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Impact of Social Capital on Poverty Reduction in Ethiopia: Evidence from the Amhara National Regional Staten

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Abstract: This study aims to investigate the influence of social capital on poverty reduction among members of financial cooperatives in the urban and rural areas of the Amhara National Regional State, Ethiopia. Adopted explanatory and used mixed research methods using the cross-sectional study from 348 stratified and randomly selected financial cooperative members. Primary data was collected through a structured questionnaire, focus group discussions, and personal interviews. Furthermore, the data was analysed using logistic regression and multiple linear regression models. Three types of social capital dimensions: cognitive, relational, and structural social capital is operationalized and measured in terms of members' understanding of shared mission and goal, cooperation, and trust. The regression result shows that structural social capital and relational social capital are associated with improved poverty reduction, whereas a lack of cognitive social capital is associated with a decline in the reduction in household poverty of financial cooperative members. Surprisingly, the finding indicated that dimensions of social capital are more effective in affecting monetary poverty than other variables in the Amhara region. The study underscores the importance of social capital in influencing poverty reduction among members of the study area. Recognizing the impact of different dimensions of social capital, policymakers can design targeted interventions to combat poverty effectively. Strengthening social capital within financial cooperatives and promoting collaboration with financial institutions are essential steps towards achieving the Sustainable Development Goal of alleviating poverty in the region.

Keywords: Member Households, Poverty, Social Capital, Financial Cooperatives, Economic Development. Sustainable Development Goals

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1. Introduction

In Ethiopia, the worsening economic condition led to a decrease in government spending on social services, aggravating the country's poverty. GDP fell from 6.1% in 2020 to 3.3% in 2022, a considerable decrease. Overseas Development Assistance (ODA) has decreased from $4 billion in 2020 to $2.7 billion in 2022. The local currency lost more than 40% of its value versus the US dollar, while inflation was above 30% (UNHCR, 2022).

Poverty remains one of the most pressing issues in the world. More than three billion people live with less than 2 USD per day, one and a half billion live with less than 1 USD per day, and 70-90% of people in developing countries are impoverished (Osborn et al., 2015) As a result, one of the key sustainable development goals (SDG) of the United Nations is to substantially reduce the percentage of people living in poverty by the end of 2030 (World Bank Group, 2014). Poverty, according to the Foundation & Hills (2013) has been defined as merely material deprivation assessed by an acceptable concept of income or consumption. It is described as the inability of individuals to access a minimum acceptable standard of living in society.

Many nations around the world, particularly those on the Asian and African continents, are striving to manage the problem of food insecurity to reduce the implications of hunger for their ever-growing populations (FAO, 2020). For example, although Ethiopia remains one of the poorest countries in the world with an annual per capita income of $883, as estimated by the government (Ministry of Finance and Economic Development (MoFEC), 2019), greater economic growth has been recorded since 2003-2004 thanks to the public investment model, which has contributed to reducing poverty in both urban and rural areas (Bertelsmann Stiftung, 2020). According to the Bertelsmann Stiftung (BTI) country report on Ethiopia, the percentage of the population living below the national poverty line has decreased from 30% in 2011 to 24% in 2016. Despite this improvement, the survey indicated that Ethiopia remains one of the poorest and most unequal countries in the world. According to the UNDP Human Development Index (HDI) (2020), Ethiopia is rated 173rd (out of 189 states) in 2019. Furthermore, the Legatum Institute's (2020) Prosperity Index not only ranked Ethiopia's social capital network at 163 (out of 189 states) for 2020, but it also indicated that one-fourth of the population still lives in absolute poverty.

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According to the Austrian Development Agency (2019), some improvements in poverty alleviation have been made in the Amhara regional state during the last ten years, yet it remains one of Ethiopia's most vulnerable regions. High demographic pressure, food insecurity, decreasing climate conditions, and limited income options are all serious challenges. Furthermore, assessments of the economic conditions of Ethiopian residents studied by Afrobarometer (2021) in geographical location revealed that residents of Amhara regional state (57%) are the third most likely to describe the country's current economic situation as bad, followed by residents of Tigray regional state (72%) and Addis Abeba City Administration (71%), whose residents are likely to feel the annoyance of ever-increasing inflation pressure. Furthermore, according to the report of FDRE Poverty and Economic Growth in Ethiopia (2018) cited in Eyasu & Yildiz (2020) the distribution of total poverty in Ethiopia in 2015/16, Amhara is the third highest 26.1% in poverty incidence, followed by Tigray (27%) and BeneshangulGumuz (26.5%), and the second highest (31.3%) in food poverty, followed by Tigray (32.9%), and Amhara also contains 5.3 million poor people.

Social capital serves as a foundation for development and is the foundation on which much economic and social well-being is constructed due to its favourable effects on labour productivity, poverty reduction, commerce, education, health, income distribution and family structure (Christoforou, 2017). According to the World Bank (2012) report, social capital plays an important role in the reduction of poverty. Social capital benefits the impoverished the most. Several academics argue that developing countries should invest in social capital because of its progressive and inclusive impacts (Greenbaum et al., 2008).

Access to microcredit improves the productive assets of the poor by allowing them to access appropriate investment money, which can then be used to invest in new technologies that improve productivity (Balogun et al., 2011). According to a study by Balogun et al. (2011), social networks and interactions are one of the platforms that could help rural families gain access to microcredit. Sociologists and economists (Oke et al., 2007; Conley and Udry, 2010) have emphasised the importance of social networks in promoting rural development through benefit streams. Social networks generate social capital, which has been characterized as "closely connected social relations that provide individuals and groups with access to productive resources" (Imandoust, 2011). This social relationship is frequently regulated through the formation of local associations or local institutions (Adepoju and Oni, 2012). Such interactions and social networks can reduce family spending, increase welfare by increasing information flows, minimise transaction costs, and create skill acquisition and enhancement platforms (Oke et al., 2007; Imandoust, 2011; Balogun et al., 2011). They also increase accessibility to the credit market through social enforcement and social collateral mechanisms, notably among the poor living in rural areas (Ogunleye and Adeyemo 2020).

