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Predictors Of Social Capital In Eastern Wollega Zone, Oromia, Ethiopia

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Abstract

This research empirically evaluated the factors influencing the accumulation of Social Capital in Eastern Wollega Zone, Ethiopia. Methodologically the study used descriptive and explanatory research design. Quantitative data were gathered through community based cross-sectional survey conducted among randomly selected 490 rural households from Agricultural Growth Program (AGP) targeted districts using multi-stage sampling technique. Multiple imputation techniques were used to deal with missed data. Methodologically, ordinary least square model was utilized to identify the determinants of social capital. The result from Chained OLS regression output revealed that households who were married, whose religion were belongs to Muslim and orthodox, whose ethnicity is belongs to Oromo and Gurage, family size of respondents and livestock production were found to be a determinants of social capital accumulation. However, sex wise, being male or female, being a crop producer, being a mixed farmer, farm size and social status have no significant association with social capital accumulation in the study area. The findings of this study are useful for researchers and contribute to the source of knowledge to scholars in related areas through contributing to the methodological gap in existing empirical studies. The results are expected to support decision makers at the local level, federal government higher ministries, and policymakers by providing empirical evidence on the predictors of social capital. Therefore, government should create conducive environment for the improvement of significant predictors identified in this study.

Keywords: Social capital, rural households, Predictors, OLS, Ethiopia.

1. Introduction

Social capital is interpersonal relationships based on mutual trust and norms of reciprocity that facilitate collective action (Putnam 2000; Coleman 1988). Emerging bodies of literature suggest that social capital is important in determining the well being of households (Salvaris & Wolcott 2002; Onyx & Bullen 2000). Coleman (1990) in an attempt to shed more light on the concept of social capital and relative importance in poverty analysis opined that social capital is not a personal property of the persons who benefit from it. Social capital adds a social aspect to the development model that has been mostly ignored in economic exploration of determinants of poverty and household welfare. In many countries of Africa, the prominence of social capital as a means of welfare enhancement has been recognized for long. Quite a lot of studies have been performed in the area of economics. For example Johannes (2011) evaluated whether social capital influences poverty using evidence from Cameroon household survey. Also in Nigeria, different studies have been conducted to investigate the influence of social capital on household welfare. Such studies include: Okunmadewa et al. (2005a), Yusuf (2008), Lawrence & Yusuf (2011), and Adepoju et al. (2011). Nonetheless, Adepoju et al. (2011) work is limited to only rural farming households in the Southwest Nigeria. Furthermore, Yusuf (2008) studied the relationship between social capital and household welfare in Kwara, including six local government areas in the State.

Studies into the determinants of social capital are currently growing. However, studies for the case of the developing countries, including Ethiopia, are still very rare. Therefore, this study aimed to analyse the factors determining social capital in Ethiopia. Assuring peoples well-being in Ethiopia is a fundamental challenge that the government and development agencies face. Recent analyses designate that some successes have been achieved, but food insecurity gaps still exist, with implications for more concerted investments in a multiplicity of community assets to achieve better results. Therefore, this study investigated the predictors of social capital in Oromia region Eastern Wollega Zone, Ethiopia.

2. Literature Review

This part provides the review of key theoretical and empirical literature related to the determinants of social capital. Regardless of the limelight of most researchers on social capital & economic issues, the study on the predictors of social capital is scant. The reviews of some related literature were discussed hereunder.

2.1. Theoretical literature

The admired theorist of social capital Putnam (2000) argued that social capital is determined by various socio-economic factors. Further, Putnam identified socio-economic factors predicting social capital, such as marital status, education level, age, gender, farm size, farming status, mixed farming, livestock production, status in membership, trust index, decision making level and labor contribution, crop production, heterogeneity of the network, diversity of membership, cash meeting attendance, and a cash contribution to association.

According to Colman's (1988) theory of social capital connection, trust, networks, and norms are basic drivers of socio-economic improvement. The Social Resource Theory developed by Lin et al. (1981a), hypothesize that the resources embedded within a network lead to an individual's profitability. The links that an individual utilizes within her /his group regardless of the strength of the tie provide she/him with the necessary resources to meet her /his objectives. This theory explains how an individual through the ties within the group, will be able to utilize the resources owned by other individuals within the group for welfare improvement.

2.2. Review related literature to the Determinants of Social Capital

An empirical work on the determinants of social capital is scarce in Ethiopia; the reviews of related literature on socio-demographic/economic and institutional factors determining social capital accumulation were presented.

2.2.1. Socio-demographic/Economic Factors

The findings of doctoral thesis by Choden (2016) a multilevel analysis based in Bhutan on an investigation of the antecedents and influences of social capital revealed that relative economic status and gender were important determinants, suggesting that higher social status associates with a high level of social capital. The nexus between age and social capital is non linear and the study revealed weak confirmation of an inverse U-shape effect, particularly on social trust. Education had a negative influence on social trust, indicating that people with a higher level of education are less likely to trust others, contradicting the argument that a household with higher social level is likely to possess a higher level of social capital than those at a low level of social status.

