that is the proportion of consumption that does not vary with income; and Yt is the real disposable income and b is marginal propensity to consume, which is between 0 and 1. Thus, when other factors are held constant, the consumption expenditure, is a function of income.

The relative income theory of consumption augmented Keynesian theory by proposing that consumption for individuals or households does not only depend on income but it is relative to the income of the neighbours with which they identify and the previous income. This theory introduces psychological and sociological factors such as social interdependencies in consumption behaviour (Drakopoulos, 2021). The idea is that a household with any given level of income spends more on consumption if it lives in a community in which the income is relatively high. As such, consumption is a function of the income of the individual and the average income of the community affiliated to. The theory further asserts that consumption depends on income levels that were previously reached by the individual. Even if the absolute income of the individual increases without an increase in their relative income (when all other households in the community receive the same percentage increase in incomes), such individuals will still spend the same proportion of their incomes as were doing previously before the increase in their absolute income (Ohale and Onyama, 2002). This implies that the individual average propensity to consume remains unchanged regardless of the increase in their absolute income. This theory therefore seems to suggest that there would not be a relationship between the individual’s consumption and own income. However, analysis would require not only analysing the individual’s income but also those for other households in its community.

The permanent income theory of consumption proposed by Milton Friedman in 1957 suggests that consumption is not determined by the current income but by long-term income in alignment with lifecycle theory of consumption (Supriya, 2015). Accordingly, households plan their consumption on expected average income over a long period of time which is referred to as permanent income. The average income comprises of two income sources; namely labour income which is generated from offering labour services and wealth generated from assets and savings. This theory seems to suggest that current consumption is influenced by income and wealth generated by individuals implying that variables such as interest rates which affect wealth or savings may affect consumption.

The Lifecycle theory of consumption introduced by Modigliani and Brumberg in 1954 hypothesizes that individual consumption in a given time period is not determined by the current income for that specific period but by the entire life time expected income (Gali, 1994). It is therefore assumed that individuals plan a pattern of consumption expenditure based on expected income over their entire lifetime and that they maintain a slight increase or less constant consumption level (Deaton, 2005). The theory suggests that the relationship between income and household consumption can be negative as individuals may save for future consumption.

The theories of consumption specifically, the relative income, permanent income and lifecycle theories haven their theoretical foundations in the microeconomic theory of consumer choice. However, the lifecycle and permanent income theories are the most comparable; both theories presume that individuals attempt to maximize their utility by equalizing lifetime stream of earnings with a lifetime pattern of consumption. Both theories make comparable predictions about the consumption effects of permanent and temporary changes in the individual and eventually household income. In contrast, the relative income theory hypothesizes that individual attitude to consumption is influenced more by income than by the hypothesized standard of living. Individuals and households make conspicuous choices to purchase goods and services and their ability to consume the good and services depends on their level of income. The current study follows this theoretical framework. This follows the theory of inter-temporal choice developed by Irving Fisher. Contrary to Keynes’ psychological way of proposition which assumed that current consumption is determined by current income, fisher proposed that individuals or households are rational and make choices concerning how much to consume today and save for tomorrow in order to maximize utility. The scholar identified that people have desire to consume more but are constrained by their incomes. As such their budget constraint hinders them from consuming as much as they wanted. The theory further compares consumer’s decision on how much to consume today with how much to save for tomorrow with regards to the available resources. Basically, the assumption is that consumers allocate their own resources to purchase goods and services in a way that maximizes utility.

The basic literature relating to consumption behaviour shows that an individual or household attempts to maximize over their lifetime utility function that is homogenous with respect to consumption at different points of time. As such, the utility function of the individual consumer is assumed to be a function of own aggregate consumption in the current and future periods. The individual will allocate the marginal increments of resources to consumption in different time periods in the same proportions as total resources were allocated before the additions. It also follows the line of argument of Ogundari & Abdulai (2014) that health capital differs from other forms of human capital. In particular, while an individual’s stock of health tends to determine the total amount of time spent producing money earnings and commodities. It is assumed that households maximize utility, which is dependent on the consumption of commodities and services, Ci, which include quality education Ei, quality health, Hi, quality food, Fdi, quality on-farm inputs, Fmi and business Bi; and also depends on leisure Li. Without considering the household decision-making process, it is assumed that household maximizes a utility function that is twice continuously differentiable and strictly concave;

In the simplest model, it is assumed that each household consumption utility is defined as;

…………………………………………………………………….(6.2)

Where is the consumption at the period t; is the lifetime utility function that is homogenous with respect to consumption at different points of time; it is assumed that and so that the marginal utility of consumption in each period is positive and diminishing. This utility function can be re-written as;

Where is utility, represents individual and household characteristics, some of which are unobservable. The household production functions of different goods and services may be described by the following functions;

Where represents the unobserved determinants of ;

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A critical variable contained in the Z vector in all production functions is the level of saving, since it influences the efficiency of the production process. Household consumption behaviour obviously operates under a set of constraints. These include the budget and time constraint.

