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Empirical Investigation of Dimensions of Social Capital in Eastern Wollega Zone, Oromia, Ethiopia

Gemechu Getahun Amente*
A PhD Scholar in Economics, Jain University, Bangalore, India, Email: gemegeto@gmail.com

Dr. Nila Chotai
Research Guide of Jain University, Director Department of Executive Education ISBR Business School, Bangalore, India, Email: nila.chotai@gmail.com

Abstract
This research empirically examined the available social capital dimensions to households in Eastern Wollega Zone, Ethiopia. Methodologically the study used descriptive research design. The data were gathered through a community-based cross-sectional survey conducted among randomly selected 490 rural households from Agricultural Growth Program (AGP) targeted districts using a multi-stage sampling technique. Exploratory and confirmatory factor analysis techniques were applied to identify the dimensions of social capital available to households. The finding from exploratory and confirmatory factor analysis revealed that in the study area 29 potential indicators and seven dimensions potential dimensions of social capital i.e. trust, heterogeneity, the density of membership, decision making, labor contribution, cash contribution, and meeting attendance.This study is very important in contributing to scarce literature related to the dimensions of social capital in Ethiopia. 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 available dimensions of social capital households.
Keywords: Social capital dimensions, Rural- households, Exploratory, Confirmatory analysis, Ethiopia
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1. Introduction

Social networks have worth. In the literature social capital had various profits which include increasing welfare, risk sharing, facilitating the flow of information, access to education, reducing crime, reducing transaction cost, enhancing access to credit and to support socio-economic change. The concept of social capital is broadly used across numerous disciplines of social science including sociology, political science, and economics, but the factors determining the level of benefit from social group participation are not well recognized. Social capital is generally understood to be a resource generated from social relations, which facilitates both individual and joint actions (Coleman, 1988). The concept of social capital had been tailored to social & economic disciplines relatively in recent years. In broader terms, social capital is a multi-dimensional variable comprising trust, networks, labor contribution, cash contribution, decision-making index, and meeting attendance of members which facilitates coordination & cooperation for mutual benefit (Putnam, 2000).

Traditionally in economics, growth, and development are based on the capacity utilization of the major production factors: land, labor, and capital (natural, physical, human, and financial). In recent years the attention of scholars diverted toward the importance of social capital. Social capital adds a social aspect to the development model that has been mostly ignored in an economic exploration of determinants of poverty and household welfare.

Ethiopia is one of the countries having the fastest economic growth. Paradoxically the country is also the acme of the poorest (Geda & Yimer, 2014). Assuring people's welfare in Ethiopia is a fundamental challenge that the government and development agencies are facing (Getachew et al., 2017). Vigorous policy and scholastic research on the identification of social capital is lacking in Ethiopia. The evidence on the available dimensions of social capital is inconsistent and lacks methodological strength.

This study is very important in contributing to a gap in the literature related to awaiting issues in identifying dimensions of social capital. Studying the dimensions of social capital is relevant in Ethiopia particularly in the study area, where households experiencing pervasive and extreme poverty. Therefore, this study aims to identify the dimensions of social capital in Eastern Wollega Zone, Ethiopia.

2. Literature Review

This part deals with the review of literature related to the dimensions of social capital. Regardless of the spotlight of most researchers on social capital & economic issues, the study on the identification of social capital dimensions is scant. The reviews of associated literature were discussed in this part.

2.1. Review Related with Dimensions of Social Capital

Even though social capital is conceived as a multi-dimensional concept comprising more than one element (Putnam, 2000; Coleman, 1988), empirically these are represented in diverse ways. Putnam (2000) explained social capital as a single index based on the correlation between the indicators for different dimensions. He believed that different elements of social capital such as trust, networks, and norms have higher-order correlations & are expected to function as one. Conversely, many scholars have represented social capital as multidimensional constructs (e.g. Elgar et al. 2011; Kaasa & Parts 2008; Bjørnskov 2006; VanOorschot et al. 2006; Knack 2002). These studies have also found the association between the items representing social capital below, which suggests a social capital is a multidimensional construct.

The limited evidence available on social capital in the context of developing countries has measured social capital as a multi-dimensional construct (Grootaert et al. 2004; Narayan & Cassidy 2001). Many Scholars (Krishna 2004; Grootaert et al. 2004), have also argued that the operation of social capital varies depending on the specific social, cultural, and economic context it is likely to differ depending on the country investigated.