In Nigeria, the findings of Adepoju (2012) on the determinants of social capital indicated that age of respondents have a relation with social capital dimensions. Accordingly, respondents within the age range of 40 and 49 years accounted for the highest percentage in membership and meeting attendance in social groups, and they gave the highest cash contribution (N9,374.95). Respondents above 69 years gave the least cash contribution; however, they recorded the highest labour contribution. The age group with the highest diversity is that of respondents within the age range of 60 and 69 as constituting by 27.9%. Furthermore, years of education were associated with social capital dimensions. Respondents with post primary education have the highest percentage of membership density and diversity in social groups, that is, 24.65 and 28.1% respectively. With the exception of respondents with postgraduate education that have 48.05% in meeting attendance, all other educational groups have above average in meeting attendance. This category of educational group also has the highest cash contribution of N11, 588.75. While respondents without formal education have the least cash contribution, they record the highest labour contribution (23.45%). Except for postgraduate respondents, it is observed that percentage in decision-making reduces as the number of years of education increases. The male household heads contribute more to the groups which they belong to and also have a higher index in decision-making. Similarly, Huang et al. (2012) find a positive association between education & promoting social trust and membership of voluntary groups.

An empirical work of Jicha, et al. (2011) indicated that education has a strong influence on social capital. They argued that education is a positive correlate of network, trust, and reciprocity in the Caribbean. Additionally, they reported that females in the Caribbean demonstrate higher levels of trust than men, but men are more likely to employ in shared activities than women.

Hollingshead (2011) argued socio-demographic variables as indicators of social capital. He used a four-factor index, consisting of education, occupation, gender, and marital status as indicators of social status. According to him, the

incorporation of these factors estimates a meaningful position of individual & members of nuclear families in the society. Although the four-factor index is developed in a context of nuclear family setting in a western society, in absence of similar literature which cuts across different societies. According to Hollingshead, marital status describes the relationship of adult men and women to the family system and is an important indicator of social status, due to the difference in trend of family members takes part in the economic matter. With regard to gender he argued that the gender of an individual plays a key part in the roles they play in the performance of maintenance functions in the society. Females are associated mostly with family responsibilities, while males have greater access to paid work, which gives them higher social status than those holding the familial jobs. Gender indicates social status in many societies, and females are associated with lower social status than males. It is an important indicator of social status, particularly in traditional societies with patriarchal values where women are given less importance than men. Additionally, the index is widely used (Adams & Weakliem 2011).

Tan & Tambyah (2011) suggested that people with higher incomes trust others more in China, Japan, Singapore, and South Korea than in other Confucian countries. They argued there is strong evidence that economic status is an important indicator of social status, which influences social capital. Furthermore, they showed that education has a strong influence on trust: higher education levels achieved in China, Singapore, and South Korea lead to more trust. Even though most studies have shown that education is a strong and robust determinant of social capital, there are a few contradictory findings. For example, in the context of Vietnam they found the negative relationship between education and social capital. They also reported a different effect of marital status of individuals on the level of trust in South Korea and Singapore. The effect varies in an appealing way: married people were the most trusting in Singapore, while divorced persons were the most trusting in South Korea. They also observed no gender effect on social trust in Asia.

Similarly, the study by Christoforou (2011) revealed that education is positively associated with active participation in voluntary organizations and group memberships. He also reported an inverted u-shaped relationship between age and group membership in southern European countries (Italy, Spain, Portugal, and Greece) as in the US. The argument of the inverted U-shaped association varies across countries. In northern European countries the young and retirees are active members of society who take a greater role in social groups and organizations.

Other cross-country study (Kaasa & Parts 2008) in Europe has also suggested individuals with higher household income have more social capital than others. Additionally, in Europe they found that age was associated positively with formal networks and negatively with informal networks. People tend to join more organizations as they age, which increases their formal networks, but the range of their informal network decreases, possibly due to lack of time, and later because of their health. They argued that the effect of age differs for different dimensions of social capital. Furthermore, they indicated that married people tend to have fewer informal networks than singles in Europe. However, it is argued that reduction in time for informal network is compensated with increase in time spent in formal network. Evidence by Tokuda & Inoguchi (2008), from South Korean revealed that the lack of trust was associated with singles (or divorced, separated, or widowed) which contradicts with a Japanese empirical evidence.

The work of Helliwell & Putnam (2007) revealed that education is a measure of social class and economic differences. They also argued that education is an associate of social it provides the skill required to enter into occupations that carry social prestige, and is therefore an indicator of social status. Therefore, it follows that people with a higher level of education will accumulate more social capital. VanOorschot et al. (2006) showed that social capital was higher among Europeans who lived in households with a higher income. Their study revealed that people with more wealth accumulate higher social capital, because they enjoy a higher social status than others. Contrarily, the study finding of Halman & Luijkx (2006) revealed that education had no effect on formal engagement in Europe.