Suppose there is no uncertainty, lifetime income and initial wealth *A0* are known and taken with certainty. Thus, the lifetime budget constraint is

…………………………………………………………..(6.9)

Equation 6.2 means that lifetime consumption should equal initial wealth plus lifetime income. It is assumed that during the lifetime, households can save or borrow in the period t so that they can consume less or more at the same period. Hence households will consume more or less at some future periods of the lifetime. In other words, households can choose whether to save up today so that they can spend more in their future. In contrast, they can borrow to consume more today, and thus, reduce the consumption at some future period in the lifetime. Therefore, there are economic trade-offs across periods.

At the end of life in period T, the household is assumed to have zero debts and zero assets. In addition, for simplicity, we assume no interest and thus, no discount of future consumption. The objective is to find optimal consumption so that a household can maximize own lifetime consumption utility in equation (6.2) with the lifetime budget constraint in equation (6.9). This can be solved by setting up the following Lagrangian.

……………. (6.10b)

The first order condition for is;

…………………………………………………………..…(6.11)

Similarly for any given ;

Since the utility function is assumed to be homogenous with respect to consumption at different points of time, the first order condition is the same for each period. Thus, the marginal utility of consumption is constant and equal to in each period. This result implies that the level of consumption is constant and equal in each period, otherwise the marginal utility of consumption varies over time. Therefore, we have;

; ……………………………………………………………(6.13)

Replace (6.5) and (6.6), to get;

And

* 1. **Methodology**
     1. **Data type and source**

The data used in this study were comprised of two panels reflecting two years and was largely quantitative in nature, sourced from randomly selected women. Data were collected through a household survey using a pre-tested questionnaire during face-to-face interviews with the women. Household related data included age, sex and education of household head; income and income sources; expenditure (food, health, education, utilities (water, electricity, airtime), household size and composition. Individual data related to the respondent included age, education level, employment status, income and income sources, savings, access to credit facilities, and social networks.

* + 1. **Measurement of outcome variables**

The outcome variables of interest in this study include saving behaviour and welfare outcomes related to the study population’s saving motives. To measure saving behaviour , average propensity to save was used following previous researchers (Badura, 2020; Brounen *et al.*, 2016; Bucciol & Veronesi, 2014). This was calculated by getting the amount saved which was captured by asking the woman to state the amount of savings contributed in the last 12 months and then dividing it by personal income. Welfare outcomes were measured using consumption expenditures. Consumption expenditure has been previously used by a number of scholars such as Amendola *et al.* (2016), Jawara (2020) and Chakrabarty & Mukherjee (2022) as a measure of welfare. Consumption expenditures covered the amount of money spent or allocated to education, medical, on-farm inputs and operations, food and off-farm business. Expenditures on education, medical and food are further computed in per capita terms which are derived by dividing the amount spent on the service or good by number of household members. A number of explanatory variables were included in this study and they are described in Table 6.1.

**Table 1.1: Description of independent variables used**

|  |  |
| --- | --- |
| **Variables** | **Description** |
| Access to nutrition information | Dummy for woman participating in training on nutrition or not (0=no; 1=yes) |
| Land accessed | Land size accessed for agriculture (Ha) |
| HHd age | Age of the household head (years) |
| Group member | Dummy variable for woman’s affiliation to social networks (0=no; 1=yes) |
| Urban resident | Dummy variable for Urban residence (1=yes; 0 otherwise) |
| Credit access | Dummy for access to credit (1=yes; 0 otherwise) |
| TLU\_equiv | Total livestock equivalents |
| decides on income | Dummy variable taking on 1 if woman makes decisions on household income and 0 otherwise |
| decides on land | Dummy variable taking on 1 if woman makes decisions on household land under production and 0 otherwise |
| Hhd size | Household size represented by number of household members |
| employed | Dummy variable taking on 1 if woman is employed and 0 otherwise |
| Hhd sex | Dummy variable taking on 1 sex of household head is female and 0 otherwise |
| Educ woman | Education level of woman (years) |
| Married | Dummy variable taking on 1 if woman is married and 0 otherwise |

* + 1. **Econometric analysis**

To study the determinants of saving behaviour and the effect of saving on welfare outcomes, the same empirical strategy was employed because of the nature of the dependent variables which were all censored. The actual regression equation in estimating effects of an independent variable on an outcome variable would be;