Thus far, few studies have been conducted on the effect of social capital and socio-economic well-being in Ethiopia. For example, while the study conducted by Alemu and Tola (2020) examined specifically the effect of a household's social capital stock on economic well-being, Daniel et al. (2016) focused on the effects of social capital and the diffusion of agricultural technologies in improving farm productivity. Arega and Wubliker (2015) also analyzed the role of social capital in the economic and social well-being of GendeWoin town, using Iddir as a proxy for social capital. Dodd (2012) and Enideg (2013) investigated the contribution of social capital to the economic and social well-being of rural and urban households; Mintewab et al. (2013) emphasised the role of social capital in the conservation of natural resources. Mintewab et al. (2013) and Di Falco and Bulte (2013) assessed the importance of social capital. in mitigating natural disasters. Nega et al. (2009) elaborated on the relationship between social capital and gender empowerment, and Eleni (2001) assessed the effect of market institutions, transaction costs, and social capital on the Ethiopian grain market.

Although studies of social capital and economic well-being are conducted at four levels which are national, regional, community, and household, previous research focused on the national, community, and household levels. Research on social capital and its impact on poverty reduction, on the other hand, is even more restricted. Furthermore, none of the preceding research delves into detail regarding how the three components of social capital (structural, relational, and cognitive) use and maintain network links and how this influences regional poverty reduction. There is a major void in research on social capital and its impact on poverty alleviation in the Amhara area for new venture development and answers questions on how social capital of financial cooperatives affects the reduction of member poverty and whether social capital affects poverty in the area studied. The lacuna that is expected to be addressed in this study also includes aspects of methodology. As a result, our study could contribute to filling these significant literature gaps by investigating the impact of components of social capital on poverty reduction at the regional level. As a result of realising the importance of social capital for economic development, this research attempts to bridge the gap in the literature, contribute to current knowledge on the issue under study, and answer the basic research question. To what extent does social capital contribute to the reduction of poverty of members of financial cooperatives in the Amhara Regional State? By using three dimensions of social capital variables to examine the impact of social capital on the reduction of poverty of members of financial cooperatives.

Existing research integrates theoretical-level analysis and empirical research at the practical level with the features of the study locations, offering academic accumulation for subsequent social capital in poverty governance. However, there is still room for further expansion, and the key potential contributions of this research could be as follows: first, earlier studies primarily used the consumer expenditure method to measure the poverty level of households. In this investigation, the consumer expenditure technique would be adequately

updated to take into account the current policy orientation of poverty alleviation and development in Ethiopia and Amhara, in particular, followed by the selection of a representative study area covering the entire region. Currently, financial cooperatives are founded and operationalised in all areas of regional state of Amhara, which represent the peculiarities of rural and urban Amhara. The third theoretical analysis of the inner mechanism of social capital affecting poverty in households is to compensate for the dimensional indicators of existing studies that primarily focus on income and multidimensional poverty while focusing on the impact of financial cooperatives' social capital on consumption expenditure poverty. As a result, this study aspires to make some attempts and breakthroughs to address the three deficiencies listed above.

Furthermore, this study is significant for social economics in three ways: first, a surprising discovery about deviations in social capital concepts and their applications; second, a clear understanding of the relative value of social capital for economic development; and third, the importance of the socioeconomic development context in realizing the impact of financial cooperatives' social capital. It also broadens the conversation by generating a vigorous discussion of various theoretical and empirical academic concerns and issues within the vast area of social and economic studies.

Finally, this study adds a detailed examination of the theoretical mechanisms by which the estimated effects of social capital appear in the economic outcomes of households. Controlling for socioeconomic status and a variety of household characteristics, the study could show persuasive evidence that social capital significantly increases access to credit through financial cooperatives, improves information flow to households, and fosters trust in public institutions. The magnitudes of the effects revealed in each mechanism study could have significant practical implications for development practitioners, sociologists, economists, and policymakers.

In this study, cooperative savings and credit union refer to a secondary-level cooperative society established by primary cooperative societies that have similar objectives with a minimum number of members to produce, provide service, or engage in both activities that are beyond the capacity of primary cooperative societies (Federal Democratic Republic of Ethiopia, Cooperatives proclamation 985/2016.

Cooperative savings and credit unions, as defined in this study, are secondary-level cooperative societies formed by primary cooperative societies with similar goals. These secondary-level societies have a minimum number of members and are involved in activities that go beyond what primary cooperatives can handle, such as production and service provision. This definition is based on the Cooperatives Proclamation 985/2016 of the Federal Democratic Republic of Ethiopia.

Primary cooperatives means a cooperative society established by individuals having similar interests and objectives with a minimum number of members prescribed in this Proclamation to produce, provide service, or participate in both activities(Federal Democratic Republic of Ethiopia, Cooperatives Proclamation 985/2016)

Social capital is what Putnam (1995) called 'structures of social life networks, trust, and norms that allow participants to act collectively more effectively to pursue shared mission and objectives'.

Poverty is the external circumstances that influence a person's behaviour, especially concerning economic transactions and discussions like productive services provision, consumer goods purchase, and the acquisition of skills (Onyernama et al., 2024).

2. Literature Reviews

Theoretical pieces of literature indicate that the alleviation of **g**lobal poverty is a problem that is usually addressed by economic techniques. While economic reasons are often emphasised when discussing ways to eliminate poverty, recent research has begun to advocate the use of social capital as an alternative (AdiSyahid et al., 2021).

The relationship between social capital and poverty has also piqued the curiosity of both theoretical and empirical scholars. According to the literature on social capital literature, social capital can reduce poverty through at least three channels: the sharing of information useful to the poor among group memberships; improved collective decision-making; and a decrease in opportunistic behaviour (Christiaan Grootaert and Thierry Van Bastelar, 2002; Zhang et al., 2017; Osei & Zhuang, 2020). According to Collier (2002), the building of social capital takes time and can frequently replace financial and physical capital. As a result, the poor may rely more on social capital than the wealthy because the former has a lower opportunity cost of time and lower inventories of private capital than the latter. Putnam (1994) contends that social capital, as proxied by norms and trust shared among members of a society or a population as a whole, is likely to be proportionally more favorable to the poor. For example, although wealthier households have collateral assets to reassure lenders, poor households might receive credit based on social sanction to enhance income or reduce their susceptibility to income.