Empirical evidence on the relationship between socio-demographic factors and social capital are diverse, mostly depending on the dimensions of the social capital examined (Van Oorschot & Arts 2005). Evidence from developing countries is also not consistent. Fidrmuc & Gërxhani (2005) found that the relationship between age and access to networks may be the cause of the u-shape in both member and candidate countries of the European Union. They reported the inverted u-shaped effect of age on civic participation in less developed European countries, where participation in collective action aimed at distributive objectives increases and falls with age more noticeably than in the developed Europe. Older individuals tend to have more limited access to social networks and the decline in access slows down at a higher age.

Glaeser et al. (2002) tested Putnam's suggestion of life cycle effect of age on social capital. Their study revealed that the relationship in the US to be an inverted U-shape. They argued that organization membership is highest when a person is in his/her 30s and 40s, which indicates group membership first increases and then decreases with age. Similarly, Alisena & LaFerrara (2002) argued that social trust increases with age in declining rate in the US, which supports the inverted u-shaped relationship.

According to Putnam (2000) socio-demographic variables such as age, education, income, and marital status are important determinants of social capital in the United States. However, Putnam did not clearly link demography to social status. Age represents the different stages of life of individuals through which their social status evolves. He argued that age has a life cycle effect. As the age of individuals captures these stages of life, it can represent their social status. He also argued that loss of trust is more common among people who are divorced. The marital status of respondents affects the level of their social capital. Married men & women rank higher on measures of social trust and civic participation than singles. He shown that marriage for both men and women increases the time spent at home and in formal community organizations, and reduces the time spent in informal networking. According to Lin (2000) women's engagements in familial responsibilities are more likely to connect them to information about the domestic realm while men's networks are more likely to provide access to information possible jobs opportunities.

The popular scholars of the concept of social capital (Putnam 2000; Putnam et al. 1993; Coleman, 1988; Bourdieu, 1986) suggested that the level of social capital possessed by individuals differs depending on two factors: who the actor is, that is, aspects that pertain to the individual themselves; and the place where actors live, that is, their context. The individual factor that 'who the actor is' is defined by the social status of that actor and in the current study it is represented by socio-demographic variables such as gender, age, level of education, and relative economic position. The social context factor where the actor lives is defined by place. Place may be represented by country, different regions within the country, or village. In this study the context will be represented by rural/urban neighbourhoods.

2.2.2. Institutional Factors Determining Social Capital

Institution is a critical attributes of social capital which smoothes an interaction among peoples. The work of Rustiadi & Nasution (2017) in Indonesia explained an institutional trust as a component of social capital having a critical importance in facilitating welfare of individuals. The welfare/poverty issues are closely related to the nature and pattern of development in the area, which can be realized through changes in social organizations and value systems while the productivity of an economic system and its resource management is facilitated by culture and institutions in the local community (social institutions). Therefore, this indicates an implementation of rural development should encourage social institutions. Since social institutions can allow the formation of social capital, it can reduce poverty in rural Indonesia (Nasution et al. 2014). In Ethiopia, the poverty rate is still relatively high, largely in rural areas. This high rate indicates that development in the rural areas does not optimally utilize various types of resources including local institutions.

Ethnicity is also one of the forms of bonding social capital. According to Aldridge et al (2002) the main determinant factors of social capital includes: history and culture, social hierarchical structure and social class which is in the form of ethnicity and clan. Ethnicity indicates an increase in a depth of connections and trust within a relatively homogenous social group. This creates a strong internal connection which creates a formation of social capital for a member of the same ethnicity. In Ethiopia traditionally ethnic based divisions are common which may cause an exclusion of others who have different views from them. Political protests following ethnic based movement is common in Ethiopia. Therefore, ethnicity can be considered as a factor determining the level of social capital accumulation.

Religious organizations have a unique importance in community. They directly support wide range of social activities. The church is not organization, but it is in which people worship together, it is a relationship between one person and the next which contributes to social capital formation. According to Terry (1994) in America nearly half of associational memberships are church related, half of all personal philanthropy is religious in character, and half of all volunteering occurs in religious context. Therefore, Religious involvement matters individual's social capital accumulation.

According to Sen (1981) capability approach, social capital refers to an endowment, i.e. a set of means to achieve a life people reason to value and highly linked with institution. More quietly, Sen's

approach distinguishes social capital from explanation of Putnam's social environment (Trust, network, norms, and values) and allows a much more precise evaluation of people's endowments to struggle against poverty. The main drawback of the capability approach rests on the empirical methodological difficulties to estimate people's capability level. According to Putnam membership of ethnicity, religion, neighbourhood or communities and memberships in associations are attributes of social capital that facilitates individual's actions.

