An Analysis of Factors Affecting individual Social Capital Investment in Regional Sri Lanka

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Abstract

This study focused on the determinants that affect an individual's investment of social capital by employing a sample of 348 individuals living in different regions in Sri Lanka. Three proxy variables were included for various aspects of social capital. This study revealed that independent variables of the model, such as gender of the household head and the living village type, are statistically significant regarding memberships in any community association. Further, the age and duration in the village were statistically significant. Simultaneously, the rest of the independent variables, such as religion, occupation, marital status, education level, household size, worker-consumers ratio, and distance to public transport, were not statistically significant factors regarding memberships in any community association in regional Sri Lanka. The second multiple logistic regression analysis of participation in economically-oriented social associations in regional society revealed that independent variables of the model, age, gender, religion, and marital status, were statistically significant. The findings explained that older people were less likely to be members of economically-oriented social associations in local society. The results indicate that in the Sri Lankan regional context, a male household head is more likely to be a member of an economically-oriented social association than a female household head. Simultaneously,

the rest of the variables, such as occupation status, education, household size, worker-consumers ratio, duration in the village, distance to public transport, and village-type, were not statistically significant regarding participation economically-oriented social associations in regional society. The results of multiple logistic empirical regression of members in community welfare associations reveal that age, marital status, household size, and duration in the village are statistically significant. In contrast, gender, religion, education level, worker consumer ratio, distance to public transport, and village-type were not statistically significant. This study suggested that business development programs should be more oriented towards the younger generation. Also, the results recommended that the regional development programs should be more oriented to married farmers who have been living in the village for an extended period.

Keywords: Economically-oriented association, Logistic model, Social capital, Sri Lanka

1. Introduction

Social capital, as a critical term in general and as a tool for development studies, receives considerable attention, creating excitement (Lin et al., 2016; Sułkowski, 2017; Kuruppuge et al., 2017; Rieckmann et al., 2018; Yeşil and Dogan, 2019; Naradda Gamage, 2020). The concept is identified for the groups, networks, norms, and trust available for people for productive purposes (Grootaert et al., 2004). As discussed by Szreter and Woolcock (2004), social capital refers to the social relationship between people that enables a productive outcome. Encouraging and developing social capital in local development intervention is growing as an essential approach in the community and local development in developing countries (Sseguya et al., 2009). Thus, social capital is recognized as a significant asset for

regional development.

Social capital scholars are annoyed to capture some intangible powers in the networking process. They have mainly focused on three dimensions in defining the social capital concept, such as Network, Social relationship and networks, and social norms, i.e., the quality of social participation in civic society. Social capital is accepted as a multi-dimensional concept. The observed different aspects of social capital are the trust (Welsh & Pringle, 2001), social interaction (Collier, 1998), network resources (Kilpatrick, 2000), rules and norms (Coleman, 1988), everyday sociability, and neighborhood connection (Narayan & Cassidy, 2001). Putnam et al. (1993) documented that social capital refers to a feature of social organization, such as trust, norms, and networks that can improve society's efficiency. However, there is no single well-known definition for social capital.

Social interaction elements can be divided into two subsections as structural perspective social capital and cognitive perspective social capital regarding the social capital's theoretical base (Lin, 2008; Beard 2007; Akhavan and Hosseini, 2016). Structural social capital is formal and informal networks, which mainly facilitate social interaction. The cognitive social capital is understood as influencing the people to act in a socially beneficial way, which is seen in three dimensions: general trust, institutional trust, and norms. Sabatini (2006) documented four types of social capital, i.e., bonding social capital, bridging social capital, linking social capital, and a formal network of political parties. Focussing on the unified theoretical approach, lately, Lollo (2012) has proposed linking, bridging, bonding, and identifying social capital. This study follows the definition given by Putnam (2001); 'Networks together with shared norms, values, and understandings that facilitate cooperation

within or among groups.' Four social capital conceptualization approaches are available in the literature as communitarian, network, institutional, and synergy approaches (Woolcook & Narayan, 2000).

The perspective of social capital can be divided into network perspective and structural perspective (Claridge, 2013). The network perspective approach has been acknowledged as an advantage that follows via social networks rather than network structure (Szreter & Woolcock, 2004). Considering this approach, Claridge (2013) pointed out three types of social capital: bonding, bridging, and linking social capital. However, Gittell and Vidal (1998) contributed to developing the bonding and bridging division, and they could arrange for a critical lens in creating social relationship after sound returning to the Theory of Strength of weak ties of Granovetter (1973). Bonding social capital is described as horizontal ties between individuals within the same social group that generates a relatively high network closure (Claridge, 2013).

Woolcock and Narayan (2000) explained that social networks create advantages and disadvantages to the members, discussed in the economic externalities concept. Katungi et al. (2007) identified information and trust as externalities of the social networks. Social capital is identical with social and economic networks in the community that facilitate the improvement of human well-being at the household level and community level through various socio-economic channels as discussed in the economic mechanism of the social capital.

