

Chapter VII

Role of social capital in performance of vegetable production program

This chapter explores the role of social capital behind varying performance of vegetable production program at the household and site level. The hypothesis in this context is guided by the principle that existing social capital endowment plays an important role in the performance of the vegetable production program. The performance of vegetable production program is analyzed at household and community level to understand the contribution of social capital. Social capital and role of its expressions is analyzed in the context of vegetable farming as income generating enterprise in the farming communities.

7.1 Vegetable production program and working strategies

The area specific crop development program (Pocket Package Strategy) was being implemented since 1995 when APP (Agriculture Perspective Plan) was approved by government as an agriculture development policy guideline. The vegetable production program in western Nepal is being implemented by the government within that policy framework to develop commercial vegetable production sites in the region. Farmer's group approach is being used for extension delivery to promote the vegetable production in different sites. The focus is on the development of farmer groups and associations through wider participation of women and disadvantaged and socially excluded category of people (Figure 7.1). The two pronged approach is being used: first social mobilization and secondly by technical service delivery to achieve the set targets. It is expected that the empowered, self propelling and vibrant farmer groups/organizations in communities will create a demand for extension services and sustain program outcomes in the long run. The government and private agencies are supposed to deliver their support in a

coordinated way in program sites. The lead role is assigned to District Agriculture Development Offices (DADO) to coordinate program activities in each district. In this context the participation of the people in groups and group activities are critical for the success of the program (DOA, 2002).