In sum, these review identified age, education level, gender, marital status, economic level and institutional factors i.e. religion and ethnicity as an important determinant factors of social capital. Furthermore, most literature on the determinants of social capital has been based either in the United States or Europe, while the studies on developing countries including

Ethiopia are very limited. It is unclear as to whether Western country studies may be directly applicable to developing nations like Ethiopia. This limitation indicated the importance of this study.

3. Conceptual Frame work

The conceptual frame work to evaluate the determinants of social capital is developed considering the social capital literature of Rustiadi & Nasution (2017), Putnam (2000), and Coleman (1988). The conceptual framework describes the linkage between the dependent variable aggregate social capital and independent variables i.e. social demographic and socio economic factors.

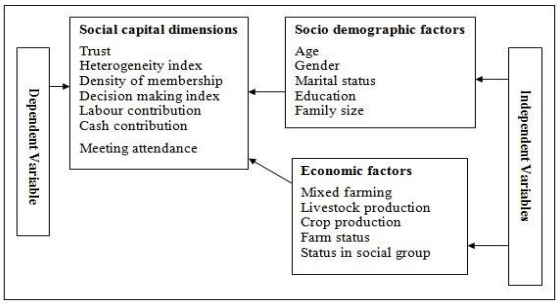

Figure 1: Conceptual Framework

4. Hypothesis

Null-Hypothesis

H_0: Each identified socio-economic characteristics does not influence social capital.

H_0: $þ_1 = þ_2 = þ_3 = þ_4 = \ldots\ldots = þn = 0$; H_0: $þ_i = 0$

Alternative Hypothesis

H_1: Each identified socio-economic characteristics influences social capital.

H_1: $þ_1 \neq þ_2 \neq þ_3 \neq þ_4 \ldots\ldots \neq þn \neq 0$; H_1: $þ_i \neq 0$

Where $þ_i$ = (i = 1 to n) are the coefficients of the vectors of predictors of social capital.

5. Methodology Research Design

This study employed explanatory research design and descriptive research design. Following Creswell (2013) and Kothari (2004) explanatory research design is used to identify the determinants of social capital. The design is the most suitable in describing and explaining research reports the status of events and issues the way they are.

Sources of data and method of collection Primary and secondary data were collected through the use of structured questionnaire. The data source is primary data through collection of cross-sectional data from Source population of Eastern Wollega zone Agricultural Growth Program (AGP) beneficiary district's households and secondary data from local level government office, published and unpublished materials. The primary data collected from each respondent covers socio-economic and demographic factors determining social capita.

Sampling technique

In this study the sample size was determined using single proportion formula following Khotari (2004) and Whitley & Ball (2002) by taking, p=50% with a 95% (Z=1.96) confidence interval of certainty (alpha=0.05) and 5% margin of error (e=0.05). The maximum limit for coefficient of variation and standard error was selected so as to make sure low unevenness in the sample and to minimize the degree or error. The sample size selected is larger when researcher has no idea as to what the level of p (values ranged 0.1 to 0.5) is in the population choosing 0.5 for p in the formula for sample size always provide enough observations, maximize the sample, irrespective of the actual value of the true proportion (Lemshow et al. 1990). In this study, since there is no prior information through empirical study on the effect of social capital on household welfare in the study area the standardized p-value of 0.5 is utilized to maximize the sample size.

Based on the work of the above-mentioned popular scholars, the sample size for this study is calculated as follows:

$n = \frac{Z^2 * p * (1-p)}{e^2}$, where n=initial sample size, z=confidence interval of certainty,
p=coefficient of variation, e=marginal error of 5%.

$n! = \frac{(1.96)^2 * 0.5 * (1-0.5)}{(0.05)^2} = 384.16 \approx 385$

The sampling frame for this study covers households in AGP targeted districts of Eastern Wollega Zone. AGP operates in three districts (Guto Gida, Wayu Tuka and Diga) of the zone. The total number of households of Guto Gida, Wayu Tuka and Diga districts were 17981, 12636 and 13337 respectively which makes the total of 43954 households in the three districts.
Therefore, it is possible to use the following correction formula for the final sample size estimation.

$nf = \frac{n!}{1+n!/N}$, where nf=final sample size, N=total number of households.

$$nf = \frac{385}{1+385/43954} = 381.6570 \approx 382$$

Therefore, by adding 10% contingency for non-response rate, the sample size for quantitative study becomes 420 respondents. The researcher extended the sample size from 420 to 490 thinking to increase the reliability of the study. Since the scope of the study comprises AGP targeted Districts the researcher distributed the determined sample size for all kebeles in which AGP operates proportionally