Meanwhile, some researchers have identified the social network's shortcomings. They discussed it as negative externalities of the social capital (Claridge, 2004). Thus, individuals may decide on investing their resources in social capital, comparing the benefits

and costs of participation in any social network (Katungi et al., 2007), which is acceptable human behavior. Social capital refers to a social organization feature, such as trust, norms, and networks that can develop society's efficiency. In this context, it is confirmed that scholars have addressed most social and cultural aspects related to social capital in detail in developed countries.

Nevertheless, the Economic aspects of social capital investment are not addressed adequately, especially in developing economies. This study attempts to develop conceptual frameworks by explaining how individuals decide to invest their resources in various social and economic organizations. Also, the current analysis expects to examine the socio-economic determinants of social capital in the local community in regional Sri Lanka.

The study is organized as follows: Section 2 provides the theoretical background of the study, Section 3 presents the literature review, Sections 4 and 5 present material and methods, and results and discussion, respectively, and Section 6 provides the conclusion of the study.

2. Theoretical Background of the Study

The social exchange theory views exchange as a social behavior that may result in economic and social outcomes (Lambe et al., 2001). An individual attempts to receive fair returns for his expenditures, which is possible to observe in social exchanges everywhere, not only in the marketplace but also in other social relations such as friendships (Burns, 1973). In economics, utility is a measure of preferences over some goods or something that satisfies individual wants. Thus, an individual utility can be construed as the value of a utility function. It is expected from a human's behavior that an individual joins the social network

(bonding or bridging) if there is a satisfactory level of net benefits. Figure 1 presents the conceptual model of individual decision to invest the resources in social capital.

Figure 1: A conceptual framework for studying individual decision to join social networks
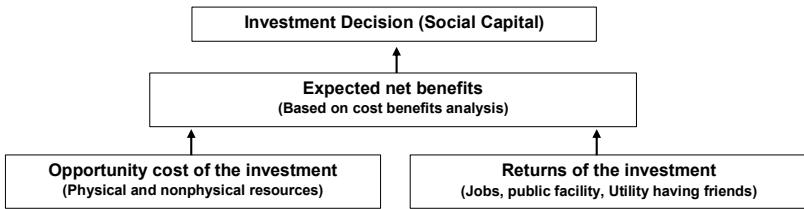
The previous literature cites some theoretical frameworks explaining how individuals decide to invest their resources in various social capital types (Alesina & LaFerrara, 2000; DiPasquale & Glaeser, 1999; Glaeser et al., 2000). This analysis's theoretical framework is developed by following prior works explained in the literature (Katungi et al., 2007; Yueh, 2001; Behera, 2006). In line with these arguments, the untaken conceptual framework below can be presented in terms of the following theoretical economic explanation:

As discussed earlier, individual resources investment happens in a different aspect of social capital as a cost-benefit decision. Individuals consider the total expenditure on the social relation regarding physical, nonphysical, and time, and the current value of future expects economic and non-economic benefits, which may be economic externalities associated with the social interaction (Yueh, 2001). An individual *(i)* who must decide whether to participate in social networks will partake if there are positive net benefits of joining a social organization. According to Utility theory, EU_{ik}^a denotes the expected total utility from

investing in an aspect of social capital *(k)*, and EU_{ik}^n denotes the expected total utility from not investing in the aspect of social capital *(k)*. Hence, individual resource investment decision can be presented as,

$$EU_{ik}^a > EU_{ik}^n$$

Expected utility (EU_{ik}^a) from investing in an aspect of social capital *(k)* is determined by the linear function of observed factors (Z_k) and unobserved factors (e_k).

$$EU_{ik}^a = \beta Z_k + e_k$$

Observed factors (Z_k) can be divided into two as individual characteristics/socio-economic (IC) and community characteristics (CC). Thus, the observed determinant of social capital investment linear function can be written as,

$$Z_K = f(IC, CC)$$

Therefore, the individual utility function that underlines the decision to join a social network can be expended as,

$$EU_{ik}^a = \beta_I(IC, CC) + e_k$$

There are two conditions to be completed in a positive decision to join a social network k. The first one is the total utility function:

$$\beta_i\,(IC,CC) + e_k > 0$$

Second, whether the social network's willingness of acceptance in new memberships.

Both developed and developing countries have some eligibility reactions for joining bridging social networks. However, this analysis considers that there is no eligibility reaction for joining a social network or organization.

3. Literature Review

The individual cost-benefit ratio of participation in local development social networks is significant (Weinberger & Juttng, 2001). Empirical research reveals different socio-economic factors influencing household's decision to participate in social networks in the local community and at national levels (Kimutai & Chepchumba, 2016; Parts, 2013; Katungi et al., 2007; Kaasa & Prts, 2007; Agyapong et al., 2017).