It is noteworthy that social capital theories go through much criticism for being poorly defined. Liu & Besser (2003) indicated that social capital is multidimensional with each element contributing to the meaning of social capital. The dimension of social capital can be recognized from two perspectives that are whether social capital is bonding (exclusive) and/or bridging (inclusive). The bonding may be more limited and tend to exclusive identities & homogeneous groups. The bridging may be more outward-looking & encompasses heterogeneous people across the different social groups (Putnam 2000). Woolcock (1998) also identified four dimensions of social capital: 1) Community view: Local association. 2) Network view: Bonding and bridging Community ties. 3) Institutional view: Political and legal institutions. 4) Synergy view: Community network and state Society relations.

Seven main social capital dimensions were commonly identified in the literature (Adepoju 2012). The reviews of these dimensions were:

Trust dimension

The core of social capital is trust, that is, whether people living in an area trust one another or not. Frequently this trust is attached to specific people through common participation in groups, associations & activities. However, when this trust goes beyond from trust of specific individuals to generalized trust, it is extraordinarily valuable because it enhances social interaction and gets things accomplished (Putnam 2001; 1993). According to numerous scholars (Lemmel 2001; Welsh & Pringle 2001; Falk & Kilpatrick 2000; Kawachi et al. 1999; Leana & VanBuren, 1999; Collier, 1998a; Coleman 1988; Cox 1995), the social trust index adds up the trust of people in one's including Generalized trust, Informal trust (i.e., neighborhood, family & friends), co-religionists, Institutional trust, and trustworthiness (i.e., feeling of safety at home during the night, on public transport and during walking alone in the village), finally most people.

Density of membership

The density of membership measures associational involvement across broad categories of groups (Adepoju 2012). It demonstrates the density of membership in various social organizations including neighborhood associations, religious organizations, sports clubs, labor unions, and professional societies. It was captured by the summation of the total number of associations to which each household belongs. In other meaning, the membership of associations by individuals in the household is added up together.

Diversity of network (Heterogeneity)

The heterogeneity index or diversity in people's social networks is equally important to the levels of social trust (Collier 1998a). In Putnam's (2000) study, a respondent was asked whether she/he had a personal friend who was a business owner, a manual worker, a community leader; and was on welfare, had a vacation home, and was of a different belief. The summation of the six categories each respondent mentioned gave an index that broadly measures the degree to which people's social networks (and collectively a community's networks) are diversified. These "bridging ties" are especially valuable in producing community solidarity and in forging a larger consensus on how communities need to change or work together (Falk & Kilpatrick 2000).

According to Adepoju (2012) heterogeneity index is a summation of each household's response to the questions on the diversity of members of the three most essential institutions to the households. Focusing on three institutions each household answers questions on whether members live in the same neighborhood, are same kin group, same economic status, similar religion, ethnicity, gender, age group, same belief, same educational level & occupation. Hence, for each of the factors, a yes response is coded zero (0) while no response is coded one (1). For each association, a maximum score of 10 represents the highest level of heterogeneity/diversity.

Decision-making dimension

This explains decision-making in a social group. This indicates civic leadership which involves the participation in the decision-making process on issues that affect the welfare of group members or the community (Baiyegunhi 2013). This is a composite measure of how frequently individuals engaged in the decision-making of their association. In the work of Adepoju (2012) the members of the group were asked to evaluate subjectively

their three most important institutions, whether they were very active, somewhat active, or not very active in the decision-making process of the group belong to.

Labour Contribution Score

Another aspect of building a social network and relationship is through an individual's attachment to an organized professional group such as a farmers' group or other groups that provide services to its members to reduce the cost of required resources. According to Adetunji et al. (2009), farmers cooperate & form a group in a community through which they assist each other in farming activities such as land clearing, ridge making, and harvesting crops, among others, on a rotational basis. This helps to strengthen the bond within a particular group, which is a valuable asset in community solidarity. It also enhances the team spirit based on the need to work together

Narayan & Cassidy (2001) identified labor contribution as an element of social capital. Individuals' decision to participate without being enforced in social activities such as attending ceremonies, providing support when the need arises and the level of trust in various connections are components of social capital. it is measured by the number of days that household members belonging to institutions claimed to have worked for their institutions. This indicates the total number of days worked by household members.

Cash contribution dimension

Aker (2007) identified the financial commitment of household's to their association as a dimension of social capital. It is one of the areas that emphasize the level of involvement in social connectivity. Financial commitment to any social group is an indicator of support for the existence of such a group or relationship. Aker posits that donation within a community denotes households' sense of kinship within the community which is not strongly associated with a household's level of wealth. According to her, the poorest household will donate to maintain their relationship within the community. In Ethiopia, individuals/neighbors donate and or render services towards social function to assist as well as foster friendship or relationships.