Sampling Procedure

A multistage sampling method was used to recruit study participants. Because, the size of the zone is large, making it difficult or expensive to observe all the units inside the zone. The basic advantage of the multi-stage sampling technique is that it is more flexible than the one stage sampling (Khotari 2004). Also, it can increase a balance between statistical precision and cost. Since the scope of the study is limited to AGP targeted districts in the Eastern Wollega zone, all AGP targeted districts and kebeles were included in the sample. At the first stage, all three AGP targeted districts in the zone have been selected. At the second stage, from three districts, all AGP targeted kebeles (24) were selected. Further, to increase the reliability of the study and to accommodate farmers who live out of the AGP area, five non-AGP targeted kebeles were selected based on their potential of density and diversity of social group association following the recommendations of district administrator's. At the third stage, the required sample respondents were allocated to kebeles proportionally. Finally, lists of households/respondents from each kebele administrative offices were used to identify the final 490 representative households from each selected using a systematic random sampling technique. To take care of randomness the researcher checked and ensured that the lists of households in each kebele were not prearranged in cyclic or periodic order, but in alphabetical which gives a good representative sample as it will comprise households from both bottom and top classes. To decide the sample interval, the identification number is assigned to all households list, the population of each kebele is divided by the required sample size from each kebele, and then every kth household participated in the study.

Data Analysis Tools

Both descriptive and inferential analysis (econometric models) tools were used to evaluate the quantitative data.

Descriptive Statistics

In descriptive analysis mean for continuous variables, percentages & frequencies for categorical variables, standard deviation and cross-tabulations were done to summarize, interpret and conclude the results. ANOVA for scale variables and chi2- tests for categorical variables were done. Identification of potential explanatory variables using unadjusted bivariate analysis was done. To perform statistical analysis the STATA-15 software package was utilized. Multiple imputation procedures are performed to deal with missed observations.

Inferential statistics

This study employed an ordinary least square econometric model to infer the relationship between dependent & independent variables. To check the goodness of fit of the model, t-test, F statistics, and chi-square were done. The standard significance level of 5% at a confidence interval of 95% was used for interpretation. The detailed OLS model specification is presented below:

Ordinary Least Square Model (OLS)

For analysis of the determinants of social capital the OLS model is used. The model is specified using Aggregate social capital index as dependent variable & socio-economic factors i.e. age, gender, education, marital status, economic status etc. as

explanatory variables. The specification of the model is:

$SC_A=\beta_0+ \beta_1HC_i + \beta_2X +\varepsilon_i$

Where, SC_A= Aggregate social capital index which is summative index of dimensions of social capital (Trust index, Heterogeneity index, density of membership, Decision making index,
Labour contribution, Cash contribution and Meeting attendance index).
Xi= vector of explanatory variables that influences social capital, HC_i = represents human capital. β_0, β_1 & β_2= represents intercept and coefficients of predictors of social capital ε_i= error term

Description of dependent and independent Variables

Dependent variable

An aggregate social capital is a dependent variable in this study. This variable was obtained by additive index of the seven social capital dimensions. In most similar studies (e.g. Jumrah & Heni 2018) an aggregate social capital index has always developed using only three dimensions of social capital: Density of membership, Heterogeneity index and Decision making index ignoring the other core dimensions of social capital like trust dimension. But, in this study the most commonly identified dimensions in literature; trust index, heterogeneity index, density of membership, decision making index, labour contribution index, cash contribution index and meeting attendance index were included to more explain the social capital variable. The resultant index was renormalized to maximum value of 100, by dividing the resulting index by one seventh. Furthermore, this variable is employed as independent variable for analysis of the the effect of social capital on rural household's welfare.
Dimensions of Social Capital include: trust index, heterogeneity index, the density of membership, decision-making index, labor contribution, cash contribution, and meeting attendance index. Trust dimension is indexed from ten indicators: generalized trust, trust in neighborhood, trust in family, trust in friends, trust in co-religionist, trust in similar ethnicity, trust in local administrators, feeling of safety at home, feeling of safety during walking, and feeling of safety in public transport. The density of membership index is measured as the total number of memberships of households in various associations as a percentage of the entire population. Correspondingly, the Heterogeneity index is formed from ten indicators of the diversity of networks such as the same neighborhood, same clan, occupation, same belief, same income group, same religion, similar sex, similar age group, similar education level, and same ethnic were used to build heterogeneity index. The Decision-making variable represents the participation level of households in the decision-making process of their associations at different levels. Meeting attendance is measured by dividing the actual number of meetings to scheduled meetings by associations and normalized to 100. The cash contribution variable was measured adding the total cash contributed by households to the various associations in Ethiopian Birr (ETB), then normalized to 100. The labor contribution variable was measured using the number of working days contributed by households to their associations, finally normalized to 100 percent.

Independent variables

Independent variables were socio-economic characteristics of the sampled households.