The relationship between social capital and poverty has piqued the interest of theoretical and empirical researchers alike. Zhang et al. (2017) and Osei and Zhuang (2020) explained that social capital can reduce poverty by encouraging group members to share useful information with the poor, reducing opportunistic behavior, and improving collective decision-making.

Financial experts and sociologists see informal communities as important in decreasing poverty, boosting human resources, and supporting country advancement through social linkages (Imandoust, 2011). Furthermore, social capital has been claimed to improve credit availability by fortifying social links and securities, particularly in developing countries (Fafchamps and Gubert 2007). Financial cooperatives and poverty reduction initiatives for members have aided community development by providing educational empowerment, occupational skill training, social protection, and financial assistance to members. These supports, in turn, enable members to participate in resource mobilization and decision-making, ultimately leading to self-sufficiency (Adekola and Dokubo, 2017).

The empirical literature shows that poverty reduction is a multifaceted issue that is frequently related to economic solutions. For instance, Bayraktar (2024) conducted research using secondary data from reports of the World Bank and Eurostat and found that social capital has the most significant effect on decreasing income inequality and recommended that developing and least developed countries take appropriate policy implications to increase the level of social capital among their citizens and society.

While most of the time the answer to poverty revolves around economic variables, recent research has begun to advocate social capital as an alternative to poverty reduction. For example, Shiaki et al., (2024) investigated the impact of social capital on poverty reduction in Benue State, Nigeria. A survey research design was used, primary data was collected from six local government areas in Benue State, and Logit binary regression analysis was used to estimate the variables used in the study regarding their effect on poverty reduction. It was discovered that participation in cooperative societies, social media involvement, rural group membership, and membership in social clubs have the potential to reduce poverty. Community trust, social connectedness, and socioeconomic background are all factors that can contribute to poverty reduction. And urge that addressing inequities and delivering incentives fairly are critical to increasing social capital.

Jha and Kelley (2023) used the India Human Development Survey to examine, using OLS and logistic regressions, the impact of different dimensions of social capital on multiple proxies for household welfare. Social capital in the form of memberships in local community organisations and social network connections has a statistically and economically significant association with household consumption expenditures, physical asset ownership, and income. Families that belong to a member of any official community organization are likely to have greater monthly per capita consumption expenditures than families that do not belong to any formal community organization. When modelling a household's stock of physical assets, a longer-term indicator of economic welfare, estimates of a similar magnitude are observed. These social capital factors are also significantly associated with a lower likelihood that a household will live below the poverty line. Organizational memberships and social networks are also significantly connected with a household's favourable assessment of its economic status.

Pham and Mukhopadhaya (2022) investigated the differences over time in poverty dimensions at the family community level in rural Vietnam, including monetary, education, health, housing, basic utilities, and sturdy assets, and discovered that most of the characteristics of nonmonetary poverty improved over time, while the dimensions of monetary poverty exhibited the slowest change. They explored the effective and significant impact that social capital plays in reducing poverty at the household and community levels. The findings suggested that while developing poverty reduction programmes, authorities should understand the important role that social capital plays in alleviating poverty.

The work by Adi Syahid et al. (2021) tries to analyze the ongoing literature on social capital and how it can affect a family's level of poverty. The Statement of Preferred Reporting Items for Systematic Reviews and Meta-Analyses was used as a systematic review approach in 10 databases containing 472 identified relevant studies. In the review, social capital was generally measured by social participation, social network, social cohesion, trust, and reciprocity, while poverty was measured by things like the poverty line, livelihood status, household welfare, household income, and other poverty levels based on comparison of income and consumption expenditure comparison. Social capital was found to be statistically significant in reducing household poverty.

Olaleye et al. (2020) employed a multistage sampling technique to explore social capital and its impact on poverty reduction in Ogun State, Nigeria, and used families participating in community groups and social ties as a proxy for social capital. The result of the Tobit regression model showed that the likelihood of being poor increased with increasing age, household size, and nativity, while monthly per capita expenditure, income, heterogeneity index, and participation in meetings were demonstrated to have a significant negative effect on poverty reduction. The consequence is that increases in per capita consumption, income, heterogeneity index, and attendance at meetings considerably reduce poverty in the study area.

Similarly, Yunus et al. (2020) examined poverty difficulties among farmers in Acheh, Indonesia, using social cohesion as a measure of community social and collective activity, and discovered that social cohesiveness had a major impact on farmers' poverty. It revealed that there was a strong and positive association between social capital and poverty levels among farmers. This research demonstrated that having a greater stock of social capital can minimise farmer poverty. Furthermore, advice, support, guidance, knowledge, and material resources were substantially associated with poverty and farmer poverty, leading to the conclusion that social cohesion can be a prospective avenue to reduce farmer poverty.

Tenzin et al. (2013) investigated the impact of social capital on rural household poverty in eastern Bhutan by looking at whether households participate in community groups, which was used as a proxy for the structural characteristics of social capital structural feature (Wassie & Abebe, 2024). The study used 1590 samples and relied on a two-stage probit least squares simultaneous equation model. They found that disadvantaged households in rural places were depressed as a result of engaging in a community group.

Furthermore, Karimi (2015) investigated the effect of social capital on reducing poverty in rural households in Afghanistan. The link between social capital and extreme poverty was explored using a contextual analysis of village savings groups in three districts of Parwan Province, Afghanistan, with samples drawn from 16 savings groups and entrepreneurship groups. The descriptive statistics approach was employed. The study findings revealed that village saving groups were a source of social capital, defining it as a group's participation in social activities that play a critical role in poverty reduction and rural development in the country.

Taga (2013) proposes that social capital appoints a person by connecting them to those in various agencies, social networks, and structural networks. He investigated the newly emerging notion of social capital and its relevance to poverty reduction in several slum regions of Pakistan's Lahore city. The data was collected from married adults, both men and female, with a monthly income of 2500 rupees[3]. A purposive sampling approach was utilized, and 15 respondents and the case study method were chosen for data gathering. An interview guide was used as a data collection instrument. A qualitative analysis was carried out. The study findings revealed that family, relatives, friends, and neighbours were the primary providers of social capital. Furthermore, the role of social capital was crucial in the development of their living standards, and it was established that social capital facilitates many resources that are critical in the elimination of poverty.