Meeting attendance index

Meeting attendance is a key indicator of participation. According to Baiyegunhi (2013), this index measures the average number of times someone from a household attended group meetings, normalized for the number of memberships of each household is computed. This is derived by summing up the attendance of household members at meetings and relating it to the number of scheduled meetings by their associations.

3. Theoretical and Conceptual Framework

The conceptual framework to examine the dimensions of social capital is developed considering the social capital literature of Baiyegunhi (2013), Aker (2007) and Narayan & Cassidy (2001). The conceptual framework of the study is developed as in figure 1.

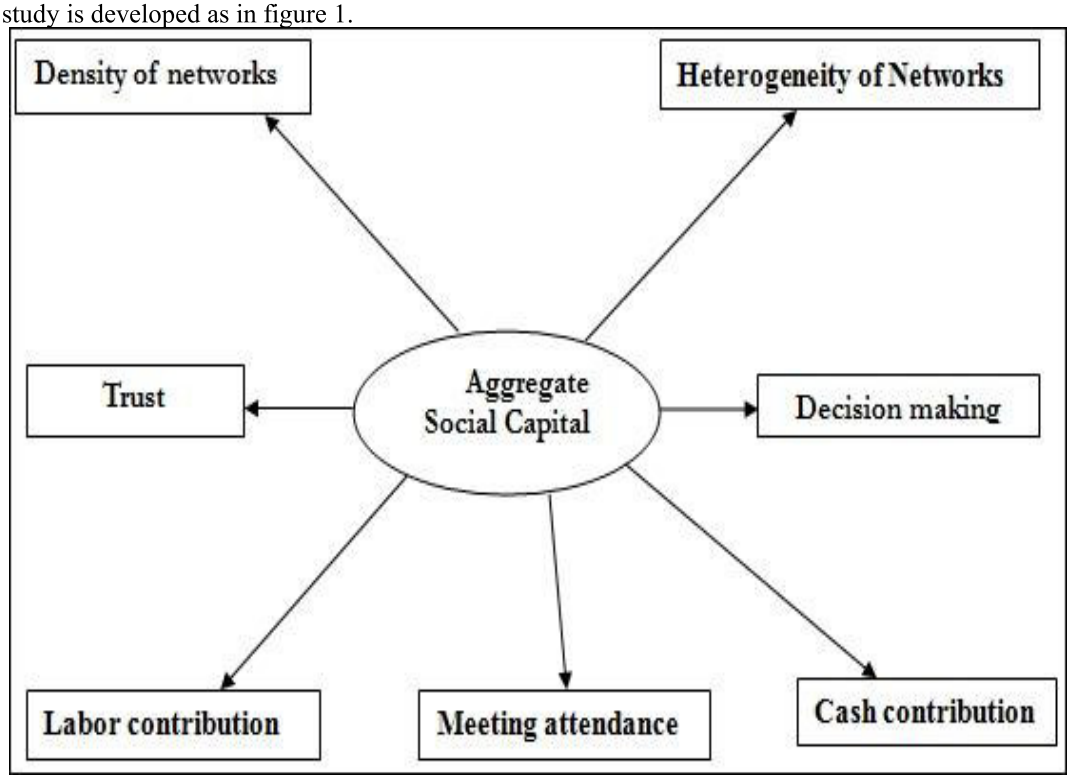

Figure 1: Conceptual Framework of the Study

The conceptual framework describes the linkage between the aggregate social capital and its dimensions.

4. Methodology

4.1. Research Design

This study employed a descriptive research design to examine the dimensions of social capital available to households; this design is used following Creswell (2013).

4.2. Data Type and Collection Techniques

Primary & secondary data were used in the current study. The primary data was gathered using a structured questionnaire. The primary data collected from each household includes Socioeconomic & demographics, and dimensions of social capital. The secondary data sources were from local level government officials, published and unpublished materials.

4.3. Sampling Technique and procedure

In this study to determine the sample size, a single proportion formula was used following Burgess (2014) and Khotari (2004) 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). Accordingly, the sample size for this study was 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 ≈ 385

The sampling frame for this study covers households in Agricultural Growth Program (AGP) targeted districts of Eastern Wollega Zone which is 43954 households. Therefore, it is possible to use the following correction formula for the final sample size determination.

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

$nf = \frac{385}{1+385/43954}$ = 381.6570≈ 382, by adding 10% (38) contingency for non-response rate, the sample size become 420 respondents. Later during data collection, the researcher extended the sample size from 420 to 490 feel that the inclusion of some kebeles out of the AGP targeted area within the AGP targeted District was necessary to increase the reliability of the study.

After determining sample size 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.