Where represents the saving behaviour of the individual *i* and is a vector of other explanatory variables. Ordinary Least Square (OLS) estimation of this equation would produce biased and inconsistent estimation of α and β given the fact that the dependent variables have censored data observations. The variable shows that some households dis-save, evidenced by negative saving ration, others have no savings with zero saving ratio while the rest have actual savings with positive saving ratio. In the presence of censored data, Tobit model is preferred. The Tobit model specification is given as follows;

; and

Where: is the observed household savings ratio for household level or average propensity to save for individual level, is the latent variable which is not observed is a Vector of unknown parameters, is vector of independent explanatory variables associated with household savings. The threshold value in the above model is zero. The model parameters are estimated by maximizing the Tobit likelihood function of the following form (Maddala, 2005; Gujarati, 2007).

(6.20)

Since εi is assumed to be normally distributed with a variance δ2, equation (6.20) can be re-written as;

Where, is the standard normal cumulative distribution function. Estimating using the OLS would have the function of the following form

However, using the censored tobit model; the same function would be;

Let be an indicator of Y\* being observed. From equation 6.20; it has been shown that;

Therefore, the density of Y\* will be expressed as;

In a situation of censoring, the density of *Yi* given *Xi* and *di* is therefore expressed as;

Equation 8 can be re-written as;

The loglikelihood function is;

……………….(6.28)

The empirical model for the outcome regression was defined as follows;

Where represents dependent variable of interest which include average propensity to save for saving behaviour and consumption expenditures for welfare outcomes. and is a vector of other explanatory variables, and are the coefficients to be estimated and is the error term.

While the model in model in equation (2.20) deals with corner solution challenges, there is another challenge of potential endogeneity in determine the causal relationship of saving on consumption expenditures. Both saving and expenditure are endogenous in that there may be unobserved characteristics which may influence expenditure and saving as well. This study employed the instrumental variable Tobit regression to deal with the problem of endogeneity. The instrumental variables used in this case was education level of the woman and household income. These were considered establishing that they were highly correlated with a woman’s savings but not on household expenditures. The IV-Tobit regression involved two steps. In the first step, savings were regressed on a set of control variables including the instrumental variable and the obtained corresponding residuals used as an additional regressor in equation (2.20). These residuals served as the control function for the potential endogeneity associated with savings. The assumption of exogeneity of savings is tested using t-statistics on the coefficient of residuals. A significant coefficient suggested the presence of endogeneity.

* 1. **Results and discussions**
     1. **Saving patterns for the households and the women in the sample**

A number of mechanisms are used in saving. Figure 6.1 summarizes the saving patterns of women living with HIV/AIDs under study. It is shown that generally, majority of women did not save as evidenced by the percentage response of only 30.88% of the sampled women having any form of savings. It is further shown that among the savers, majority (86%) saved via informal means mainly through VSLA (56.20%). Respondents also cited other informal channels such as purchase of livestock and assets which registered 28.34% responses.

**Figure 1.1: Percentage response on saving patterns**

* + 1. **Characterization of saver and non-savers**

A comparison of selected individual and household characteristics between savers and non-savers was made under this study and the results are presented in Table 6.2. For simplicity, the savers include those who registered any contributions towards savings during the specified period while the non-savers registered zero. The variables focused on included sex, age and education of household head, household size, child dependency ratio, employment rate, credit access, affiliation to social networks, and residency type. These are variables that have been shown to influence individual or household saving behaviour (Le Blanc *et al.*, 2016; Obayelu, 2013). It was observed that the savers were significantly more educated, employed mainly under self-employment, and had access to credit. It was further shown that majority of these savers were affiliated to social groups and participated in decision making on land for agricultural production. The implication here is that that they were more empowered.

**Table 1.2: Comparison of characteristics across saving groups**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Non-savers** | **Savers** | **P-value** |
| **Individual characteristics** | | | |
| Age | 38.09 (10.69) | 38.33 (9.58) | 0.608 |
| Education | 5.00 (2.47) | 5.14 (2.58) | 0.000 |
| Employed (1=yes) | 0.68 (0.47) | 0.74 (0.44) | 0.001 |
| Wage employed (1=yes) | 0.48 (0.50) | 0.48 (0.50) | 0.712 |
| Self employed | 0.24 (0.43) | 0.35 (0.48) | 0.000 |
| Group member (1=yes) | 0.48 (0.50) | 0.73 (0.44) | 0.000 |
| On ARVs | 0.79 (0.41) | 0.79 (041) | 0.889 |
| Decides on land | 0.67 (0.47) | 0.76 (0.43) | 0.000 |
| Decides on hhd\_income | 0.62 (0.49) | 0.59 (0.49) | 0.181 |
| Access to credit | 0.17 (0.38) | 0.34 (0.47) | 0.000 |
| **Household characteristics** | | | |
| Female headed households (1=yes) | 0.68 (0.47) | 0.57 (0.50) | 0.000 |
| Employment rate | 1.06 (0.75) | 1.13 (0.67) | 0.016 |
| Child dep. Ratio | 1.12 (1.08) | 1.19 (1.08) | 0.081 |
| Dist. to trading center (km) | 0.90 (1.15) | 0.99 (1.41) | 0.151 |
| Land accessed (Ha) | 1.57 (1.87) | 1.97 (3.49) | 0.001 |
| Household size | 5.74 (2.23) | 5.49 (2.07) | 0.005 |
| Urban residence | 0.73 (0.44) | 0.74 (0.45) | 0.656 |
| Dependency on farming | 0.28 (0.45) | 0.11 (0.31) | 0.000 |
| TLU | 0.20 (0.67) | 0.30 (0.25) | 0.020 |