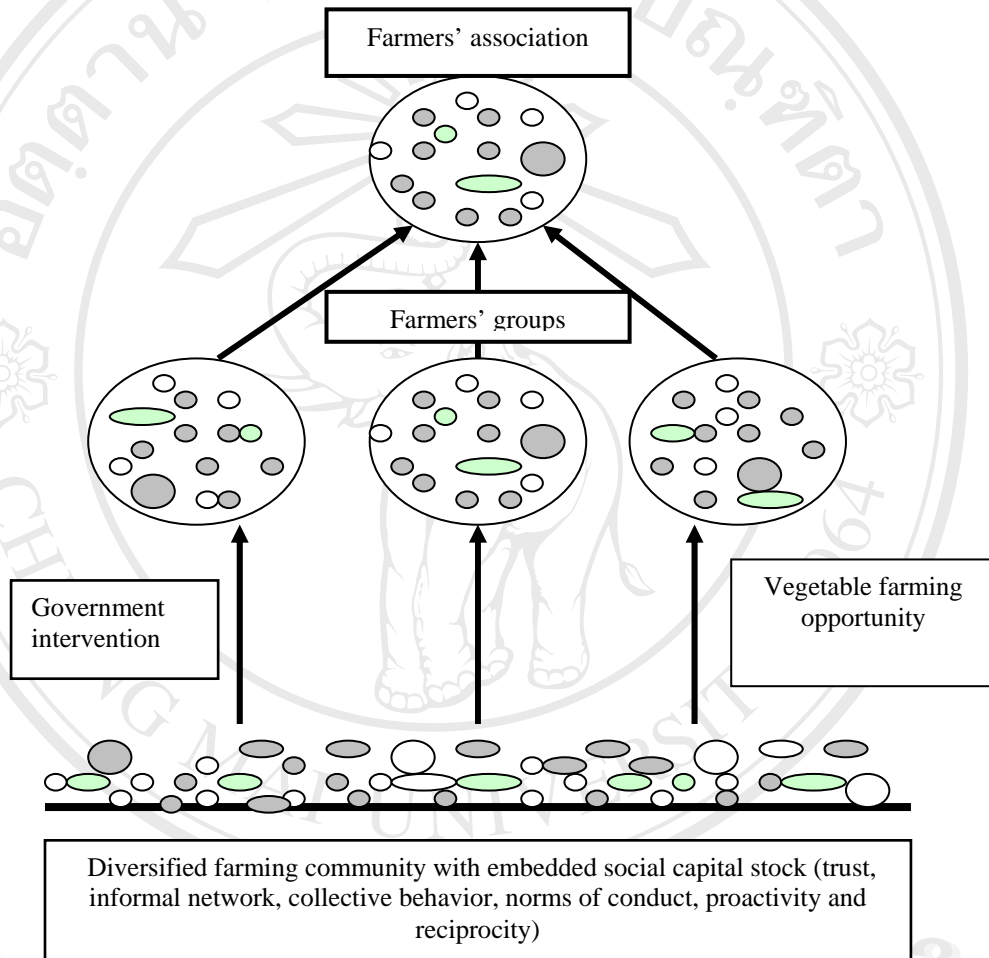


Figure 7.1 Working strategies for the vegetable production program in sites in western Nepal

Source: Conceptualized during field survey, 2005

7.1.1 Formation of groups

The social mobilizers deployed in each sites have responsibility to create awareness about the program objectives, working strategy and available government support for the farmers in program sites. They encourage farmers to organize in

groups with special focus on participation of women and disadvantaged category of people. The groups in each site further federated in one umbrella association, which carries wider responsibility of vegetable production and marketing. Generally the size of the farmers group varies from 15-25 members but not limited and participation is voluntary in groups (DOA, 2002).

7.1.2 Group activities

All the services to the members and community are delivered through group channel, which has made the role of farmer groups pivotal. Farmer groups have to set their own rules and regulations for their members regarding participation in the meeting, mobilization of group fund, information dissemination and vegetable production and marketing activities. The group members have to collect certain amount of money for their group welfare fund and all members have equal access to that fund (DOA, 2002).

Thus the farmer groups in production sites and their associations are key players for the performance of vegetable production program. Many aspects of the program need wider cooperation among groups and group members mostly during input management, crop failure, output marketing, risk bearing during market fluctuations and exploration of new markets. The preparation and implementation of production, input management and marketing plans in consultation with deployed agriculture technicians are the main activities to be performed by farmer groups in the production sites. The participatory progress assessment regarding production and marketing of vegetables is another key task set for the groups.

7.2 Social capital and performance of the program

The performance of vegetable production program can be analyzed by different ways. For example, production, marketing, income generation, institutional development, capacity building, resource use efficiency, impact on environment, women and children based on the objective of analysis. The performance in these

aspects is governed by many factors and social capital is important one. There are a number of performance nodes of the program where social capital has important bearing however nature and level of contribution varies at different nodes (Table 7.1).

Table 7.1 Program performance areas and role of social capital

Performance areas	Role of social capital
Sustainability of outcomes	Cohesive farmer groups with broader networks and high level of trust can sustain program outcomes and develop high resilience against any kind of shortfalls. It is also helpful to establish self regulatory vibrant mechanism within the group for sustainability.
Service delivery	Trust and ties among/between agencies, among/between staffs, between farmers and agencies plays important role in effective service delivery. The bridging and linking networks to service delivery organizations and trust level to extended radius of the farm households is most important in this context.
Marketing of output	Trust among groups, group members and traders can promote collective marketing system, reduces transaction cost of marketing, create synergy to find better price, minimize unfair downward leveling competition and promote information flow.
Marketing of input	Trust and cooperation among group members can reduce transaction cost of input marketing, collective marketing can also get the price discount from the agencies
Production	Use of modern inputs and scale of production is facilitated by collective decision making and market networks of the group and households
Equity	Trust and norms of common goodness reduce gender, social and economic inequality among the members and community people.
Participation in groups	Proactivity, trust, networks and reciprocity enhance participation of community households in the program. In less trustworthy community, people are more reluctant to join in groups.
Group functioning	Trust, reciprocity, collectivity and cooperation are basic ingredients which makes farmer groups self propelling and dynamic over time. Creative competition among group members enhances group capacity and unfair competition promotes downward leveling, fraction and collapse of the group.
Household level adoption, income and empowerment	Proactivity, trust, networks and social norms play important role in adoption vegetable farming by households at commercial scale.