4.4. Data Analysis Tools

Descriptive statistical method is used to analyze the quantitative data. To identify the dimensions of social capital from the collected data an exploratory factor analysis (EFA) and Confirmatory Factor analysis techniques were applied. The indicators measured seven components of social capital: trust, heterogeneity, the density of membership, decision making, labor contribution, cash contribution, and meeting attendance.

4.5. Description of Variables

Demographic variables

Demographic variables used in this study include age, gender, marital status, education level, household size. The level of education of households 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 sum of family members.

Dimensions of social capital

Dimensions of social capital in this study comprise trust index, heterogeneity index, the density of membership, decision-making index, labor contribution, cash contribution, and meeting attendance index.

Trust is social capital dimension indexed from ten indicators: generalized trust, trust in neighborhoods, 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, same-sex, same age group, same educational 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

the meeting 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.

5. Result and Discussion

This part discusses the results of the study in three main sections: the details of demographic characteristics of respondents, social capital dimensions, and the result of factor analysis.

5.1. Description of demographic factors

The proposed sample size for this study is 490. Of this, 473 households were participated in the study making the response rate 96.53%. About 42.28 %(N=200) of the sample population is from the 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 83.09% males and 16.91% females. About 43.61% of the households fall between 31-40 years. The mean age of respondents was 41.53 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 mean year of education is 5.34 years. By marital status, the married respondents account for 85.41percent; single respondents were 4.4% and divorced respondents account for 10.15% of the total population studied. The average and maximum number of household sizes were 4 and 19 respectively, about 76.5percent of households reported between 1-4 household members. Only 1.27% of respondents reported the maximum household member which was above 13 household members. The highest household number in the study area is 19. For the details of information see table 1.

Table1: Demographic factors

Variables	Frequency	Mean	SD	Min.	Max.
District					
Guto Gida	155(32.77)				
Diga	200(42.28)				
Wayu-tuka	118(24.95)				
Gender					
Female	80(16.91)				
Male	393(83.09)				
Age (years)		41.53	10.54	21	80
Education (years)		5.34	5.12	0	18
Family size (numbers)		4.17	2.28	1	19
Marital status					
Single	21(4.44)				
Married	404(85.41)				
Divorced	48(10.15)				

Source: *Own computation from Field survey, 2021*

5.2. Description of Dimensions of Social Capital

The distributions of the social capital dimensions to households in the study area were displayed in table 2. The description was focused on the major seven dimensions of social capital including trust, the density of membership, heterogeneity, decision-making, meeting attendance, labor & cash contributions.

The average level of trust index is 67%, whereas 13% and 985 were minimum and maximum levels of trust index respectively. About 42.14% of the diversity of the network belonged to an average respondent. The minimum and maximum heterogeneity indexes in the study area were 3% and 90% respectively.

Concerning the density of membership index, an average is 38.25 percent, the minimum and maximum density of membership in the study area is 13.6% and 935 respectively. About 39% of participation in decision-making is owned by an average household. About 16.6% and 100% were the minima and maximum levels of participation in decision making respectively. The average meeting attendance is 70.7 percent. Also, an average of 1093.9 ETB is contributed annually by each household to various associations. Concerning labor contribution annually the average value of 23.04 man-days was contributed.

Table 2: Social Capital Dimensions

Social capital dimensions	Mean	SD	Min.	Max.
Trust index (%)	67.08	24.19	13	98
Heterogeneity Index (%)	42.14	22.53	3	90
The density of Membership (%)	38.25	9.97	13.63	93
Decision making Index (%)	39.03	18.28	16.66	100
Meeting attendance (%)	70.77	13.94	24.59	91.66
Labor contribution (man days)	23.04	10.58	5	47
Cash contribution (ETB)	1093.93	559.56	100	2500

***Source**: own computation from survey data, 2021*

5.3. Identification of Dimensions of Social Capital

Since social capital is a multidimensional construct it cannot be measured by a single indicator. In this study social capital is represented by seven dimensions and 43 indicators. The results of both exploratory and confirmatory factor analysis were presented below:

Exploratory factor analysis result

The analysis result of the data indicated that the overall KMO statistic was 0.73, which was sufficient and the KMO statistics of each variable is greater than 5%. The result of the screen test was not clear, as there were multiple breakpoints, at factors 4, 5, and 11, as shown in Figure 2.