Similarly, Hassan and Birungi (2011) investigated the links between household poverty and social capital in Uganda, assuming a two-way causal relationship between social capital availability and poverty. The study employs econometric methodologies that account for endogeneity, as well as two nationally representative data sets. The findings revealed that access to social capital in the form of membership in social organizations has a favorable effect on household income and reduces poverty. Furthermore, education was a major factor in household wealth and improved the likelihood of participating in social networks. The findings imply that government efforts to increase household income that take into account existing social institutions were implemented sustainably to foster associational performance and development and, as a result, reduce poverty.

3. Material and Methods

3.1. Research Approach, Sampling, and Data

To examine the impact of social capital on members saving behavior, we used a mixed research approach; both primary and secondary data were used. Primary data were obtained through questionnaires, personal interviews, and focus group discussions. We chose the Amhara region because it is the second largest, most populated, and productive region in Ethiopia, but according to Afrobarometer (2021) the regional state residents (57%) are the third most likely to describe the country's current economic situation as bad, followed by residents of Tigray regional state (72%), and Addis Abeba City Administration (71%), whose residents are likely to feel the annoyance of ever-increasing inflation pressure. Besides, the distribution of total poverty in Ethiopia in 2015/16, Amhara is, the third highest 26.1% in poverty incidence, followed by Tigray (27%) and BeneshangulGumuz (26.5%), and the second highest (31.3%) in food poverty, followed by Tigray (32.9%), and Amhara also contains 5.3 million poor people (Anteneh, 2020). And also first purposively selected cooperatives, saving, and credit unions; hereafter, we call them unions in the Amhara region because they are available in all zone administrations except the Oromo special zone in the region. All kinds of primary cooperatives have the right to become members of the unions, and they have a large number of members which is 3,719 member primary cooperatives. Then simple size was determined, and stratified according to members' primary cooperatives functions, which are financial and nonfinancial primary cooperatives, proportional to the size sampling technique, and finally random sampling was used to select respondents.

We used statistical analysis on randomly selected members of the chairpersons of financial cooperatives and respondents out of 3,719 primary cooperatives, which are members of the 27 unions registered in the Amhara region of Ethiopia. Out of 3,719 member primary cooperatives in the unions, 21% are primary financial cooperatives, while the rest are agricultural and nonagricultural primary cooperatives, with a total number of 2,318,581 individual members, of which 22.6% are females as of the end of 2020. We chose these union members to control the general members' development status with a limited differential.

The objective of the sampling procedure that we used was to select a set of elements or study units from a population. We used random sampling because it enhances the probability of accomplishing this objective and also allows for an objective assessment of the reliability of the sample. The study employed a multistage sampling approach to select research participants. First, a random sample of primary cooperatives of the union members was chosen. Within each selected cooperative, the chairperson was purposively selected as a respondent. Additionally, stratified and proportional samplings were used to select participants from other

[3] The *Pakistani rupee* has been the official currency of *Pakistan* since 1948.

relevant groups within the research area. These groups included board and committee members, staff, government representatives, and community leaders.

In determining the sample size to fill the questionnaire, Kothari's (2004) formula was employed as follows: $n = \frac{Z^2 * p * q * N}{(N-1)(e)^2 + Z^2 * p * q}$, Where n = the sample size; N = the total number of households; p = 0.5 the reliability of the sample proportion reliability; q = 1 − p; e = 5% the error margin / acceptable error considered; Z = 1.96 is the critical value for a 95% confidence interval.$n = \frac{1.96^2 * 0.5 * 0.5 * 3719}{(3719-1)(0.05)^2 + 1.96^2 * 0.5 * 0.5} = 348$

The chairpersons of the selected member primary cooperative interviews conducted demographic data like age, family size, gender, religion, education, health, along with their monthly income, savings participation, and physical and participation in family labour. Additionally, the cooperatives' social capital of cooperatives (structural, relational, and cognitive) data were collected.

Data from the sampled financial cooperative members were collected in a single wave for three months, from April to June 2023. To ensure consistency, and clarity, and avoid duplication, enumerators and enumerator supervisors were invited from each financial cooperative locality. These personnel received theoretical and practical training in reliable data collection and questionnaire use, including estimating data collection time and improving the questionnaire itself.

The data collection team consisted of enumerators, enumerator supervisors, and the researcher. three days of training for the supervisors and enumerators were provided by the researcher who oversaw the entire process, who were all native speakers. Each financial cooperative union had 21 supervisors, typically the union managers, who assisted the researcher in monitoring the enumerators' work and facilitating group discussions and key informant interviews. The 27 enumerators, all with college degrees and previous data collection experience, used a standardised questionnaire to collect data from a sample of members.

3.2. Poverty Measure and Poverty Line Estimation

According to Kondo et al., (2007), the main indicators of household well-being are per capita income, food expenditures, total expenditure, and savings. Members' household per capita food expenditure was used to measure poverty and was analysed in this study.

Estimation of the poverty line: A poverty line is frequently characterised as a predetermined or well-defined standard of income or consumption that is thought to represent the bare minimum required for a productive and active life, or even survival (Ahmad, 2024). Many empirical social capital studies use per capita consumption expenditures as a proxy for household welfare because consumption expenditures, as opposed to income, better capture true standards of living in developing countries, are less seasonally volatile, and are less susceptible to measurement error in household surveys (Moratti and Natali 2012).

The poverty line is the level of spending that separates poor households from nonpoor households. This is a predetermined and well-defined standard income or consumption value (expenditure) (Ahmad, 2024). The decision to use an expenditure-based measure of household expenditure rather than an income-based measure was motivated by the fact that income can be interpreted as a measure of either expenditure opportunity or expenditure potential, whereas expenditure can be interpreted as either an expenditure incurred or a measure of expenditure achievement (Meyer and Sullivan, 2003).