Socio-economic variables

Socio-economic variables used in this study include age, gender, marital status, education level, household size, status in a social group, farming status, farm size, crop production, livestock production, religion and ethnicity. The level of education of the households is used as a proxy for the human capital variable. It gives exposure to acquiring and utilizing social capital. Household head age is measured in years. Gender variable was used in analysis assuming consumption can be varied between sexes. Household size is a number of the family members in the household. Farm Size represents is an area of farmland in hectares. The farming status of the households was measured using the categorical variable which assumes 1=full time farming and 0=par time farming. The status of a social group is represented by being an executive member, being a member, and not being a member of a social group. Further, Religion is measured based on being a membership of any religion or not. Categories of Religion were coded as 1= Protestant,
2= Wagefata, 3= Orthodox 4=Muslim 5=others. Finally, Ethnicity variable is measured as a nominal variable having categories of: 1= Tigre, 2= Gurage, 3= Amhara, 4= Oromo and 5= others

6. Result and Discussion

Descriptive Statistics Results

Socio-economic characteristics of the respondents

The descriptions of socio-economic characteristics of the respondents were presented in Table below. The proposed sample size for this study was 490. Of this, 473 households were participated in the

study making the response rate 96.53%. About 42.28 %(N=200) of sample population is from Guto Gida district, 32.77 %(N=155) is from Diga district and 24.95 percent (N=118) is from Wayu Tuka district. The study population comprised of 83.09% males and
16.91% females. About 43.61 percent of the respondents are between 31 and 40 years age range. The mean age of the study participants is 41.53 years. This shows that most of the respondents are in their economic active age irrespective of the report of the UNDP (2019) that life expectancy of Ethiopia is 56 years.

By education level, about 23.36% were illiterate (have no formal education), 24.04% were between grade 1 and 4, 26% were between grade 5 and 8, 17.23% of respondents were between grade 9 and 12 and about 9.3% were above grade 12. The average years of level of education of households are 5.34 years. By marital status, the married respondents account for 85.41percent; single respondents were 4.4% and divorced respondents accounts 10.15% of the total population studied. The average household size in the study area is 4, which falls into the group of households that have the highest representation (76.5percent) in household size, that is, households having between 1 and 4 members. About 1.27 percent of the respondents have above 13 household members. The highest household number in the study area is 19.

About 56.1% of the respondents are involved in crop production while 43.9 percent where not crop producers. This is an indication that majority of the respondents in the study area engaged in agricultural activities either as primary or secondary income generating activity. As well, the result reveals that 50.23 percent of the respondents were primarily participants of livestock production and 49.7% of them were not participant. About 87 percent of respondents were followers of mixed farming system and the remaining 12.69% were not. With regard to primary occupation of respondents about 41.44 percent were farming, 1.27 percents were civil servants, 19.03% were private enterprise, 12.9% were Artisan, and 13.7% were traders and the remaining11.6% were others. The details of socio-economic characteristics of respondents were presented in table below:

Table 1: Description of socio-economic characteristics

Variables	Frequency	Mean	Std. Dev.	Min.	Max.
District Guto Gida	155(32.77)				
Diga	200(42.28)				
Wayu-tuka	118(24.95)				
Total	473(100)				
Gender					
Female	80(16.91)				
Male	393(83.09)				
Total	473(100)				
Age group (yrs)		41.53	10.54	21	80
21-30	51(10.78)				
31-40	205(43.34)				
41-50	121(25.79)				
61-70	90(19.2)				
71-80	5 (1.06)				
Total	473(100)				
Education level		5.34	5.12	0	18
Illiterate	103(23.36)				
Grade 1-4	106(24.04)				
Grade 5-8	115(26.08)				
Grade 9-12	76(17.23)				
Above grade 12	41(9.30)				
Total	441(100)				
Family size		4.17	2.28	1	19
1-4	346(73.15)				
5-8	102(21.56)				
9-12	19(4.02)				
13 and above	6(1.27)				
Total	473(100)				
Marital status					
Single	21(4.44)				
Married	404(85.41)				
Divorced	48(10.15)				
Total	473(100)				
Farming Status					
Full-time	342 (72.30)				
Par-time	131(27.70)				
Total	473(100)				
Crop production					
No	180 (43.90)				
Yes	230 (56.10)				
Total	410(100)				
Livestock production					
No	213(49.77)				
Yes	215(50.23)				
Total	428(100)				
Mixed farming					
No	49(12.69)				
Yes	337(87.31)				
Total	386(100)				
Primary occupation					
Civil Service	6 (1.27)				
Private enterprise	196(41.44)				

Source: Own computation from Field survey, 2021

Descriptions of Social Capital Dimensions

The distribution of the social capital dimensions available in the study area is presented in Table 2 The study focused on the major seven dimensions of social capital and these are trust, density of membership, heterogeneity, and decision-making, meeting attendance, cash and labour contributions. Average level of trust index is 67 percent. About 36.64% of respondents belong to the higher level of trust which ranged between 81 and 100 percent. As well about 6.8, 10.3, 24.3 and 21.8 percent of households were belongs to less than 20 percent, between 21 and 40 percent, between 41 and 60 percent, and between 81 and 100 percent of trust index respectively.