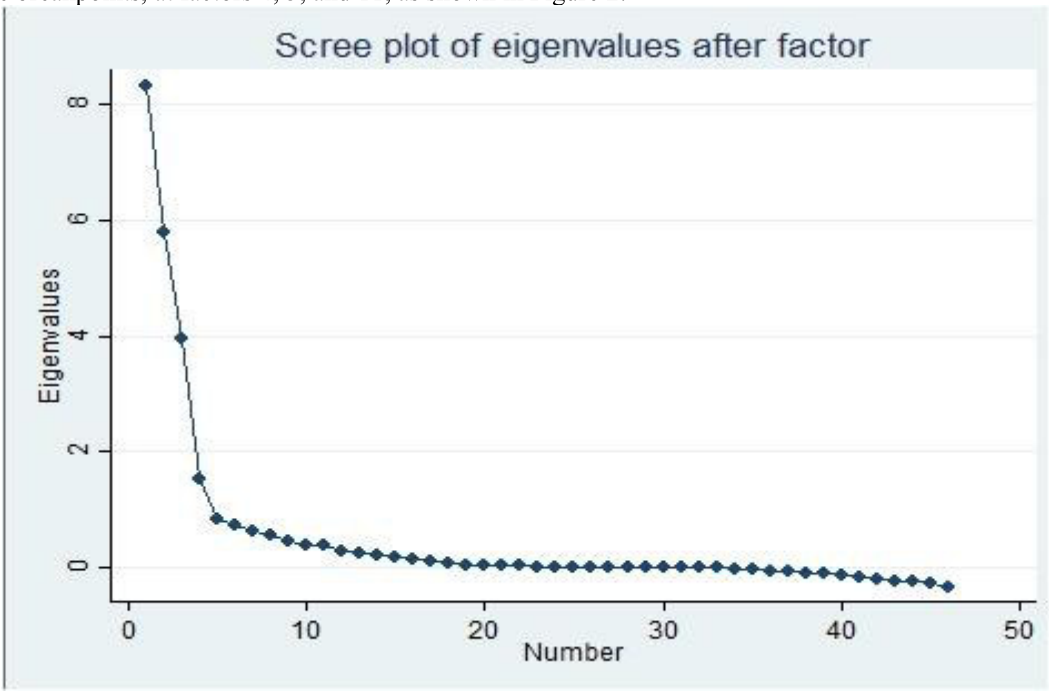

Figure 2: Scree plot of eigenvalue

Based on the rule of thumb of Eigenvalue greater than 1, only seven factors were retained by proportion criteria, which would result in a factor that explained the minimum of the variance. These suggested seven factors could be extracted. Therefore, seven factors were retained. The residual matrix of the factor indicates residuals were low, signifying there were no other factors. The retained seven factors' cumulative variance is 1.1615. Their preliminary Eigenvalues were 8.32753, 5.77384, 3.94289, 2.26489, 1.61853, 1.57086, and 1.45939. Each factor explained 40%, 21%, 19%, 10%, 5%, 3% and 2% of the variance. As explained below, the factors were interpretable and largely consistent with the dimensions used by other researchers. For detail see Table 2 below.

Table 3: Eigen values of factors

Factor	Eigen value	Difference	Proportion	Cumulative
Factor1	8.32753	2.55369	0.4015	0.4615
Factor2	5.77384	1.83095	0.2100	0.7815
Factor3	3.94289	2.67800	0.1905	1.0000
Factor4	2.2489	0.64636	0.1001	1.0701
Factor5	1.61853	0.04766	0.0543	1.1044
Factor6	1.57086	0.11147	0.0316	1.1360
Factor7	1.45939	0.05849	0.0255	1.1615
Factor8	0.40090	0.09800	0.0222	1.1837

Factor9	0.30290	0.06969	0.0168	1.2005
Factor10	0.23321	0.01173	0.0129	1.2134
Factor11	0.22148	0.08360	0.0123	1.2257
Factor12	0.13788	0.03854	0.0076	1.2333
Factor13	0.09934	0.03440	0.0055	1.2388
Factor14	0.06494	0.01184	0.0036	1.2424
Factor15	0.05310	0.01557	0.0029	1.2454
Factor16	0.03754	0.01900	0.0021	1.2474
Factor17	0.01854	0.00987	0.0010	1.2485
Factor18	0.00867	0.00774	0.0005	1.2490
Factor19	0.00092	0.00009	0.0001	1.2490
Factor20	0.00084	0.00062	0.0000	1.2490
Factor21	0.00022	0.00000	0.0000	1.2491
Factor22	0.00022	0.00000	0.0000	1.2491
Factor23	0.00022	0.00013	0.0000	1.2491
Factor24	0.00009	0.00587	0.0000	1.2491
Factor25	-0.00578	0.00258	-0.0003	1.2488
Factor26	-0.00836	0.00446	-0.0005	1.2483
Factor27	-0.01281	0.00376	-0.0007	1.2476
Factor28	0.01657	0.01475	-0.0009	1.2467
Factor29	-0.03132	0.01117	-0.0017	1.2449
Factor30	-0.04250	0.01945	-0.0024	1.2426
Factor31	-0.06195	0.02304	-0.0034	1.2392
Factor32	-0.08498	0.04333	-0.0047	1.2344
Factor33	-0.12831	0.01258	-0.0071	1.2273
Factor34	-0.14090	0.02769	-0.0078	1.2195
Factor35	-0.16858	0.01895	-0.0093	1.2102
Factor36	0.18753	0.02392	0.0104	1.1998
Factor37	-0.21146	0.03813	-0.0117	1.1881
Factor38	-0.24959	0.00092	-0.0138	1.1742
Factor39	0.25050	0.02550	-0.0139	1.1604
Factor40	-0.27600	0.05558	-0.0153	1.1451
Factor41	-0.33158	0.03906	-0.0184	1.1267
Factor42	-0.37063	0.03748	-0.0205	1.1061
Factor43	-0.40811	0.03167	-0.0226	1.0835