Based on Ajakaiye and Mwabu (2007), we used OLS and Logit/Probit regressions to analyse social capital and its impact on poverty reduction in the Amhara regional state. The estimation methods applied in this study are summarized algebraically below, as follows:

$$PCEx_i = \alpha_0 + \alpha_1 DSC_i + \alpha_2 FS_i + \alpha_3 Age_i + \alpha_4 Sex_i + \alpha_5 Edue_i + \alpha_6 MST_i + \alpha_7 HSt_i + \alpha_8 PC_i + \alpha_9 FLabor_i + \alpha_{10} ACCr_i \quad \ldots\ldots (1)$$

Where $PCEx_i$ is the per capita consumption expenditure, DSC_i is the dimension of social capital, FS_i is family size, Edu_i is the education status, MST_i is the marital status of the respondents, HSt is the health status, PCa is physical capital, FLabor is family labour, and $ACCr_i$ is access to credit in a financial cooperative; α_i denotes the parameter.

1. Per capita food expenditure (poor or not), the variable is a dummy and bi-response, and to select whether we use the logit or probit model for this study, we calculated Akaike's Information Criterion (AIC) (Akaike, 1973) and Bayesian Information Criterion (BIC), proposed by Schwarz (1978). According to Verbeek (2004), usually, the model with the smallest AIC or BIC value is preferred; by doing so, the logit model has the lowest AIC and BIC value and was preferred in the analysis. See the model comparison in Table 1: below.

The logistic regression model employed in this study is a logistic regression model with Y as the dependent variable and X as the independent variable. The following cumulative logistic distribution function is used to explain the model (Maddala, 2001; Gujarati, 2006):

The Logit model was used and modeled as follows: Since the outcome variable (y_i) takes one of two values:

$y_i = \beta_0 + \beta_1 X_i + \varepsilon_i$ ..... (2)

$P_i = E(y = 1|X_i) = \beta_0 + \beta_1 X_i + \varepsilon_i$ ..... (3)

The cumulative logistic distributive function can then be written as:

$$P_i = E(y = 1|X_i) = \frac{1}{1+e^{-(\beta_0 + \beta_1 X_i}}$$ ..... (4)

$$P_i = \frac{1}{1+e^{-zi}}$$ ..... (5)

Where, $Z_i = \beta_0 + \beta_1 X_i$

Due to nonlinearity, the logistic regression equation can be written in terms of an odds ratio for success and failure. Finally, taking the natural log of both sides, we can write the equation in terms of logits (log-odds): Log-odds are a linear function of the predictors. Let us make sure that the transformation of z lies between 0 and 1.

$$\frac{e^z}{1+e^z} \in [0,1]$$ ..... (6)

Where, $e^z < 1 + e^z$

Hence, the probability of any event occurring is

$$Pr(Y = 1|x) = \frac{P_i}{1-P_i} = \frac{e^z}{1+e^z}$$ ..... (7)

$$Pr(Y = 0|x) = 1 - Pr(Y = 1|x) = 1 - \frac{e^z}{1+e^z} = \frac{1}{1+e^z}$$ ..... (8)

Hence, z is the log transform of the odds ratio, taking the logarithms of both sides:

$$L = \ln\left(\frac{P_i}{1-P_i}\right) = Z = bX$$ ..... (9)

Where L is the log of the odds ratio and is linear in parameter.

$$Z \in [-\infty, \infty] \; and \; Pr(y = 1|x) \in [0,1]$$ ..... (10)

$$= a + bX + e$$

y = 1, if probability of y= p and 0, if probability of y= 1- p ..... (11)
Our Logit model is written as follows:

$PCEx_i = \alpha_0 + \alpha_1 DSC_i + \alpha_2 FS_i + \alpha_3 Age_i + \alpha_4 Sex_i + \alpha_5 Edue_i + \alpha_6 MST_i + \alpha_7 HSt_i + \alpha_8 PC_i + \alpha_9 FLabor_i + \alpha_{10} ACCr_i$ ..... (12)

Logit model regression coefficients of the interpretation of the variables are not straightforward; we employed the marginal effects of the variables to simplify the explanation in the form as follows:

Marginal Effect (mfx), $mfx = \frac{\P Pr(S*=1|x)}{\P X}$ ..... (13)

Where $PCEx_i$ is the per capita Consumption expenditure ((poor or not)), DSC_i is the dimension of social capital, FS_i is the family size, Edu_i is education status, MS_i is the marital status of the respondents, HS_i is the health status, PC_i is physical capital, $FLabor_i$ is family labour, and $ACCr_i$ is access to credit in a financial cooperative; α_i denotes the parameter.

3.3. Variables: Definition and measurement

The dependent and independent variables used in the models above are described as follows:

$PCEx_i$ (per capita household expenditure continuous and Dummy (poor or not)): $PCEx_i$ (per capita household expenditure) is a dependent variable that was used to represent poverty. In this study, consumption expenditure was used to assess poverty. Consumption encompasses purchased products and services as well as those produced by one's creation. To calculate real per capita consumption expenditure, consumption spending is divided by family size (Deaton &Zaidi, 2002). The measure of poverty assigned to each member of the household is the per capita food expenditure. Furthermore, income varies more over time, whereas expenditure is frequently smoothed and represents a more reliable and genuine consumption level, particularly among low populations (Coudouel et al., 2004; Govender et al., 2007), where the dependent variable is a dichotomous indicator equal to one if a member household's per capita food consumption expenditures fall below the USD

1.90 per day/person World Bank-constructed poverty line, which is equivalent to ETB 104.5 per day/person at 1 USD equivalent to the ETB 55 on August 21, 2023 exchange rate, and otherwise zero.

Dimensions of social capital (DSC_i): This is an independent variable and a dummy that is measured using the three dimensions of social capital, which are structural, relational, and cognitive social capital. According to Lee (2009), the three aspects of social capital are widely employed in business and management research. It was calculated as an index based on trust, cooperation, and comprehension of the shared objective and mission. It is the stock of a household's investments in productive, intangible social assets, social networks, and reciprocity ties. It was calculated as an index based on the amount of time spent on group activities per period, the connection of the groups, and trust in nonmembers of one's cooperative.

Age_i: Age refers to the respondent's date of birth and was calculated as a count of years. According to Fakayode and Rahji (2009), in the context of microcredit, age can be used as a proxy to determine the level of maturity in using loans more prudently and reflect the borrower's repayment capabilities. This implies that as consumers get older, they gain experience, learn the rules of the game, gain confidence, and improve their likelihood of borrowing. As a result of these considerations, it is hypothesised that the age of the member households has a positive link to their membership in financial cooperatives.