It was further shown that female-headed households registered less savers. In addition, the savers had a significantly higher employment rate and accessed more land for agriculture production. Household size of non-savers was significantly higher than that of savers. It was also shown that a significantly higher percentage (28%) of sampled households that depended solely on farming was registered among the non-savers compared to only 11% among savers implying that the non-savers were more economically vulnerable. The savers had a significantly higher total livestock units compared to non-savers.

* + 1. **Means of Outcome variables across saving groups**

A comparison of key outcome variables between savers and non-savers is presented in Table 6.3. The results show statistically significant differences between means of all variables accept per capita expenditures on food and medical expenses.

**Table 1.3: Means of incomes and consumption expenditures across saving groups**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Non-savers** | **savers** | **Mean diff.** | **P\_value** |
| Per capita income | 138,454 (127,123) | 184,212 (136,591) | 51,758 | 0.028 |
| Percapita Food expenditure (Ush) | 185,009 (159,624) | 183,132 (160,858) | -1878 | 0.795 |
| Education expenditure | 361,546 (383,749) | 526,755 (414,854) | 165,209 | 0.003 |
| Percapita Medical expenditure | 36,713 (10,649) | 68,499 (13,603) | 31,786 | 0.167 |
| Business expenditure | 280,591 (38,595) | 383,720 (69,621) | 103,129 | 0.026 |
| Expenditure on-farm | 29,304 (18,996) | 33,680 (25,218) | 4,376 | 0.000 |

*Figures in parentheses are standard deviations.*

It was found that savers had higher expenditure on education that non-savers. Similar studies have been reported by Jawara (2020) who observed that households that had access to savings spent more on education than those that did not. It was also observed that savers invested more in their off-farm businesses and on-farm activities than their counterparts. The implication here is that savings may help in diversifying diets and as such smoothening consumption among households.

* + 1. **Saving motives among sampled households**

The respondents from the sample reported a number of reasons for saving. Overall, the most common reasons for saving included health and education (Figure 6.2). It is very clear from the results that health emerged as the most popular motive among the sampled households registering a percentage response of 42.22%. This was followed by the education of children which registered 35.59% of the responses. It was also found that the least common motive was retirement which registered less than 1% of the responses as being an important motive for saving. This is in line with earlier studies such as Le Blanc *et al.* (2016) in the Euro area and Yao *et al.*( 2014) in China, as well as Mndeme & Sinde (2022) in Tanzania who found the most common saving motive among households to be precautionary motive which covers health. However, the same studies found retirement to be second in importance which is not the case for the current study, in line with an earlier study by Lotto (2022) in East African countries. The non-popularity of retirement motive could be related to cultural characteristics in most African countries where the habit of saving for retirement is not regarded as important but also could be related to systems in place that promote retirement which are poorly developed or inefficient. The other probable explanation could be related to target sample population for this study which constitutes of women living with HIV/AIDS who may not be considering retirement as possible. A study in Ghana by Yeboah *et al.* (2012) however, found that the most popular motives for saving were business and retirement implying that probably in more developed African countries, retirement could be an important saving motive. This is in alignment with earlier studies from developed countries (Le Blanc *et al.*, 2014; Yao *et al.*, 2014).

**Figure 1.2: Percentage response on saving motives**

* + 1. **Determinants of saving behaviour among women living with HIV/AIDS**

Table 6.4 summarizes the results from a Tobit estimation while using Average propensity to save as the dependent variable. This study showed that average propensity to save increased with marital status, location of household, group affiliation and access to nutrition knowledge. Women who have accessed nutrition knowledge were more likely to have a higher propensity to save than their counterparts.