Weinberger (2000) stated that people's motivation to join different types of social networks could be divided into two sections as *internal determining factors* and *external determining factors*. Meanwhile, Perkins et al. (1996) pointed out that factors affecting an individual's decision in joining to a local organization depend on social, economic, and environmental aspects. However, Parts (2013) stated that social capital determinants are separated into two main groups as psychological and socio-economic characteristics of individuals and contextual or systemic factors at the local level. Parts included factors such as income, social status, education, and personal experience into the first leading group while factors such as overall development level, quality of institutions, patterns of cooperation, and trust into systematic factors at the local level. At the individual level, local social network participation is influenced by a varied range of socio-economic and contextual factors. Among them, education and income factor are the most influential (Parts, 2007).

Some individual characteristics recognized as key influential determinants of social capital include age, gender, education, social status, and household wealth and income. Evidence proves that an individual's age is a more influential factor in the decision to participate in local social networks (Putnam, 2000; Haddad & Maluccio, 2003; Glaeser et al., 2002). Gezinski

(2011) documented that women's age is positively associated with some aspects of social capital. It means that older people are more likely to bond social relations, bridge social relations, and value sharing. Besides, some social relations aspects, such as support giving and support received from friends and family members and age, are negatively associated with social capital.

In an analysis by Glaeser et al. (2002), based on their study on an economical approach to social capital, they tested the implication of the economic model of individual investment in social capital by employing organization membership as a proxy for the social capital. They observed an inverted u-shaped empirical relationship between age and social capital, while Sseguya (2009) identified age as a significant determinant in the participation of local food security groups in southern Uganda. The empirical evidence indicates older people are more likely to join community nets than young people. Although age seems to be a significant demographic factor in influencing social capital, it is less studied empirically.

Empirical evidence signifies some cultural aspects that determine and influence the community in participating in social networks in rural developing society. Prior literature suggested that the gender of the head of the household may be a critical factor in the stock of social interaction held by the household (Gugerty & Kremer, 2002). Maluccio et al. (2003) pointed out that female-headed households may be incapable of participating in the community and other social networks that require various types of contributions, while in the rural developing societies, the female is more likely to join with a higher degree of cooperation in community organization (Molinas, 1998). This provides only a little evidence to examine the influence of gender as a determinant of social capital.

Among the individual characteristics, another significant determinant is the gender of the household head. However, as per the prior literature, mixed results and gender may create differences in preferences and barriers to the social capital formation, such as high opportunity cost of time (Katungi et al., 2007). Christoforou (2005) reports that women are less likely to participate in formal social networks than men, while women are more likely to participate in the family-based bonding social networks.

Evidence proves that household income is a significant determinant of household perceived social capital. Some empirical evidence suggested that higher-level income is expected to be positive and is a highly significant determinant of participation in community social networks (Helliwell & Putnam, 1999; Knack & Keefer, 1997). Sarpong (2011) documented that in Ghana, farmers' income levels positively affect participation in the local farmer organizations. However, La Ferrara (2002) observed that individuals with a high income are less likely to join social networks due to budget constraints since resource investing social capital has an opportunity cost. On the other hand, to lead a successful life in the community, wealthier households may be willing to participate in social networks (Alesina & La Ferrara, 2002). Meantime, some evidence shows that poor households reported a high opportunity cost in joining social networks (Behera & Engel, 2006).

In analyzing the factors influencing individuals' participation in the social organization, education level may be identified as a critical determinant of social capital. There are many ways in which the education level can influence participation in social networks. Helliwell and Putnam (1999) pointed out that educated individuals are highly confident in managing

a group and presenting their ideas to a group. Thus, they may be more likely to join social organizations to receive positive benefits more successfully. Consequently, higher education is linked to higher opportunity costs, and a negative relationship between education level and community participation may be expected. The perceived level of social capital of a household or an individual is identified as an endogenous variable, which depends not only on the individual's factor but also the community and environmental characteristics. This means that village-level factors may also influence a different dimension of social capital because the expected utility from social capital can depend on community-level factors. Some prior empirical evidence suggests that village-level determinants influence the community in social networks' participation (Charles & Kline, 2002; Costa & Kahn, 2003; Alesina & La Ferrara, 2002; Asadullah, 2016).

Alesina and La Ferrara (2002), provide an econometric social capital investment model. Although they focus on specific aspects of social capital, the finding is crucial to understand the influencing community factors of social capital. After controlling several individual characteristics, these researchers found that participation in social activities is considerably lower in more unequal and in a more racially fragmented society. Further evidence proves that low-level social capital for individuals is associated with systemic factors at the community level, such as community heterogeneity, social discrimination, and lack of economic success, which were the local level factors in determining social capital.