Sex_i: Sex represents the respondent's sex. Gender also influences individuals' income levels as well. Women have fewer work opportunities in developing countries than men. Males earn more than females in underdeveloped countries. In poor countries, women are offered less preference in all sectors. The majority of women in underdeveloped nations work in agriculture, and their production is lower than men's. It is a dummy variable that has a value of one if the subject is male and zero otherwise.

Status of marriage (MS_i) refers to respondent's marital status. It is a dummy variable with a value of one if the individual is married and a value of zero otherwise. The family size (FSZ_i) is operationally defined as the number of people who live in a household. The size of a household is intimately tied to the growth of a certain area. Household expenditure on food and other consumption items increases with household size, according to Martey, Etwire, Wiredu, and Dogbe (2014). In this study, the size of the household serves as an independent variable. As the size of the household increases, family members have fewer resources accessible to them. If the family's household size is modest, family members have more resources available to them. The number of individuals in the household was used to calculate it.

Education level ($Educ_i$): Education level ($Educ_i$) refers to the respondents' formal education and training. Awunyo et al.,(2012) discovered that increasing the number of school years had a beneficial influence on microcredit participation and concluded that education generally favours microcredit participation. It is necessary for all humans and determines poverty in all societies. As a result, better education is essential for all citizens, especially those living in rural areas. Education level of education was used to calculate the number of years of formal schooling and years of career training.

Health status (HS_i): Health status (HS_i) is the frequency with which respondents and their families attend health centres. Better health can help people become more productive members, track how frequently a member attends the health centre, and is predicted to have a good impact on the poverty reduction members of financial cooperatives.

Physical capital (PC_i): Physical capital (PC_i) is imagined as durable, productive assets owned by member households, such as computers, motorcycles, and automobile ownership. Land size and house ownership were used to calculate the index of physical capital of households and are expected to positively influence the reduction of poverty of members of financial cooperatives.

Family Labor ($FLabor_i$): Family Labour ($FLabor_i$) refers to the number of economically active household members aged 15 and up, and it is projected to have a favourable impact on member families' per capita income growth. The number of household members who met the inclusion requirements was counted.

Access to credit ($ACCr_i$): This variable is related to the availability of financial facilities and is expected to positively influence the reduction in poverty of members of financial cooperatives. Access to credit was measured as the probability of access to credit and taken as a dummy that takes the value of one if the member has access to credit from a financial cooperative and zero otherwise.

4. Results and Discussions

4.1. Descriptive Results and Discussions

The data set includes monthly cross-section observations from 348 financial and nonfinancial cooperative members for the year 2023. The average total household income is ETB 8,038.79, with the lowest and highest sums of income being ETB 3,050 and 28,450, respectively. The average household consumption is ETB 7,457.42, of which ETB 7,104.16 is spent on food.

The correlation matrix shows that the expenditure of per capita food consumption of the member's household is positively correlated with physical capital, structural social capital, relational social capital, family size, and educational attainment of members, while other variables, including cognitive social capital, are negatively correlated with the expenditure of per capita food consumption expenditure. According to Gujarati

(2003), since total correlations are less than 0.80, there is no multicollinearity between independent variables. In the matrix below, the correlation coefficient was positive and negative, indicating the effect of each variable.

In Figure 1: the two-way scatter relationship between the dimensions of social capital and the expenditure on per capita food consumption of members revealed that there is a positive relationship between the expenditure on per capita food consumption of members and structural and relational social capital, but cognitive social capital is a negative relationship with the expenditure on per capita food consumption expenditure.

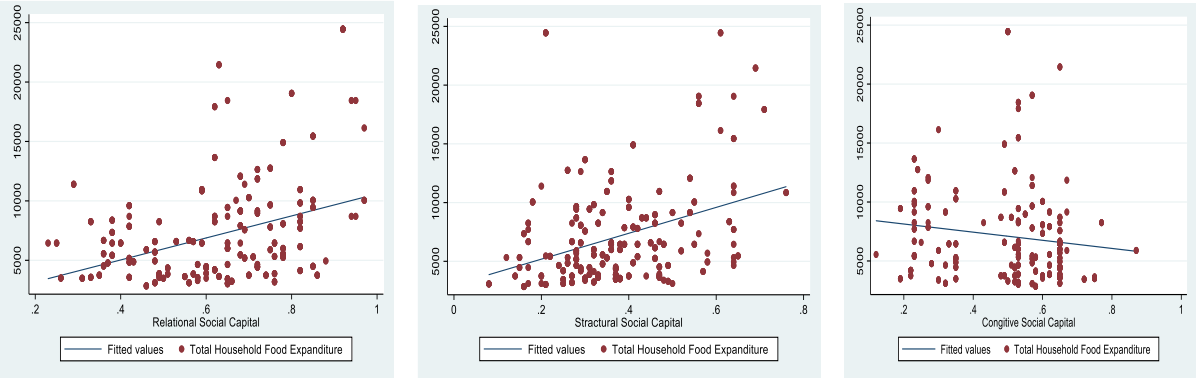

Figure 1: Two-way scatter among social capital dimensions and total food expenditure

Source: Own computation from survey data (2023)

4.2. Econometric Results and Discussions

Based on the above poverty measurement results, poverty was chosen as the explanatory variable, with members' household expenditure poverty = 1 and nonpoor household expenditure = 0. A dichotomous logit regression model was used to analyze the response status of household poverty to a structural, relational, cognitive social network, and individual socioeconomic attributes of the household head.

4.3. Effects of Social Capital on Consumption Expenditure (Poverty)

The multiple linear regression shows that the overall F-statistic of 82.37 has a p-value of 0.000. The multiple linear regression model that specified the link between the three dimensions of social capital and members' household per capita expenditure suggests that the regressors are jointly and statistically significant. At the same time, $R^2 = 0.7949$ accounts for a large part of the variation. The total model explained 79.49% of the variation in household per capita expenditure between participants.