**Table 1.4: Factors that determine individual woman’s saving**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Av. Propensity to save** | **Coef.** | **Std. Err.** | **P-value** | **dy/dx** | **Std. Err.** | **P-value** |
| Married woman (1=yes) | -0.05 | 0.03 | 0.037 | -0.01 | 0.01 | 0.036 |
| Wmn decides on land | 0.03 | 0.02 | 0.157 | 0.01 | 0.00 | 0.157 |
| Decides on hhd income | -0.04 | 0.02 | 0.089 | -0.01 | 0.00 | 0.088 |
| Access to credit | 0.01 | 0.05 | 0.997 | 0.01 | 0.01 | 0.997 |
| employed | -0.05 | 0.05 | 0.227 | -0.01 | 0.01 | 0.239 |
| Group member | 0.67 | 0.05 | 0.000 | 0.17 | 0.01 | 0.000 |
| Urban resident | 0.12 | 0.04 | 0.009 | 0.02 | 0.01 | 0.006 |
| Female hhd head | 0.03 | 0.05 | 0.485 | 0.01 | 0.01 | 0.480 |
| Access to nutrition info | 0.12 | 0.05 | 0.029 | 0.02 | 0.01 | 0.018 |
| Household size | 0.01 | 0.01 | 0.422 | 0.00 | 0.00 | 0.422 |
| Constant | -0.71 | 0.12 | 0.000 |  |  |  |
| No. of observations | 2,631 |  |  |  |  |  |
| LR chi2 | 342.14 |  |  |  |  |  |
| Prob > chi2 | 0.000 |  |  |  |  |  |
| Pseudo R2 | 0.129 |  |  |  |  |  |

Women from urban households and those affiliated to social groups had a higher propensity to save. Social networks are a vehicle for transmitting information and as such, can improve the individual’s capability and thus resulting in a positive influence on saving behaviour. The current study results support previous studies such as by Newman *et al.* (2014) which observed a positive role of social capital measured by group membership in influencing saving behaviour in Vietnam. A study by Nagasha (2022) observed social influence to have a great impact on saving behaviour among university students in Uganda. The married women were more likely to have a lower propensity to save than their non-married counterparts. This could probably be related to the fact that they could rely on their spouse if they did experience any income shock and thus the lower propensity to save.

* + 1. **Saving behaviour effects on food expenditure**

Savings have been shown to smoothen food consumption. Results on whether saving behaviour does influence food expenditures are presented in Table 6.5. Although a positive relationship was observed between saving behaviour and food expenditure, it was insignificant implying that saving behaviour was not important in influencing food expenditure. The probable explanation could be related to the fact that Uganda is endowed with two production seasons and so people are rarely worried about having food in the future period. The current study validates an earlier study by Chakrabarty & Mukherjee (2022) which observed that saving led to increase and diversification of consumption expenditures but significant impacts were observed on non-food expenditures. However, the results indicate that what influenced food expenditure include access to credit, decision on land and marital status. Access to credit and marital status have a positive effect on food expenditure. These are factors are likely to increase incomes that can be used to either purchase food or invest in activities that bring in more incomes to enable the required purchases. On the other hand, households with women who make decisions on land are likely to spend less on food probably because the women will influence what is to be produce on the land and will prioritise food production. This contradicts earlier studies such as Maniriho (2021) who observed a positive relationship between the two variables.

**Table 1.5: Results for saving behaviour effects on food expenditure**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **Coef.** | **Std. Err.** | **P-value** | **dy/dx** | **Std. Err.** | **P-value** |
| Saving | 2695882.0 | 2260966.0 | 0.233 | 9759.5 | 1792963.0 | 0.996 |
| Land accessed (Ha) | -8642.6 | 58548.0 | 0.883 | -55099.0 | 42660.0 | 0.197 |
| Wmn decides on hh income | 80324.6 | 109562.0 | 0.463 | 35341.1 | 32179.0 | 0.272 |
| Wmn decides on land | -383721.5 | 133777.8 | 0.004 | -149018.1 | 135133.2 | 0.270 |
| Hhd size | 51129.5 | 32673.8 | 0.018 | 33757.9 | 13293.0 | 0.011 |
| Urban residence | 1461.7 | 302447.6 | 0.996 | 48092.2 | 63747.0 | 0.451 |
| Access to credit | 291662.2 | 139695.7 | 0.037 | 76255.3 | 138222.6 | 0.581 |
| hhd\_educ | 70869.9 | 48516.6 | 0.144 | -10082.0 | 57365.0 | 0.860 |
| Married | 187248.0 | 82436.8 | 0.023 | 12107.6 | 136130.8 | 0.029 |
| Employed | -153558.9 | 276267.3 | 0.578 | -100633.1 | 56324.0 | 0.074 |
| Hhd age | -5387.8 | 6429.7 | 0.402 | -2421.9 | 2005.9 | 0.227 |
| Constant | 311880.6 | 521665.3 | 0.000 |  |  |  |
| No. of observations- 2,631 | | | | | | |

The results also indicate a significant positive influence of household size. An additional member increased the percapita expenditure by Ush.51,130. The bigger the household size, the greater the food demands and thus such households spend more on food consumption. Similar results were reported in Nigeria (Akplan, 2013) and Zimbabwe (Rubhara *et al.*, 2020).