Costa and Kahn (2003) documented that community characteristics such as race and income heterogeneity are influential factors in determining non-church memberships.

Miquel et al. (2015) identified that culture is a significant determinant of the effectiveness of formal democratic institutions in society. Besides, findings reveal that generalized trust enhances the provision of village public goods. Individuals can invest their resources in the local community to improve the community's level by engaging in various types of social interactions. Dipasquale and Glaeser (1999) observed that homeowners are more likely to invest in social capital because homeownership makes barriers to their mobility.

4. Materials and Methods
4.1 Data
This study focused on the determinants that affect an individuals' investment of social capital by employing a sample of 348 individuals living in different regions of Sri Lanka. Under the multisampling strategy, a five-stage sampling procedure was used to select the study population and samples. Multi-stage sampling has been identified as an extension of cluster sampling (Shimizu, 2005).

A questionnaire was used in this study as the primary field data collection method. A team of six assessors, who were graduates experienced in field data collection, conducted the field survey within three months, between May to July 2017. Before starting the survey activities, the field assessors participated in a one-day training program on survey research conducted by the principal researcher. The questionnaire was pre-tested in Dambulla divisional secretary area over a week after completing the training workshop.

4.2 Econometric Model Specification

Logistic regression helps to model the outcome of a categorical dependent variable (Czepiel, 2001). The Logistic regression model is a nonlinear model used whenever the research study's dependent variable in binary response variable can only proceed one out of two possible outcomes. For individuals' decision to participate in the social organization, the possible response is either participated or otherwise. Thus, a binary logistic model was chosen as it is considered the most appropriate and straightforward empirical model in this analysis. Ronald and Yates (1938) have proposed the logit link for a regression model with a binary variable, and Berkson (1944) has reported the early action of this model. The logistic model concept is based on Bernoulli and binomial distribution (Adem et al., 2012), which estimate the probability of the dependent variable to be one. This is the probability where some events happen. The Bernoulli distribution can be summarised in terms of econometric model specification, considering the outcome variable (y_i) of this analysis. Bernoulli distribution has a response variable with only two results. In this analysis, it is necessary to estimate the decisions to participate in the social organization.

$$y_i = \begin{cases} 1 & if\ the\ i^{th}\ individual\ is\ investing\ social\ capital \\ 0 & otherwise \end{cases}$$

y_i is the number of individuals investing in social capital in the community, which is considered to be dependent on socio-economic characteristics of household community-level factors and expected gains from participation, and thus, y_i is considered as a random variable. y_i can take values 1 and 0 with probabilities π_i and $1-\pi_i$ respectively, and y_i is a Bernoulli distribution with parameters π_i and n_i:

$$y_i \sim B(n_i,\ \pi_i)$$

The Bernoulli distribution can be written in a compact form as,

$$P(Y_i = y_i) = \pi_i^{y_i}(1 - \pi_i)^{1-y_i} \tag{1}$$

The probability function of Y_i is given by the following equation:

$$P\{Y_i = y_i\} = \begin{bmatrix} n_i \\ y_i \end{bmatrix} \pi_i^{y_i}(1 - \pi_i)^{n_i-y_i} \tag{2}$$

Where $y_i = 0, 1 \ldots n$, and $\pi_i^{yi} (1-\pi_i)^{1-yi}$ is the probability of resource investment in social capital, and n_i-y_i is the probability of not investing in social capital/community organization. Equations (3) and (4) gives the mean and variance of Y_i, respectively.

$$E(Y_i) = n_i\pi_i \tag{3}$$

$$var(Y_i) = n_i\pi_i(1 - \pi_i) \tag{4}$$

It is essential to consider the logit transformation. The linear probability model can be presented as,

$$\pi_i = x_i, \beta, \tag{5}$$

The probabilities depend on a vector of the observed covariate X_i and β, which represents the vector of the regression coefficient. As the model is estimated using the ordinary least square method, it transforms the probability to remove the range restriction in the following two steps. The first step is moving from probability to the odds,

$$odds = \frac{\pi_i}{1-\pi_i} \tag{6}$$

The second step is taking the logarithms,

$$logit(\pi_i) = log\frac{\pi_i}{1-\pi_i} \tag{7}$$

Now, it can define the multiple logistic regression models. In this analysis, the independent binary variable was used to invest resources in the social capital or not investing in social capital as an individual decision. The study has k observations, y_1, y_2)... y_k and i^{th} observation can be treated as a random variable Y_i. It is assumed that Y_i has a binomial distribution. The logistic model can be expressed in its simplest form with the following:

$$P = \frac{1}{1+e^{-z}} \tag{8}$$

Where P is the probability of social capital investment occurrence that varies from 0 to 1, and z is the linear logistic model, which varies from $-\infty$ to $+\infty$ and expressed as:

$$Z = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 ... + \beta_k X_k \tag{9}$$