The result of factor loadings indicates an interesting pattern indicating no cross-loadings are suggesting a clear factor structure. The factor loadings show interpretable factors signifying seven dimensions of social capital. They are Trust, Heterogeneity, Diversity of networks, Decision making, Labor contribution, Cash contribution, and Meeting attendance. Table 4 below shows factors with loadings greater than 0.3, excluding those indicators with small loadings. The result indicated that 29 indicators of social capital were retained, and 14 items were removed due to low loadings.

Table 4: Factors with loadings greater than 3% for social capital indicators

Indicators	Trust	Heterogeneity	Density of membership	Decision making	Cash contribution	Labour contribution	Meeting attendance	Uniqueness
TR1	0.9962							0.70000
TR2	0.9962		0.734					0.6000
TR3	0.9963							0.7008
TR4	0.5962	0.89						0.68000
TR5	0.9953							0.8018
TR6	0.9962							0.70000
TR7	0.440							0.9371
TR8	0.6908							0.0127
DensM1			0.578					0.8179
DensM4			0.335					0.8834
DensM5			0.737					0.6660
DensM6			0.476					0.7884
DensM9			0.480					0.8162
DensM10			0.329					0.8532
DensM11			0.574					0.9623
DensM13			0.650					0.9597
DensM14			0.5082					0.6504
DensM16			0.6063					0.9891
DensM17			0.386					0.9291
Het1		0.8010	0.5796					0.8123
Het2		0.7935	0.5905					0.6100
Het4		0.6979						0.5805
Het5		0.7075						0.7619
Het9		0.7805						0.6305
Het10		0.6776						0.451
InsDMK				0.717				0.8629
LabC					0.3553			0.8605
CashC						0.508		0.8872
MeetAtt							0.395	0.9577

Source: *Computation from survey data, 2021*

The detailed explanations of indicators along their dimensions were presented below:

Trust Dimension

The first factor was represented with loadings from eight trust indicators. The loadings were high, especially for six indicators, suggesting a clear factor structure. Out of ten indicators of trust, two items i.e. feeling of safety during walking (TR9) and feeling of safety in public transportation (TR10) were ignored due to their low loadings. This suggests the trust variable is a good dimension of social capital represented by eight indicators in the study area.

Heterogeneity Dimension

The second factor was represented with loadings from the remaining six indicators of the diversity of networks. Four indicators relating to being a member of the same occupation (Het3), same-sex (Het6), same age group (Het7), and same educational level (Het8) were dropped due to low factor loadings. The indicators in this factor represent being a member of the same neighborhood, the same clan, the same income group, the same religion, the same belief, and the same ethnicity.

The density of membership Dimension

The third factor was represented with loadings of twelve indicators of the density of membership. These potential indicators of density of membership with high factor loading includes: Membership in Women association(DensM1), Parent-teachers association(DensM4), Religious group(DensM5), Neighbourhood group(DensM6), Environmental protection group(DensM9), Cooperative Association(DensM10), Agricultural production group(DensM11),Youth group Membership(DensM13), Political party(DensM14), Red-cross association(DensM15), Ekub association(DensM16) and membership in Edir association(DensM17). As a result of low factor loading seven indicators i.e. Membership in Health group (DensM2), Traders association (DensM3), Social service group (DensM7), Occupational/professional group (DensM8), Sports group (DensM12), Recreational group (DensM18) and membership in another group (DensM19) were removed.

Decision making Dimension

The fourth factor was represented with loadings of indicators of participation in decision-making. There was only one indicator for participation in decision-making in the data set, the factor had a high loading.

Labor contribution Dimension

The fifth factor was represented by the labor contribution of households to their association. This indicator was also found to have higher factor loading.