After fitting the regression model, we performed the heteroskedasticity test by using the Breusch-Pagan test (estathettest). The Chi-square test statistic for the test is 3.46, and the p-value that corresponds to the Chi-square test statistic is 0.0628. This value is greater than 0.05, and we cannot reject the assumption of a constant-variance null hypothesis at a 5% level of significance and conclude that there is no heteroskedasticity in the data. We used the variance inflation factor to check the multicollinearity test in this model. According to Wooldridge (2015), the variance inflation factor (VIF) and tolerance level (1/VIF) are two key measurements of a multicollinearity problem; as a rule of thumb, a VIF value of 10 or a tolerance index of 0.10 is considered a critical point to describe a major multicollinearity problem. It exists when the tolerance level is less than or equal to 0.1 and all VIF is greater than 10. Our test findings show that the tolerance indexes (1/VIF) for all variables are greater than 0.10, and the VIF is considerably below 10 except for age and its square, confirming that there is no multicollinearity problem among the independent variables. We also employed robust regression to reduce the problem of multicollinearity.

Table 1: below revealed that family labor, physical capital dimensions of social capital, age, family size, marital status, health status, and access to credit of members were significant factors influencing household per capita food consumption expenditure of financial cooperative member households, but coefficients of members' sex and educational level were not significant even at the 10% significant level. Overall, we discovered that social capital had a significant impact on members' household per capita food expenditure. One possible explanation is that social capital could equip members with diversified revenue-generating activities or the entrepreneurial drive to start new businesses to generate commercial or agricultural income and meet expected food consumption item spending. Family labor, physical capital, and access to training all have a positive influence, with the linear coefficient indicating that a member's endowment with these is the most essential element for the degree of family per capita expenditure improvement.

The structural and relational social capital factors showed a positive and substantial effect on members' household per capita expenditure. This means that for every unit improvement in member trust and cooperation, member household per capita income rises by 64.38% to 39.27%. This is due to the members' increased trustworthiness as a result of dealing with the association's issues, which benefits their involvement and boosts their household per capita income. Furthermore, social engagement among members may delve into economics and related financial management tactics, as the sharing of ideas on socioeconomic issues improves one's

financial literacy, raising members' expenditures.

The negative and substantial cognitive social capital coefficient, on the other hand, demonstrated that members' comprehension of commonly shared values is low, which has an impact on the level of household per capita expenditure. A unit increase in access to credit, family labor, and physical capital, on the other hand, raises the per capita expenditure of members' families by 55.63%, 3.2%, and 42.72%, respectively. More importantly, members' access to credit has a positive and significant effect on members' household per capita expenditure; these findings are consistent with Wetterberg (2005), who concluded that individuals with more social ties will have easier access to resources than those with fewer social ties.

The ability to obtain resources can be impacted by having a diverse set of social ties. On the other hand, the age of members has a negative and significant coefficient, whereas when the age of members is doubled, the coefficient becomes positive and significant; the possible reasoning is that younger members may tend to save the realised level and type of production and may be reluctant at innovations, whereas aged members are more likely to invest in new technologies and participate in technical progress, and may thus have a higher household per capita income. Furthermore, this could be related to the fact that members become acquainted with improved production practices over time, allowing them to increase productivity and, as a result, per capita consumption.

On the contrary, marriage and the health status of members hurt household per capita expenditure. It is possible to conclude that household per capita expenditure is related to the member's marital status as well as the health of household family members. Surprisingly, both family labour and family size are substantial; however, the reverse sign indicates that the family size contribution is large, but inversely associated with household per capita expenditure. This is a sign that the size of the family contributes excessively, which hurts the per capita expenditure. This finding strengthens Christopherou's (2017) concept that social capital serves as a foundation for development and is the foundation on which much economic and social well-being is constructed due to its favourable effects on labour productivity, poverty reduction, commerce, education, health, income distribution, and family structure.

A typical additional technique used to study the impact of social capital on household welfare is logistic modelling of a household's risk of being poor (e.g., (Christiaan Grootaert and Thierry Van Bastelar, 2002 ; Okunmadewa et al., 2007; Ahmad and Sadaqat, 2016). The odds ratio and marginal effect associated with each regressor are shown in Table 1: below, where the dependent variable is a dichotomous indicator equal to one if a member household's per capita consumption expenditures fall below the USD 1.90 per day/person World Bank-constructed poverty line, which is equivalent to ETB 104.5 per day/person.

Pearson's chi-square test was used to determine the model's general meaning, and at least one coefficient was found to be different from zero at a 1% level of probability. All defining variables were found to be significant for the dependent variable.

The result of the logit regression model shows that the total model precisely predicted 62.73% of the data and reported a goodness-of-fit chi-square value of 238.39 and a log-likelihood value of -70.80876, which is statistically significant at a 1% significant level. As indicated in Table 1, explanatory variables of which eight out of thirteen were statistically significant.

We used the marginal effect for better interpretation and understanding, and used it to produce predictions with the multiple logit regression estimated model. The marginal effect prediction outcomes in Table 1: below revealed that social capital dimensions significantly affect poverty reduction in members' households; more explicitly, structural and relational social capital influence members' household poverty reduction positively and significantly, whereas cognitive social capital influences poverty reduction significantly and negatively. The marginal effect coefficient demonstrated that a point increase in structural and relational social capital leads to a 14.5% and 9.3% percentage point increase in poverty reduction, respectively; both coefficients are statistically significant and positive at the 5% and 10% levels. Furthermore, a rise in the members' structural and relational social capital enhances the possibility that a member household is economically safe from poverty.

However, a lack of cognitive social capital affects members' household poverty reduction by 7.9 percentage points at a 10% significant level, this means that confidence and collaboration between financial cooperatives and members increase poverty reduction in member homes, whereas a lack of common understanding of mission goals and values reduces consumption expenditure in member households by half. The finding supports Yunus et al.'s (2020) claim that social cohesion has a significant and positive relationship with farmers' poverty, implying that having a higher stock of social capital can reduce poverty.