Equation 9 can be re-written in the following form:

$$Z = \alpha + \Sigma \beta_i X_i \tag{10}$$

Where α is the intercept of the model, β_i (i = 1, 2, 3... n) are the estimated slope coefficients of the logistic regression, and X_i (i = 1, 2, 3... n) represent the independent variables of this study. Thus, the logistic model for social capital investment decision can be represented as,

$$P = \frac{1}{1+e^{-\alpha + \Sigma \beta_i X_i}} \tag{11}$$

Thus, the log of odds (logit) is presented in Eq. 12

$$log\left(\frac{p}{1-p}\right) = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 ... \beta_k X_K \tag{12}$$

The Logistic regression is a generalized linear model with binomial errors and link logit (Rodriguez, 2007). Instead of using the least-square method for best fit, it procedures the maximum likelihood estimation (Pradhan, 2010).

There are two types of empirical approaches on social capital; a cognitive dimension in the form of trust and a structural dimension in the form of social networks (Glaeser et al., 2002). Analysis of this section focuses on examining the factors that affect the social capital by employing the network's second approach. Thus, the author uses the responses to *community associations' membership* questions from the survey conducted in regional Sri Lanka.

Social capital in this respect is identical with any social network and economic-oriented social associations to get information regarding bonding social capital and bridging social capital. Memberships in economic-oriented social associations are considered bridging social networks in the regional society in this study. The logistic regression approach is employed to examine and identify the socio-economic factors influencing households' participation in both social networks at the community level. Because social networks participation decision be a dichotomous choice in terms of response, a variable can only take one out of two possible outcomes. The outcome is either participation or non-participation. The potential outcome is either household-investing in social capital (Y=1) or otherwise (Y=0). The Logistic empirical results provide the odds ratio, which helps identify the strength and direction between the outcome variable and explanatory variables (Cox, 1958; Hosmer & Lemeshow, 2000; Rodriguez, 2007). The Goodness-of-fit statistics of the empirical logistic regression were assessed by employing

different statistics and tests such as the Likelihood ratio test, Pseudo- R2s, and Hosmer and Lemeshow goodness test.

4.3 Measurement Variables

The variable in the empirical logistic regression was selected based on theoretical schoolwork and existing knowledge in the local fields. The author included three social capital-dependent variables and eleven (11) independent variables into the empirical model, which may explain the determinants of social capital in the regional society of Sri Lanka. These variables are presented in Tables 1 and 2, respectively.

Table 1: Social capital dependent variables

Variable	Variable definition
Membership in community associations (MEA)	1, if the household head is a member of community associations, and 0 otherwise
Membership in economic-oriented associations (MEA)	1, if the household head is a group member of the economically-oriented associations (saving/credit/business/production), and 0 otherwise
Membership in welfare associations (MSA)	1, if the household head is a group member of social welfare associations (welfare/religion/cultural/sport), and 0 otherwise

Individuals' characteristics, household socio-economic factors, and community characteristics in the particular villages were included in the empirical model as independent variables, based on existing literature and knowledge in the fields. Thus, this study had different determinants of social capital based on literature as follows: Katungi et al. (2007), Parts (2013), Glaeser et al. (2002), Behera and Engel (2006), and Kaasa and Parts (2007), among others, and the field knowledge.

Table 2: Variables included in the analysis and the expected effects

Variable	Definition	Expected sign
Age	Age of the household head (years)	+/-
Gender	Gender of the household head	+/-
	1, if household head is a male, and 0 otherwise	
Religion	The religion of the household head	+/-
	1, if a Buddhist, and 0 otherwise	
Employment	Employment status of the household head	+/-
	1, if a farmer (self-employed), and 0 otherwise	
Marital status	1, if the household head is married, and 0 otherwise	+/-
Education	The education level of the household head: 1, if the head has a degree or a diploma, and 0 otherwise	+
Household size	Total number of household members	+
Duration in the village	Number of years the household is living in this village. 1, if more than 10 years, and 0 otherwise	+
Public transport facility	Distance in kilometers from the house to the nearest public transport: 1, if less than 2 km, and 0 otherwise	+/-
Workers to Consumers ratio	The ratio of workers to consumers in the household (members aged between 15 and 65/ members aged 15 and below + members aged above 64)	+/-
Village status	1, If it is a traditional farm village, and 0 otherwise	+/-

Table 2 presents the independent variables. The independent variables included in the empirical model hypothetically may have a positive or a negative effect on different social capital dimensions depending on the socio-economic situation of the regional society, as individual characteristics, household characteristics, and community-level characteristics.