Cash contribution Dimension

The sixth factor identified was represented by the household's financial contribution to their association in Birr

(ETB).

Meeting attendance Dimension

The seventh factor was represented by the scheduled annual meeting participation of households in their association. This indicator was also found to have higher factor loading.

After identifying the potential indicators of dimensions of social capital and the formation of appropriate coding which was the same scale the correlation between dimensions of social capital was analyzed. The result indicates there is a strong correlation between dimensions of social capital. This indicates the interdependence of the dimensions of social capital, which suggests social capital is an aggregate of these identified dimensions. Therefore, in this study, an additive aggregate index of social capital was formed using identified 29 potential indicators of seven dimensions. For the detail see Table 5 below.

Table 5: Correlation Matrix of Social Capital Dimensions

	1	2	3	4	5	6	
1.TRindeXA4	1						
2.HetIndexA4	0.8433	1					
3.DensityMinA4	0.76323	0.55650	1				
4.InstDecMA4	0.94019	0.57700	0.69321	1			
5.LabConA4	0.5441	0.3474	0.5981	0.68210	1		
6.CashCindexA4	0.5602	0.86301	0.7838	0.39701	0.4814	1	
7.MeetatIndeA4	0.560	0.2782	0.6310	0.50012	0.64500	0.95020	1

Source: *Computation from survey data, 2021*

Confirmatory factor analysis (CFA) result

To evaluate whether the observed seven dimensions of social capital effectively measure a latent social capital variable CFA technique was performed. To identify the standardized CFA model, the variance of the latent variable (social capital) is set to 1, which means that its standard deviation is 1 as well. The estimation result shows that p-values for all of the factor loadings are below the typical cutoff of 5%, which shows the factor loadings are statistically significant, leading to accepting the alternative hypothesis & the rejection of the null hypotheses that the factor loadings are equal to zero.

The standardized factor loading for the trust, heterogeneity, density of membership, decision making, labor contribution, cash contribution, and meeting attendance variables were 0.93, 0.9, 0.87, 0.81, 0.77, 0.55, and 0.39 respectively. Indicating that relatively trust, heterogeneity and density of membership dimensions have strong factor loadings, meaning that a one standard deviation increase in Social Capital leads to a 0.93, 0.90, and 0.87 standard deviation increase in the response to the trust, heterogeneity, and density of membership questions. These three were the strongest factor loading of the seven dimensions; therefore, they are the best measure of social capital. The other factor loadings range from 0.39 to 0.81. The factor loadings for decision making, labor, and cash contribution were moderate. The weakest measure at the parameter level is meeting attendance. Therefore, except for meeting attendance, all other dimensions of social capital were identified as the best measures of social capital.

Concerning R^2 values trust variable has the largest R^2 (0.83) and the meeting attendance dimension has the lowest (0.22), highlighting that meeting attendance is not as good a measure of social capital as the other six. An interpretation of the R^2 for trust is that 83% of the variance in trust is explained by the latent variable social capital. The overall model level goodness of fit result i.e. chi-square value, $\chi 2$ (7) = 11.69, p = 0.63, is statistically not significant indicating the model reproduces the observed covariances among the seven dimensions well. The null hypothesis is that the model best fits. The p-value of 0.63 is greater than the 5% acceptable level, which means that the null hypothesis is accepted and the model best fits, meaning that the latent variable specified as social capital is strongly related to the indicators used to measure it.

The RMSEA, root mean squared error of approximation, is exceptionally low at 1%, and the probability that it is less than 5% in the population is very high at 0.982. Both the RMSEA value is less than the 8% cutoff and the p-value is above the 5% cutoff. Again, signifying a well-fitted model. The comparative fit index and the Tucker–Lewis index are CFI = 1.000 & TLI = 1.034 respectively which is high. The standardized root-mean-squared residual i.e. 0.026 is well below the cutoff of 8%. Finally, the coefficient of determination for the entire model is 0.78 which is high.

The researcher assessed the model by looking at the three levels of fit jointly. Model-level fit is extremely good. The equation level fit is very good for three dimensions; moderate for others, but not as good for the meeting attendance item. After all, at the parameter level, all factor loadings are statistically significant and at least reasonable in extent. Therefore, jointly this model of social capital fits well, with the recognition that the items are not equally good measures of social capital. For detail see Tables 6, 7, and 8.