* + 1. **Saving behaviour effects on medical expenditure**

Medical expenditures include one of the key reasons why individuals in the current study save. Results on whether savings behaviour does influence health expenditures are presented in Table 6.6. An insignificant relationship is observed between saving behaviour and per capita medical expenditure. This could be related to the fact that the women targeted under the study were accessing medical services from government health facilities at no cost. As such, their household members were more likely to attend similar health care facilities where it is basic and free. These results are similar to those of an earlier study by Jawara (2020) which found no significant effect of saving on health spending in The Gambia. The results further showed strong positive significant (p<=0.05) influence of education and credit access on household percapita medical expenditures. An additional year of education increased the percapita medical expenditure by Ush.2,929. The probable explanation for this is that more educated women are more likely to seek for medical services from health centres or even go to private clinics to consult specialists which are more expensive than their counterparts. Similar results have been observed by previous studies such as Ogundari & Awudu (2014). In addition, those who had access to credit were more likely to spend less on medical services.

**Table 1.6: Effects of saving behaviour on medical expenditure**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **Coef.** | **Std. Err.** | **P-value** | **dy/dx** | **Std. Err.** | **P-value** |
| Saving | -85984.3 | 62932.4 | 0.172 | -144.6 | 27311.0 | 0.996 |
| Education of woman | 2928.9 | 1207.7 | 0.015 | 656.0 | 487.9 | 0.019 |
| Married | -3480.9 | 4480.1 | 0.437 | 970.1 | 1610.4 | 0.547 |
| Wmn decides on hh income | -1041.9 | 4105.0 | 0.800 | -492.4 | 660.1 | 0.456 |
| Hhd size | -1922.1 | 1696.9 | 0.257 | -662.3 | 521.3 | 0.204 |
| Access to credit | -641.2 | 7249.7 | 0.030 | 4224.2 | 2991.8 | 0.051 |
| Group member | 14012.3 | 10091.0 | 0.165 | 1861.0 | 3144.6 | 0.554 |
| Urban residence | 6452.8 | 8933.9 | 0.470 | 2055.8 | 1385.3 | 0.138 |
| Female hhd head | -1123.2 | 7434.2 | 0.880 | -1241.7 | 1628.7 | 0.446 |
| Livestock units | 648.1 | 947.0 | 0.494 | -5.5 | 278.7 | 0.984 |
| Hhd age | 357.0 | 313.7 | 0.255 | 105.0 | 79.4 | 0.186 |
| Employed | 2974.0 | 8630.3 | 0.730 | 1451.2 | 1342.5 | 0.280 |
| Constant | -12602.4 | 18549.7 | 0.000 |  |  |  |
| No. of observations- 2,631 | | | | | | |

Key: Wmn= woman; hhd= household

* + 1. **Saving behaviour effects on education expenditure**

Children’s education has been given as one of the key saving motives. Whether saving behaviour does influence the level of education expenditure is key a question. The study shows a positive significant influence of saving behaviour and percapita education expenditure (Table 6.7). These results are in line with earlier results by Jawara (2020) and Maitra *et al.* (2022) who observed that access to savings have a positive influence on expenditure on education.

**Table 1.7: Relationship between saving behaviour and education expenditure**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **Coef.** | **Std. Err.** | **P-value** | **dy/dx** | **Std. Err.** | **P-value** |
| Saving | 1,217,203.0 | 605845.0 | 0.045 | 2865.8 | 337494.0 | 0.051 |
| Education of woman | 19900.8 | 6497.3 | 0.002 | 5207.5 | 3450.2 | 0.041 |
| Wmn decides on hh income | 27967.6 | 44068.2 | 0.526 | 4612.0 | 7327.7 | 0.529 |
| Child dependency | 52667.9 | 53707.3 | 0.327 | 3082.2 | 14530.0 | 0.832 |
| Access to credit | -6967.4 | 38258.8 | 0.855 | 20255.3 | 13519.0 | 0.134 |
| Group member | 15661.3 | 49378.6 | 0.751 | -2455.0 | 6710.8 | 0.714 |
| Urban residence | 121302.2 | 46087.6 | 0.008 | 591.4 | 32722.0 | 0.024 |
| Female hhd head | -22901.7 | 69880.8 | 0.743 | -1963.8 | 7108.0 | 0.782 |
| Land accessed (Ha) | 13894.5 | 14211.7 | 0.328 | 6581.8 | 7022.3 | 0.349 |
| Livestock units | 9123.6 | 9352.6 | 0.329 | -914.8 | 2785.4 | 0.743 |
| Hhd age | -588.0 | 1036.4 | 0.57 | 430.6 | 364.2 | 0.237 |
| Employed | -68626.2 | 95600.4 | 0.473 | 4662.9 | 21309.0 | 0.827 |
| Wmn decides on land | 52684.5 | 36744.3 | 0.152 | 5720.9 | 13186.0 | 0.664 |
| Constant | 26371.8 | 106491.4 | 0.000 |  |  |  |
| No. of observations- 2,631 | | | | | | |