In business and cooperative organizations, the role of trust, network, reciprocity and code of conduct are well understood and commercial vegetable production itself is a business enterprise and these attributes of social capital contribute largely in its success. In this whole system networks, trust, reciprocity, collectivity, proactivity and norms between and among the actors (farmers, farmer groups, farmer associations, traders, consumers, service providing organizations and working staffs) plays crucial role. In the absence of these attributes, a program cannot achieve desired level of performance. The social capital endowment between and among these agents creates enabling environment for all agents to work together get better achievements. Field level agriculture technician can not be trusted by farmers until he fulfills his commitments made to them, for this he must be trusted and supported by his organization, if there is a lack of trust in this chain the extension program cannot get momentum toward success.

7.2.1 Household level performance measures

The household level performance of the program is measured by adoption index for vegetable farming. The adoption index measures use of the potential land for vegetable farming by the farm households. The second index used is income index as a measure of household level performance of the program.

Adoption index: Adoption index is the ratio of existing area under vegetable crops to total potential area suitable for vegetable farming owned by household. The higher adoption index value indicates that household is growing vegetable crops in larger proportion of his potential land. The mean adoption index at household level is found 0.61 which shows on average farm households in the sites have adopted vegetable farming by more than 60 percent of their potential land suitable for vegetable crops. The adoption index ranges from 0-1 in value.

Income index: The second index is the ratio of annual gross income from vegetable crops to annual gross income from farming. The average value of income index is found 0.55 with a range of 0 to 1. It means on average vegetable crops

contribute 55 percent to the farm income of a farm household in vegetable production sites.

7.2.2 Role of social capital in household level performance

The lower level of adoption index indicates poor performance of program at household level as the households is not adopting vegetable farming using full potential. The adoption index at the household level is selected as single measure of the program performance to understand the role of social capital empirically. For the income index only those households can get higher income from vegetable crops consistently who have better market opportunities and linkage with technical support agencies. Income index is found less reliable as compared to the adoption index as a measure of program performance at household level and not analyzed in detail.

7.2.2.1 Social capital and innovation adoption process

The adoption of vegetable farming in large or small scale, farm households have to go through series of decisions regarding changes in existing farming system. The existing social capital endowment at household level can retard and lubricate the adoption process of vegetable farming by the household. The innovation decision or adoption process follows the five stages (Rogers, 1995) and at each stage the household as well as the community level endowment of social capital plays important role (Table 7.2).

Table 7.2 Role of social capital in different stages of adoption

Adoption stages	Role of social capital
Knowledge: - Person becomes aware of an innovation and gets idea of its functioning	The both local and external networks contribute in this process. The existing reciprocity and proactivity support knowledge gathering process. Here mostly bridging and linking networks are crucial to get new ideas about the innovation.
Persuasion :- Person forms a favorable or unfavorable attitude toward the innovation	The level of thin trust, size of bridging and linking networks and level of trust in extended trust radius positively contribute in developing favorable attitudes. The positive norms towards the innovators available in communities help to make the favorable attitude.
Decision :- Person engages in activities that lead to a choice to adopt or reject the innovation	This stage needs backup from bonding networks and pull from external networks. The thick trust in homophilous communities may create resistance for positive decision making but thin trust lubricates the process. The General ethical norms and wider bridging and linking networks create confidence for positive decision making.
Implementation:- Person puts an innovation into use	Bridging and linking networks available to individuals provide support during implementation of the idea. The available networks provide information, ideas, skill and support to the individual during implementation.
Confirmation: - Person evaluates the results of an innovation-decision already made.	In this stage the existing system norms play important role, better norms rewards innovators both in success and failure condition but in absence of goodness norms one gets jealous in success and harassment in failure from others.

7.2.2.2 Regression models

Adoption index: The empirical model for adoption index conceptualized with the premises that adoption of vegetable farming by the households is governed by various social, economic, support service, infrastructure and resource related factors under which the farm household operates. The adoption index is regressed with social capital index and some other variables. This model produced small R^2 however the social capital index has positive coefficient. Further social capital index is decomposed in its constituents and a new regression model was conceptualized (Model-1, Chapter-III). Both positive and negative coefficients are found showing

mixed contribution of social capital in adoption of vegetable farming by the farm household.