Table 6: Standardized Factor Loadings

Standardized	**Coefficient**			**OIM**		
		Std. Err.	**z**	**P>z**	**[95%**	**Conf.**

							Interval]
Measurement							
TRindexA4<-	SocialCapital	0.93801	42.93	0.000	0.030833	2.584369	2.831651
	_cons						
HetIndexA4<-	SocialCapital						
	_cons	0.9551488	0.3812315	-4.07	0.000	2.298688	0.804288
		1.501292	0.0582828	25.76	0.000	1.38706	1.615524
DensityMindexA4<-							
	SocialCapital	0.8741026	0.1303984	3.55	0.000	-0.7186787	0.2075265
	_cons	1.268734	0.0296935	42.73	0.000	1.210536	1.326932
InstDecMindexA4<-							
	SocialCapital	0.844711	0.2448372	3.98	0.000	-1.454343	0.494599
	_cons	1.330749	0.0545497	24.40	0.000	1.223834	1.437665
LabConA4<-	SocialCapital						
	_cons	0.7734449	0.2031771	3.09	0.002	-1.025955	0.229515
		1.658915	0.0565518	29.33	0.000	1.548075	1.769754
CashCindexA4<-							
	SocialCapital	0.556306	0.221994	3.46	0.001	-1.202431	0.3322303
	_cons	1.45478	0.0544453	26.72	0.000	1.34807	1.561491
MeetatIndexA4<-							
	SocialCapital	0.395003	0.1497919	2.39	0.017	-.651087	0.0639136
	_cons	2.945736	0.0451909	65.18	0.000	2.857164	3.034309
Var(e.TRindexA4)		1.342813	0.1105157			1.142774	1.577869
Var(e.HetIndexA4)		0.8397827	0.1154397			0.6414423	1.099452
Var(e.DensityMindexA4)		0.2989148	0.0243389			0.2548232	0.3506354
Var(e.InstDecMindexA4)		0.9642751	0.0843904			0.8122811	1.14471
Var(e.LabConA4)		1.159938	0.0886448			0.9985828	1.347365
Var(e.CashCindexA4)		1.031037	0.0815877			0.8829118	1.204013
Var(e.MeetatIndexA4)		0.7651267	0 .056525			0.6619866	0.8843365
Var(SocialCapital)		0.1972529	0.0763768			0.0923498	0.4213187

LR test of model vs. saturated: chi2(7) = 11.69, Prob > chi2 = 0.6309

Source: *Computation from survey data, 2021*

Table 7: Equation level goodness of fit

Dependent Variables	Variance Fitted	Predicted	Residual	R-squared	mc	mc2
Observed						
TRindexA4	1.540066	0.1972529	1.342813	0.83808	0.3578838	0.1280808
HetIndexA4	1.314593	0.4748105	0.8397827	0.6611843	0.6009861	0.3611843
DensityMinA4	.3412184	0.0423036	0.2989148	0.5239782	0.3521054	0.1239782
InstDecMinA4	1.151585	0.1873101	0.9642751	0.626542	0.4033041	0.1626542
LabConA4	1.237665	0.0777277	1.159938	0.628019	0.250603	0.0628019
CashCindexA4	1.147179	0.1161418	1.031037	0.400012	0.3181842	0.1012412
MeetatIndexA4	0.360121	0.023700	1.005100	0.2214	0.053111	0.002777
Overall				**0.76534**		

Table 8: Overall goodness of fit

Fit-statistic	Description of Value
Likelihood ratio	
chi2_ms(14)	11.694 model vs. saturated
p > chi2	0.631
Population error	
RMSEA	0.000 Root mean squared error of approximation
90% CI, lower bound	0.000
upper bound	0.042
pclose	0.982 Probability RMSEA <= 0.05
Baseline comparison	
CFI	1.000 Comparative fit index
TLI	1.034 Tucker-Lewis index

Size of residuals		
SRMR	0.026	Standardized root mean squared residual
CD	0.78	Coefficient of determination

Source: *Computation from survey data, 2021*

6. Conclusion and Recommendation

The main aim of this paper is to identify the available dimensions of social capital to households. Methodologically the study used descriptive research design. The data were gathered through a community-based cross-sectional survey conducted among randomly selected 490 rural households from Agricultural Growth Program (AGP) targeted districts using a multi-stage sampling technique. Missing data were dealt with multiple imputation techniques. Exploratory and confirmatory factor analysis techniques were applied to identify the dimensions of social capital available to households

The finding from exploratory and confirmatory factor analysis revealed that in the study area 29 potential indicators and seven dimensions potential dimensions of social capital i.e. trust, heterogeneity, the density of membership, decision making, labor contribution, cash contribution, and meeting attendance.

The current study concludes that the identification of available dimensions of social capital is crucial for the government to closely support local communities and to set strategies to promote socio economic transformation. Therefore, the government should take a measure that clearly identifies and promotes available social capital dimensions to farming households.

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