5. Results and Discussion

This section presents the empirical results on socio-economic determinants of social capital in the regional society in Sri Lanka, in association with four main analytical subtopics, i.e., sample descriptive statistics, determinants of individual's participation in any type of social association and networks, determinants of individuals participation in economic-oriented community associations, and determinants of individuals participation in community welfare association.

5.1 Descriptive statistics of the sample

Individuals' socio-economic characteristics, household variables, and community characteristics of the sample were examined using the descriptive analysis method. The analysis revealed that most respondents reside in non-traditional farm villages in regional Sri Lanka, while 29.6 percent of respondents are from traditional agricultural villages. Regarding the respondents' age, 81.3 percent of household heads are 60-years old or less, and the age range is 21 to 85 years. A significant majority of household heads were males, representing 87.4 percent of the total sample. However, the female is employed and is the head of the family in 12.6 percent of the households in the study area. Considering the ethnic group and religious status, more than 84.5 percent of respondents were Sinhalese (Sri Lankan majority), and 75.3 percent were Buddhists. Most household heads engaged in

agricultural activities as the main occupation, and a significant proportion of respondents were married, representing 90.2 percent of the total sample of the study.

Descriptive statistics indicated that a significant majority of respondents had obtained secondary or above education level. The mean monthly income of respondents was Rs. 15,496.84 (std. deviation: 14920.27). The respondents' minimum income was recorded as Rs. 1000.00, and the maximum income was reported as Rs. 90000.00 in the field investigation in this study area/regional society in Sri Lanka. In terms of memberships in community associations, 73 percent of total respondents are participating and have membership in a/any community association in the regional society. A 25.3 percent of respondents have memberships in economically-oriented community associations identified as savings, credit, business-oriented, or production-oriented social associations or networks in the local society. However, 74.7 percent of household heads are not engaged with such kinds of social networks. Regarding memberships in community welfare associations, 66.4 percent of total respondents participate in the regional society.

5.2 Estimation Results

As explained in the analytical framework of the current chapter, a Binary logistic regression model was employed to examine the individual characteristics, household factors, and community-level determinants of three forms of social capital: membership in any community association, membership in economically-oriented associations, and membership in welfare associations in the local community in regional Sri Lanka. Before the Logistic regression analysis, multicollinearity between the models' independent variables was verified to avoid uncertainty about

the results. Leech et al. (2005) recommended that the linear regression between categorical independent and dependent variables should be tested for the Multicollinearity problem before moving to logistic regression since this system have no provision to overcome the Multicollinearity problem.

The collinearity statistics explained that the value of variance inflated factor (VIF) is less than 1.253 in all independent characteristics and variables used for the logistic models. The values of tolerance of the independent variables are less than 0.980, and the mean value of VIF is 1.219. These results clarified that no multicollinearity problem exists among the independent variables of the models.

Multiple logistic regression models were employed to recognize the likelihood factors of a household head as a member of any community association in regional Sri Lanka. Table 3 presents the results of logistic regression analysis. According to the results of the logistic regression of participation of any community associations of the society, the overall percentage of the baseline model is accurate as its prediction is correct (about 73%) and statistically significant ($p<0.00$). The Omnibus test results established the empirical model is statistically significant ($P <0.00$). In this model, the P-value for Hosmer and Lemeshow goodness-of-fit test chi-square value is 7.199, and the p-value is 0.515 (>0.05); thus, it cannot reject the null hypothesis. It established that the empirical model is a good fit for the field survey data, and the model describes 14 percent of the variation. The overall prediction is correct and is about 75 percent.

According to Table 3, the intercept of the regression among the model's independent variables, such as gender of the household head and living village type, are statistically significant at the 5% level. Besides, the age and duration in the village were statistically significant at the 10% level, while the rest of the independent variables were not statistically significant factors to explain the model. If the gender of the household head is positive, it indicates that the household head is male and is more likely to join any community association in regional society than a female household head. The odds ratio for the gender of the household head is 5.405, which explains that a male head is 5.405 times more likely than a female household head to join community associations, even after controlling the other independent variable effects. Christoforou (2005) also found that women were less likely for community participation in the formal network. In Sri Lankan regional context, social barriers may interrupt the female household head to join formal community associations. Village type is another significant predictor. People living in a traditional farm village are less likely to belong to community associations in regional society than persons residing in a non-tradition farm village in regional Sri Lanka.