It is further shown that per capita expenditure on education increases with education of the woman and urban residence. An additional year of education is associated with Ush.19,901 increases in per capita expenditure on education. The probable explanation for this is that higher education status is associated with increased incomes; and with increased incomes, it is more likely that children are enrolled in quality or private schools which are usually more expensive. Similar results were observed by Lyimo & Ali (2021 who observed that education expenditures were positively influenced by savings. The observed results in relation to urban residence could be related to the cost of education being higher in the urban areas compared to rural areas.

* + 1. **Saving behaviour effects on on-farm expenditure**

For households engaged in agricultural production, access to finances for agricultural inputs is key. Results on whether saving behaviour had an influence on on-farm expenses are presented in Table 6.8. This study shows that saving behaviour did not have a significant effect on-farm expenditure. One of the probable explanations could be related to farmers using home saved seed for example instead of purchasing the improved seed and thus do not have to save for them.

**Table 1.8: Effects of saving on spending on farm inputs**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Coef.** | **Std. Err.** | **P-value** | **dy/dx** | **Std. Err.** | **P-value** |
| Saving | -335,499.1 | 235978.1 | 0.155 | -696.2 | 87963.0 | 0.994 |
| Married | -28,475.4 | 18743.1 | 0.129 | -2400.9 | 6268.4 | 0.702 |
| Hhd size | 2918.6 | 5843.9 | 0.617 | 1797.4 | 1381.8 | 0.193 |
| Access to credit | -15869.1 | 28210.1 | 0.574 | 7912.4 | 10553.0 | 0.453 |
| Group member | 44771.6 | 34996.8 | 0.201 | 3820.3 | 9589.1 | 0.690 |
| Urban residence | -22628.6 | 33491.4 | 0.499 | -12257.2 | 5350.8 | 0.022 |
| Female hhd head | -15262.8 | 27218.0 | 0.575 | -4845.5 | 5580.4 | 0.385 |
| Land accessed (Ha) | 15959.4 | 7857.3 | 0.042 | 9632.1 | 2985.3 | 0.001 |
| Livestock units | 3555.7 | 4321.2 | 0.411 | 205.3 | 1108.3 | 0.853 |
| hhd\_age | 716.8 | 1007.4 | 0.477 | 166.6 | 174.8 | 0.341 |
| Employed | -262.0 | 33200.1 | 0.994 | -1485.7 | 4764.7 | 0.755 |
| Education of woman | 13339.9 | 4428.1 | 0.003 | 2655.8 | 1676.3 | 0.007 |
| Wmn decides on land | 44510.5 | 20437.7 | 0.029 | 8405.9 | 6689.9 | 0.049 |
| Wmn decides on hh income | 3737.7 | 16106.3 | 0.816 | 2273.0 | 2215.6 | 0.305 |
| Constant | -91273.3 | 60509.0 | 0.000 |  |  |  |
| No. of observations- 2,631 | | | | | | |

Additionally, in some farming communities, it is a common practice for them to get inputs on credit and pay at the end of season, after harvesting. As such the farmers may not have to use a significant amount of savings. However, a study by Brune *et al.* (2016) found savings to have a positive influence on investments in agricultural inputs. That study followed an experimental design in which farmers were supported to channel their farm proceedings to bank accounts. The current study further showed that what influenced on farm expenditures included education of the woman and access to land for production. It is shown that farm expenditure increased significantly with education of woman and size of land accessed for agricultural production. The probable explanations for such results are diverse. With education comes increased knowledge on improved agricultural production which requires improved input allocations and thus this may push the more educated to invest more into improved farm inputs. Similarly, with increased land accessed for agriculture, it is expected that more inputs in terms of seed and labour for example will be required and thus justifying the increased expenditure on-farm inputs. This study also observed that households with women who made decisions on land were more likely to invest more in farm inputs.