Farming	90(19.03)				
Artisan	61(12.90)				
Trading	65(13.74)				
Others	55(11.63)				
Total	473(100)				
Farm size (hectare)		4.50	2.85	0.75	15
0-4	299(63.21)				
5-9	138(29.18)				
10-14	22(4.65)				
15 & above	14(2.96)				
Total	473(100)				

The level of heterogeneity to which an average household belongs is 42.14 percent. About 13.97 percent of households belong to lower level of diversification i.e. between 0 and 20 percent. However, the large number of respondents i.e. 54.8 percent of households belongs to 21 to 40 percent of diversification. Only 7.42 percent of respondents own the higher level of diversification which ranged between 81 and 100 percent. With regard to density of membership index an average is 38.25 percent. About 1.5 percent of respondents have 0 to 20 percent of density of membership in social association. Majority of respondents (76.47 percent) claim to have 21 to 40 percent of density of membership. Less than one percent of respondents own the highest percentage of density of membership index i.e. 81 to 100 percent. The rest 18.74 and 2.4 percent of households belong to 41 to 60 and 61 to 80 percent of density of membership.

An average rural household has 39 percent of participation in decision-making. About 39.43 percent of the respondents claim to participate in 21 to 40 percent of the decision made in their various groups, while just 23.3percent has less than 20 percent participation in decision making. Only 4.36 and 11 percent of respondent claim to have relatively higher level of participation in decision making i.e. 61 to 80 and 81 to 100 percent respectively. An average meeting attendance is 70.7 percent. About 0.87 of the respondents had less than 20 percent of meeting attendance, and 28.8 percent of respondents have above 80 percent meeting attendance index. Majority of respondents (44.9%) claim to have 61 to 80 percent of meeting attendance. The remaining 25 percent of respondents have 21 to 60 percent of meeting attendance.

An average of 1093.9 ETB is contributed annually by each household to various associations. About 21.97 percent of the rural households contributed less than 5,00ETB annually in their various groups while 2.69 percent of them contributed more than 2000ETB.

About 20.8%, 41.26% and 13.23% of respondents contribute 501 to 1000ETB, 1001 to 1500ETB and 15001 to 2000 ETB to their association. Labour contribution is generally in the study area with an annual average value of 23.04 man-days. About 18.24 percent of the respondents contributed 10 man-days or less annually while 4.18 percent of them claim to contribute 41 and above man-days annually. About 27.25%, 25.49% and 24.84% of respondents reported to contribute 11 to 20, 21 to 30 and 31 to 40 man-days respectively. An average aggregate social capital index in the study area is 49.8 percent. The details of these seven social capital dimensions were further presented in table 2.

Table 2: Distribution of social capital dimensions

Social capital dimensions	Frequency	Mean	Std. Dev.	Min.	Max.
Trust index (%)		67.08	24.19	13	98
0-20	31(6.84)				
21-40	47(10.38)				
41-60	110(24.28)				
61-80	99(21.85)				
81-100	166(36.64)				
Heterogeneity Index (%)		42.14	22.53	3	90
0-20	64(13.97)				
21-40	251(54.80)				
41-60	23(5.02)				
61-80	86(18.78)				
81-100	34(7.42)				
Density of Membership (%)		38.25	9.97	13.63	93
0-20	7(1.53)				
21-40	351(76.47)				
41-60	86(18.74)				
61-80	11(2.40)				
81-100	4(0.87)				
Decision making Index (%)		39.03	18.28	16.66	100
0-20	107(23.31)				
21-40	181(39.43)				
41-60	100(21.79)				
61-80	51(11.11)				
81-100	20(4.36)				
Meeting attendance (%)		70.77	13.94	24.59	91.66
0-20	4(0.87)				
21-40	32(6.99)				
41-60	84(18.34)				
61-80	206(44.98)				
81-100	132(28.82)				
Labor contribution (man days)	23.04		10.58	5	47
0-10	83(18.24)				
11-20	124(27.25)				
21-30	116(25.49)				
31-40	113(24.84)				
41 and above	19(4.18)				
Cash contribution (in birr)		1093.93	559.56	100	2500
0-500	98 (21.97)				
501-1000	93(20.85)				
1001-1500	184(41.26)				
1501-2000	59(13.23)				
2000 and above	12(2.69)				
Aggregate social capital		49.84	8.72	17.75	87.87
0-20	5(1.16)				
21-40	57(13.19)				
41-60	331(76.62)				
61-80	37(8.56)				
81-100	2(0.46)				
Total	432(100)				

Source: own computation from survey, 2021

Econometric Results
Determinants of Social Capital

To identify factors associated with social capital, the researcher started with unadjusted regression analysis (Hosmer et al. 2013) using each of the possible independent variables before declaration of MI data set. Following unadjusted analysis variables with P-values up to 0.2 in unadjusted analysis entered together in to the adjusted chained regression equation to test the significance of each predicator in relation to the response variable. A number of variables i.e. age of household head, gender, marital status, religion, ethnicity, family size, level of education, farming status, Farm size, mixed farming, occupation, livestock production, crop production and status of household in social group have been considered for this study. Ordinary least square econometric model was employed to identify influencing factors for social capital.