Table 3: The result of multiple logistic regression

Variables	β	S.E	Wald Statistics	Exp (β)
Age	0.015**	0.010	1.975	1.015
Gender	1.687*	0.350	23.286	5.405
Religion	-0.192	0.307	0.389	0.826
Occupation	-0.076	0.289	0.068	0.927
Marital status	0.398	0.432	0.852	1.489
Education level	-0.195	0.289	0.453	0.823
Household size	0.090	0.103	0.764	1.094
Worker-consumers ratio	-0.016	0.118	0.020	0.984
Duration in the village	0.524**	0.324	2.604	1.688
Distance to public transport	-0.116	0.308	0.143	0.890
Village type	-0.598*	0.280	4.548	0.550
Constant	-1.664*	0.926	3.229	0.189

*N.B.: *significant at α = 0.05, **significant at α = 0.10*
Source: Author's calculations from the survey data 2017

Age of the household head and duration in the village were statistically significant at the 10% level, where the two factors were significant with a positive sign. The odds ratio indicates that older household heads are more likely to belong to a community association member in regional society. For each unit increase in the age of household head, the odds of becoming a member of any community association increase by 1.5 percent. Those living in the same village for over ten years are 1.68 times more likely to belong to community associations.

On the other hand, other independent variables such as religion, occupation, marital status, education level, household size, worker-consumers ratio, and distance to public transport are not statistically significant to explain the model. However, the results disclose that some variables such as marital status and household size have positive signs while other insignificant variables indicate negative signs.

Another logistic model was employed to find the determinant of participation of economically-oriented social associations. According to the results of the logistic regression of participation of economically-oriented social associations, the overall percentage of the baseline model is accurate as its prediction is about 74.7% correct and statistically significant ($p<0.00$)— the Omnibus test results established that the empirical model is statistically significant ($P <0.025$). The goodness-of-fit of a statistical model is normally evaluated by defining how well the model fits the field data. Thus, the Hosmer–Lemeshow test is a statistical test used for the goodness-of-fit logistic regression models. In this empirical model, the P-value for Hosmer and Lemeshow goodness-of-fit test statistics is 0.204 (>0.05). Thus, the null hypothesis cannot be rejected. It established that the model is a good fit for the field data. Table 4 presents the logistic

regression coefficients, the Wald statistics, and the odds ratio.

According to the result of multiple logistic empirical regression, independent variables of the model age of household head and gender of household head were statistically significant at the 5% level.

Besides, individual characteristics such as religion and marital status of the household head were statistically significant at the 10% level, while the rest of the variables were not statistically significant. As a significant variable, the age of the household head reports a negative impact. It means that older people are less likely to be members of economically-oriented social associations in local society. For each unit increase in the age of household head, the odds of becoming a member of the economically-oriented social associations in regional society decrease by 0.966. This finding is consistent with theresult of Haddad and Maluccio (2003), Katungi et al. (2007), and Alesina and La Ferrara (2000).

Table 4: The results of multiple logistic regression analysis of participation in economically-oriented social associations in regional society

Variables	β	S.E	Wald Statistics	Exp (β)
Age	-0.036*	0.011	10.580	0.965
Gender	1.009*	0.500	4.075	2.744
Religion	0.426**	0.314	1.848	1.532
Occupation	-0.177	0.286	0.383	0.838
Marital status	0.710**	0.508	1.948	2.033
Education level	-0.117	0.286	0.168	0.889
Household size	-0.116	0.104	1.238	0.891
Worker-consumers ratio	0.094	0.114	0.681	1.099
Duration in the village	-0.176	0.332	0.282	0.839
Distance /transport	-0.297	0.297	0.996	0.743
Village type	-0.023	0.287	0.007	0.977
Constant	-0.372	1.015	0.134	0.690

*N.B.: *significant at α = 0.05, **significant at α = 0.10*
Source: Authors calculation from the survey data 2017

Age is negatively associated with community membership and inconsistent with Sseguya et al. (2009) and Beard (2007). Sseguya et al. (2009) recognized age as a significant factor in the participation of local food security groups in southern Uganda. His results indicate that older people are more likely to join community food security than younger people. However, in Sri Lankan regional socio-economic context, older people money off the future. Thus, older people are less likely to be members of economically-oriented social associations in the regional society.

Another significant variable is the gender of the household head. A positive effect indicates that a male household head is more likely to be a member in economically-oriented social associations than a female household head. The odds ratio for the gender of the household head is 2.744, meaning that a male head is 2.744 times more likely than a female household head to join economically-oriented social associations, even after controlling other independent variable effects. However, other independent variables such as occupation status, education, household size, worker-consumers ratio, duration in the village, distance to public transport, and village type are not statistically significant.

Another empirical binary logistic regression was employed to find the socio-economic determinants concerning membership in welfare associations in the regional society. The same independent variables were used for this model. Thus, there is no multicollinearity problem among the independent variables of the model. According to the results, the overall percentage of the baseline model is accurate as its prediction is about 64.4% accurate and is statistically significant (p<0.00). The empirical model with explanatory variables is 76.2% accurate, and the Omnibus test results confirmed that the model with explanatory

variables is significantly better (P <0.015).

The P-value for Hosmer and Lemeshow goodness-of-fit test statistics is 0.837, and thus, cannot reject the null hypothesis. It established that the model is an excellent fit for our field data. Table 5 provides the logistic regression coefficients, the Wald statistics, and an odds ratio of the model's independent variables.