The coefficient of marginal effect, on the other hand, confirmed that family size, gender, and access to credit all had a significant impact on a member's poverty reduction process. Which family size and sex of members affect poverty reduction negatively and significantly? It is believed that as the number of members of the members' household increases, so will food consumption expenditure. However, the predicted result indicates that this variable will have a negative impact on poverty reduction, implying that members' households spend less on food than the calculated poverty line. Whereas access to credit has a positive and significant effect on poverty reduction at a 1% significance level, this result shows that access to credit for members helps to reduce poverty through financial cooperatives, which helps members improve the flow of information and instill

confidence in financial cooperatives to participate in financial products and services, engage in new business, and manage seasonal liquidity shortages to meet planned lifestyles. Financial services, as defined by Umejiaku (2020), are intermediate inputs and building blocks in efforts to boost the productivity of available physical and human resources in risk management.

These results show that the dimensions of social capital are more effective in improving monetary poverty than other variables in the Amhara region. This may be because it influences the saving behavior of members, the availability of loanable funds in the financial cooperatives, and the awareness level of members on consumption smoothing to escape poverty through social networks, thus achieving poverty alleviation.

Table 1: Social Capita and Household per Capita Food Consumption Expenditure

	OLS Model: Household Per Capita Expenditure (lnPCExp)	**Logit Model: Members' Saved Participation(MSP)**	
Variable	**Coef.**	**Coef.**	**Marg. Eff.**
Structural Social capital	0.643***	7.611***	0.145**
	(0.171)	(2.143)	(0.066)
Relational Social Capital	0.393***	4.875*	0.093*
	(0.13)	(1.91)	(0.049)
Cognitive Social Capital	-0.453***	-4.171**	-0.079*
	(0.114)	(1.471)	(0.043)
Family Size	-0.29***	-2.567***	-0.049***
	(0.012)	(0.365)	(0.026)
Age	-0.02**	-0.175	-0.003
	(0.001)	(0.103)	(0.002)
Age Square	0.0002**	0.002*	0.00003
	(0.0001)	(0.001)	(0.00002)
Sex	-0.019	-0.718	-0.019**
	(0.081)	(0.747)	(0.026)
Education	-0.006	-0.31*	-0.006
	(0.011)	(0.145)	(0.004)
Marital Status	-0.083***	-0.197	-0.004
	(0.025)	(0.338)	(0.007)
Health Status	-0.122***	-0.623	-0.012
	(0.041)	(0.483)	(0.0.01)
Physical Capital	0.427	2.712**	0.052
	(0.1)	(1.28)	(0.032)
Family Labor	0.0319*	0.378	0.007
	(0.018)	(0.237)	(0.005)
Access to Credit	0.556***	2.016***	0.047*
	(0.041)	(0.589)	(0.025)
Constant	8.552	4.853	
	(0.235)	(2.745)	
R2	**0.7949**		
Pseudo R2		**0.6273**	
Observation	**348**	**348**	**348**

Source: Own computation from survey data (2023)

Notes: OLS = Ordinary least square, and Robust standard errors in parentheses and the Logit model includes Coef= Coefficient, marg.Eff.= Marginal Effect and. *, **, *** on the coefficient tell significant levels at 10%, 5% and 1%, respectively.

5. Conclusions

The study provides empirical evidence that social capital influences the poverty status of the households of members of financial cooperative members' households. The division of social capital into three dimensions demonstrates that structural, relational, and cognitive social capital influence household per capita expenditure and, as a result, improves the poverty status of the household, hence reducing poverty. The study found that structural and relational social capital reduces poverty in member homes. A low level of cognitive social capital, on the other hand, has a detrimental impact on the poverty reduction process among members of financial cooperatives. Finally, this conclusion confirms previous findings that social capital has a large and beneficial influence on the poverty status of members' households and is a critical input in improving well-being. Family variables such as family size, marital status, and health status of members have a considerable negative impact on per capita food consumption and the poverty reduction process of members. Unlike the findings of Pham and Mukhopadhaya (2022), the majority of non-monetary poverty characteristics improved with time, but monetary poverty dimensions showed the slowest rate of improvement. This study confirmed that financial cooperative social capital improves the monetary poverty of members more than other economic and demographic variables,

and members should be encouraged to increase their trust, collaboration, and awareness of their institution's common mission and values since data show that belonging to a financial cooperative social network significantly reduces poverty in the research area.

6. Recommendations

It is recommended that to reduce poverty among members of financial cooperative households, financial cooperatives' social capital in the members should be used as synergy and/or capacity through increasing and utilising networks to practice productive joint business groups to increase the income of the members, which will result in prosperity. Since social capital offers a prospective intervention to develop the positive effect of trust, cooperation, and understanding of the shared mission and goal on members' poverty reduction, we believe that fostering financial cooperatives' social capital of financial cooperatives in the Amhara region will increase their role in maintaining poverty reduction and subjective well-being. Therefore, our findings suggest that policies aimed at improving environments that strengthen existing financial cooperatives' social networks and facilitate members' social interactions are likely to improve the poverty reduction process of the Amhara region. There is also a need to educate financial cooperatives on the importance of strong human capital development among their members. Social capital as an asset can improve access to information that is helpful to members, which can have a knock-on effect on poverty reduction within members and the economy as a whole by increasing growth and income redistribution and should thus be supported. The regional government creates supervisory instruments and regulates the service delivery of financial cooperatives to increase members' social capital utilization, improve members' knowledge and awareness of the shared mission, goals, and values, and encourage them to play a part in increasing members' social capital of and communities at large. This study also advises further research into other socioeconomic factors that affect the level of food security in households that include both cooperative members and non-members to enhance and deepen the study. This study implies that financial cooperatives' social capital may not have much discretion in developing poverty alleviation policy, as suggested by research on poverty reduction issues. Future research may consider other explanatory variables such as socioeconomic and demographic factors (like management decisions, government assistance, distance, and liquidity) that may have an impact on the strengthening of social capital in financial cooperatives.

This study has certain limitations. This study is restricted to financial cooperatives' social capital of financial cooperatives and measures objective poverty in the Amhara region due to financial and time limitations. As a result, other researchers are encouraged to cover all types of cooperatives' social capital in the Amhara region and/or Ethiopia at large, as well as subjective and time-based poverty to take these aspects into account in future studies.

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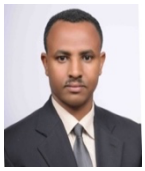

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