Table 7.3 Result of linear regression (OLS) for household level adoption index

Variables	Unstandardized coefficients		Standardized coefficients	t	Sig. (P)
	B	Std. Error	Beta		
(Constant)	0.571**	0.205		2.789	0.006
Dummy for food security (DFS)	-0.233**	0.056	-0.326	-4.138	0.000
Bonding network (BNET)	-0.353**	0.120	-0.209	-2.953	0.004
Dummy for government service (DGS)	0.120*	0.056	0.141	2.120	0.036
Dummy Chettri (DC)	-0.055	0.072	-0.058	-0.764	0.446
Dummy Baisaya (DB)	-0.234**	0.054	-0.361	-4.353	0.000
Dummy Sudra (DS)	-0.208**	0.081	-0.184	-2.573	0.011
Dummy ethnic tribe (DET)	0.062	0.076	0.072	0.821	0.413
Dummy for migrants (DM)	-0.084	0.049	-0.110	-1.704	0.091
Linking networks (LNET)	0.181	0.118	0.104	1.529	0.129
Education level of the family head (ELFH)	-0.011*	0.005	-0.131	-2.006	0.047
Trust to government officials (TGO)	0.027	0.017	0.101	1.599	0.112
Thin trust (TT)	0.034	0.090	0.025	0.376	0.707
Thick trust (THT)	-0.198*	0.092	-0.149	-2.154	0.033
Reciprocity of labor (RL)	-0.423**	0.141	-0.206	-2.996	0.003
Reciprocity seeds and breeds (RSB)	0.182	0.103	0.117	1.767	0.079
General reciprocity (GR)	0.254	0.177	0.098	1.432	0.154
Land holding size (LHS)	-0.061**	0.024	-0.182	-2.584	0.011
General ethical norms (GGN)	0.260**	0.068	0.272	3.847	0.000
General cooperation (GC)	0.378**	0.152	0.189	2.481	.014
Market distance (MD)	-0.014*	0.006	-0.155	-2.323	0.022
R = 0.701	Significance F = 0.00				
R ² = 0.491	Standard error = 0.242				

** Significant at (P< 0.01) level

* Significant at (P<0.05) level

Ten expressions of social capital were introduced in the model (defined in Chapter III) to know contribution of social capital in household level adoption index of vegetable farming. Out of these ten variables, five are found significant (Table 7.3). The important finding here is social capital expressed in different forms has both

positive and negative contribution in adoption index of vegetable farming by the household.

Trust variables: The to government officials both have insignificant positive coefficient which indicates its positive contribution in adoption of vegetable farming. The higher trust level of the household to the government officials encourage adoption of new ideas delivered by them, here enhance the adoption of vegetable farming by the household. It also helps to get better emotional and material support from the government officials.

The level of thick trust endowment for the household has significant negative coefficient (B -0.198, P <0.05), which implies thick, trust level for the household retards adoption of vegetable farming by the household. The coefficient shows keeping the other variables constant one unit increase in thick trust reduces 0.19 unit adoption index of vegetable farming. It implies social capital endowment at household level in the form of thick, negatively affects the adoption of vegetable farming by the household. The thick trust embedded in bonding networks produce inertia for change making individuals inward loyal and reluctant to change. The thick trust endowment narrows down individual freedom of decision making regarding any change is traditional setup in farming system. The thick trust produces a sort of dependency syndrome of actor to the environment and make less proactive towards the change. This finding is consistent with Adler et al., 2000. Adler mentioned strong solidarity within the group might overembed the actor in the relationship. This overembedness reduces the flow of new ideas into the group, resulting in parochialism and inertia (cited in Productivity Commission, 2003).

The correlation coefficients showed the inhibitory effect of thick trust endowment for adoption of vegetable farming is higher for the poor households (less than 0.5ha of land holding size). Similarly positive effect of trust in government officials and businessmen is higher for this category of people.