During unadjusted regression analysis the predictor variables found significant includes: maritial status (p=0.001), Religion (p=0.000), Ethnicity (p=0.000), livestock production (p=0.001), education (p=0.000), family size (p=0.004), Mixed farming (P=0.007), farm size (p=0.013), Gender (0.016) and Social Status (p=0.00). These significant variables in the unadjusted regression model were entered together in adjusted chained linear regression model analysis to test the significance of each predicator in relation to the dependent variable. The output of adjusted chained linear regression was presented in table 3.

Table 3: Determinants of social capital (OLS Model)

Variables	Coefficients	Standard Error	t-value
Genderh			
Male	0.3236103	0.7854793	0.41
Maristats			
Divorced	-1.793834	1.551508	-1.16
Married	3.161832**	1.388645	2.28
Religion			
Muslim	12.21386***	1.065282	11.47
Orthodox	2.6932 ***	0.6871696	3.92
Wagefata	0.7009738	0.9706867	0.72
Others	0.8829009	1.198288	0.74
Ethnic			
Gurage	4.322171***	0.8563745	5.05
Amhara	-3.04856	1.036114	-2.94
Oromo	0.3685629***	1.684763	0.22
LogEdu	-0.6956294**	0.4420376	- 1.57
Logfamsiz	-1.942307**	0.8432253	-2.30
MixedFrm			
Yes	0.5181983	1.106688	0.47
LogFarmSZ	-0.1999836	.527805	-0.38
Lvstocpro			
Yes	3.215605**	1.237517	2.60
SStatus			
Member	0.0456425	0.834041	-0.05
Executive	0.2463002	1.174209	0.21
Constant	47.1184***	5.420849	8.69
Obs.=473, R^2 = 0.68			

Source: Own field survey data, 2021

Note: ***, **,* represent 1%, 5% and 10% level of significance, respective

As reported in the above Chained regression output, households who were married at 5% significant level, who's religion were belongs to Muslim and orthodox followers at 1% significant level, who's ethnicity is belongs to Oromo and Gurage at 1% significant level, who have large family size at 1% significant level, education level at 5% and who are livestock producers at 5% significant level were significantly associated with social capital accumulation. The result indicates these significant variables are determinants of social capital in the study area. However, in this study sex wise, being male or female, education level, being a crop producer, being a mixed farmer, having large farm size, social status wise being executive, member or not member have no significant association with social capital accumulation in the study area.

The econometric finding shown that Marital status of the head, in particular being married respondent was also found having a positive and significant ($p<0.05$) influence on aggregate social capital index. The coefficient of Married (3.161832) category indicates the social capital accumulation is by 3.161832 units for married respondents as compared to single respondents. The result revealed that religion has definitely a statistically significant ($p<0.01$) positive effect on social capital accumulation (SCAindex) of rural households of Eastern wollega zone AGP targeted districts. The coefficients for Muslim (12.21386) and orthodox (2.6932) indicates that for Muslim religion followers the social capital accumulation is higher by 12.21386 units as compared to protestant (reference category) religion followers and for orthodox religion followers the social capital accumulation is higher by 2.6932 as compared to protestant religion followers.

With regard to Ethnicity of the head's it's also found having statistically significant ($p<0.01$) positive association with aggregate social capital index of households. Specifically, the coefficients of Gurage (4.322171) and Oromo (0.3685629) indicates for Gurage and Oromo religion followers social capital accumulation is by 4.322171 and 0.3685629 higher as compared to Tigre ethnic groups. The family size had statistically negative influence ($p<0.05$) on aggregate social capital index of rural households. An increase in the family member of a household by one adult equivalent decreases an aggregate social capital index by 1.942307units. Livestock production is also significantly ($p<0.05$) associated with aggregate social capital accumulation of

households. The result indicated that for livestock producers the social capital accumulation is higher by 3.215605 units as compared to not producers. Furthermore, education level of respondent is significantly (at 5%) and negatively associated with the aggregate social capital index

7. Conclusion

The result from Chained OLS regression output revealed that households who were married, whose religion were belongs to Muslim and orthodox, whose ethnicity is belongs to Oromo and Gurage, family size of respondents and livestock production were found to be a determinants of social capital accumulation. However, sex wise, being male or female, being a crop producer, being a mixed farmer, farm size and social status have no significant association with social capital accumulation in the study area.

8. Limitations and future directions

This study is restricted to only three districts at the household level. The restriction of study to individual level might disregard the determinants of social capital at the higher institutional level. Since the study data is cross-sectional, a one-time observation is difficult to determine the temporal relationships between outcome and predictor variables. Future research should focus on identifying a possible causal relationship between the social capital and its predictors using experimental research design.

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