* + 1. **Saving behaviour effects on off-farm business investment**

In relation to effect of saving behaviour on off-farm business investments, the results show that saving behaviour has a positive influence on investing in off-farm business (Table 6.9). The results further show that investment in business increased with education of the woman, employment status, decision on land, marital status and credit access but decreased with presence of a woman who made decisions on land.

**Table 1.9: Effects of saving on investing in off-farm activities**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **Coef.** | **Std. Err.** | **P>z** | **dy/dx** | **Std. Err.** | **P>z** |
| Saving | 3217202.0 | 162189.0 | 0.000 | 190.9 | 6624.4 | 0.000 |
| Married | 253067.4 | 126171.8 | 0.045 | 1858.8 | 1877.4 | 0.072 |
| Group member | -336549.0 | 324243.4 | 0.299 | -7669.7 | 5153.7 | 0.137 |
| Wmn decides on hh income | 20240.7 | 151536.8 | 0.894 | -896.5 | 1337.9 | 0.503 |
| Child dep. ratio | -148759.9 | 160544.6 | 0.354 | -1531.3 | 1375.7 | 0.266 |
| Access to credit | 540090.0 | 266924.2 | 0.043 | 14264.9 | 9243.7 | 0.051 |
| Urban residence | 22883.4 | 296166.3 | 0.938 | 3132.5 | 2820.4 | 0.267 |
| Wmn decides on land | -274193.0 | 128715.1 | 0.033 | -1326.9 | 1347.0 | 0.052 |
| Employed | 1341399.0 | 480675.5 | 0.005 | 41123.7 | 21211.0 | 0.053 |
| Livestock units | -23130.2 | 23404.7 | 0.323 | 284.3 | 255.3 | 0.265 |
| Hhd size | 57217.9 | 34297.0 | 0.095 | 908.9 | 707.2 | 0.199 |
| Female hhd head | 16557.6 | 229868.3 | 0.943 | -3024.8 | 3022.7 | 0.317 |
| Land accessed (Ha) | 57707.8 | 48772.4 | 0.237 | -1100.8 | 992.8 | 0.268 |
| Constant | -3229096.0 | 771890.2 | 0.000 |  |  |  |
| No. of observations- 2,631 | | | | | | |

Households with an employed woman were more likely to invest into business because with the employment status, the incomes coming into the household are increasing and thus justifying the influence on increasing investment in business. Positive effects were also observed for access on credit and marital status. On the other hand, the woman’s decision making on land under agricultural production showed a significant negative relationship with investment in off-farm business. In addition, if a woman made decisions on land, then it was more likely that priorities may shift to allocating more resources to agricultural production and less on-farm business.

* 1. **Conclusions and recommendations**

This study categorises the households into savers and non-savers and compared them in relation to specific descriptive. It was shown that those categorized under non-savers were majorly female headed, with older household heads, larger household sizes, mainly depending solely on on-farm activities for their livelihoods, women were better educated with majority making decisions on household incomes. The savers on the other hand had a higher employment rate, accessed more land for agricultural production, majority had participated in project trainings, had more livestock units and more women were engaged in some form of employment. It is clearly indicated that the most popular motives for saving are health, education for the children and business, in that order of importance. What drives the individuals to improve their propensity to save includes group membership, location of residency, specifically urban and access to nutrition information. From the study, strong significant positive influences of saving behaviour on children’s education, investment in off-farm income generating activities are observed. Only slight positive influences are observed for on-farm investments. No significant influence is observed for savings on expenditures for food and health. For medical expenses it would not be an issue of concern since the women and their household members could be seeking medical services from health facilities affiliated and supported by the government. However, across the country, those facilities have been reported to provide not only basic health services but also inadequate in some cases. The implication of the current study is that majority of the households do forego incurring higher food expenses for expensive children’s education. Probably this is where they derive maximum utility. Of course, this is influenced by a number of factors such as education level, access to land for agricultural production and sex of household head.

This could probably make sense in that they would allocate the income generated to purchase of quality foods or consume what has been produced on-farm. However, the concern is whether what is produced on-farm is actually consumed and not sold and the income used to pay for their children’s education. These scenarios could compromise on the quality and quantity of food consumed by the household, thereby exposing the household members to food and nutrition insecurity.

This study therefore recommends that policy makers take deliberate action to invest in strategies that aim at improving the incomes for the target population. Such strategies could include promoting and supporting off-farm income generating activities. This will improve the incomes and may influence rational allocation of the savings to other items including expenses related to children’s education. As such, this will enable the households to allocate more of the savings to production or purchase of nutritious foods thereby smoothening consumption and leading to improved food and nutrition security at both individual and household levels. Furthermore, it is important to conduct awareness campaigns to help the masses understand the consequences of inadequate food nutrition in terms of health, growth and productivity of the human capital.

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