Table 5: The results of logistic regression of member in community welfare associations

Variables	β	S.E	Wald Statistics	Exp (β)
Age	0.015**	0.010	2.332	1.015
Gender	0.267	0.350	0.584	1.307
Religion	-0.319	0.286	1.250	0.727
Occupation	-0.666*	0.282	5.573	0.514
Marital status	0.927*	0.397	5.449	2.527
Education level	0.115	0.262	0.193	1.122
Household size	0.140**	0.096	2.119	1.150
Worker-consumers ratio	-0.052	0.108	0.227	0.950
Duration in the village	0.701*	0.299	5.493	2.016
Distance to public transport	0.024	0.278	0.008	1.025
Village type	0.064	0.268	0.057	1.066
Constant	-1.56**	0.873	3.232	0.208

*N.B.: *significant at α = 0.05, **significant at α = 0.10*
Source: Author's calculation from the survey data 2017

According to Table 5, independent variables of the model, such as the household head's occupation, marital status, and duration in the village, are statistically significant at the 5% level. In contrast, another two expiatory variables, i.e., age of household head and family size, and intercept of the empirical model, are statistically significant at the 10% level. The rest of the independent variables were not statistically significant factors to explain the model. The odds ratio for occupation indicates that a household head whose main occupation is farming activities is 0.514 times less likely to join a community welfare association than those engaged in other activities such as government, private, and others.

The odds ratio for the marital status indicates that married

household heads are 2.527 times more likely to join the community welfare association than unmarried persons. Moreover, household heads living more than 10-years in the same village are 2.016 times more likely to belong to the community welfare association than others.

Other significant factors are age and household size. Both these factors can be identified with a positive sign. Thus, older people are more likely to belong to community welfare associations. The odds ratio for the age indicates that with each unit increase in age, the odds of joining to community welfare association increase by 1.5%, and with each unit increase in many household members, the odds of joining a welfare association increase by 15%. These are statistically significant at the 10% level. However, other independent variables such as Gender, Religion, Education level, Worker-consumers ratio, Distance to public transport, and Village type are not statistically significant to explain the model.

According to Table 5, independent variables of the model, such as the household head's occupation, marital status, and duration in the village, are statistically significant at the 5% level. In contrast, another two expiatory variables, i.e., age of household head and family size, and intercept of the empirical model, are statistically significant at the 10% level. The rest of the independent variables were not statistically significant factors to explain the model. The odds ratio for occupation indicates that a household head whose main occupation is farming activities is 0.514 times less likely to join a community welfare association than those engaged in other activities such as government, private, and others.

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6. Conclusion

The present analysis examined the determinants of social capital in the regions of Sri Lanka. This empirical research was based on the survey data, and the sample consisted of 348 respondents, selected based on the multi-stage sampling method. Multiple logistic regression models were used for data analysis, which presented some significant understandings of determinants of a different form of social capital such as membership in community associations, membership in economically-oriented associations, and membership in welfare associations.

The logistic regression results verified that different forms of social capital have different determinants. Membership in

economically-oriented associations is considered the proxy variable for Bridging social capital, and membership in welfare associations was a proxy variable for Bonding social capital. The results identified that age, marital status, household size, and duration of residing in the village are the significant factors for bonding social capital. In the Sri Lankan regional socio-economic context, for successful implementation of programs for developing the Bonding social capital and community welfare, development programs should be more oriented to married farmers who live in the village for an extended period.

The analysis results further revealed that age, gender, the religion of households head, and marital status are significant determinants of Bridging social capital in regional Sri Lanka. In this context, this type of social capital brings together people across diverse social divisions (Field, 2003). It may not comprise many shared norms that mainly improve interaction frequency by sharing information and ideas. Granovetter (1973) explained that the flow of new information and job opportunities is easier for some members with weak ties in a network. Thus, this study provides valuable information for policy- and decision-makers to implement new community development programs. The analysis clarifies the practical implications, which are much relevant to people or institutions engaged in a promotional program of a community. Accordingly, this study findings signify that promotional programs of development of bridging social capital and empowerment programs and small business programs should be more oriented to the younger generation in society. This study's findings signify that promotional development programs of social capital and empowerment programs and small business programs should be more oriented towards the younger generation in the society. Central Government and local

government in the private partnership sector should support setting up a structure to formalize further and recognize the community association.

This study was mainly performed using a field data set. However, the researcher recommends an investigation using time-series analysis for social capital and regional development in Sri Lanka to investigate the trend of two principal variables. It must include all aspects of social capital, such as bridging, bonding, linking, and political participation. It is also necessary to conduct a new empirical study, considering both subjective and objective measurements, as the present research mainly focussed on a subjective approach to the variable measurement.

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