The high thick trust produce strong social cohesiveness, which helps in producing better outcomes regarding development interventions once the initial inertia due to the cohesion (thick trust) with respect to change is broken and momentum is initiated. In such case, increase in the trust level to government officials' community leaders and level of thin trust important to break initial inertia produced by thick trust.

Network variables: The bonding network of the household has significant negative coefficient (B 0.353, $P < 0.05$), which implies higher bonding networks, reduces adoption of vegetable farming by the household. The coefficient shows one unit change in bonding networks reduces the adoption index of vegetable farming by 0.35 units. The effect is very similar that of thick trust as thick trust mostly resides on bonding networks. The bonding networks increases dependency of the households and narrow down the individual freedom of decision making, it needs consensus and delays decision making process. Carroll (2001) described the effect of bonding and bridging networks as “what binds can also exclude or divide, and sometimes groups constrain their own members. Bridging, i.e. "cross-cutting ties," can counteract the adverse effects of certain bonding relationships”. The bonding networks control the individual behavior. Woolcock (1998) mentioned “too much social control can restrict individual initiatives”.

Secondly the linking networks has insignificant positive coefficient which means households with higher linking network status have better access to knowledge, skill and information that create positive motivation for the adoption of vegetable farming.

General cooperation variable: The level of general cooperation of the household has positive and significant coefficient (B 0.378, $P < 0.05$). The one unit increase in level of general cooperation increase 0.378 units in scale of adoption of vegetable farming. The high level of cooperation provides informal insurance to the individual household and creates confidence to take risky decisions and promotes the adoption of vegetable farming.

General ethical norms: The significant positive coefficient (B 0.26, $P < 0.05$) of general ethical norms shows higher endowment of such norms encourage people to go ahead and provide moral support even in cases of failure which bolsters the adoption of new practices by the farm households. In contrast where general ethical norms are weak people discourage the individuals from getting ahead and there is unfair competition among the households in the community. In such cases, there is downward leveling competition opposite to shouldering synergy. The communities with poor general ethical norms do not ensure crop security against theft and destruction by the livestock, which has negative effect in adoption of the vegetable farming. It is more important in Nepalese farming context where a farm household owns a number of operational parcels of land scattered over an area. The regression coefficient implies one unit increases in level of general ethical norm increases 0.26 units in adoption index of vegetable farming by the household when other variables are held constant.

Reciprocity variables: Out of the three reciprocity variables in the model one is significant with negative coefficient. The level of reciprocity of labor has negative effect (B 0.423, $P < 0.05$) as large scale vegetable producers reciprocate less labor in the community. The general observation in the area shows that there is very limited reciprocity of labor in vegetable farming. Reciprocity of labor is high only in case of traditional subsistence crops. The high reciprocity of seeds and breeds has positive effect in adoption of vegetable farming but it has insignificant positive coefficient.

Other variables: The food security, education level of household head, land holding size, market distance, *Sudra* and *Baisaya* caste categories have negative coefficients which shows these variables negatively affect the adoption of vegetable farming by the household. The *Sudra* is the professional caste category that might be one reason of low adoption vegetable farming this caste category. The supports available from government have positive coefficient, which shows that government support has positive effect on adoption of vegetable farming by the household. The large landholders do not adopt vegetable farming with full potential, they have tendency to adopt other cash crops other than vegetables. The food secure households

have lesser tendency to adopt vegetable farming than food insecure households. The food insecure households always try new farm practices to get food sufficiency. The market distance has negative significant coefficient, which shows the households far from the market have lesser tendency to adopt vegetable farming.

Income index: The income index which is the ratio of gross annual income from vegetable farming to gross annual farm income is regressed with a number of explanatory variables (Chapter III, Model-2). It was hypothesized that social capital has positive contribution in the income index of vegetable farming. The empirical results showed insignificant negative coefficient of social capital (Table 7.4).

Table 7.4 Result of linear regression (OLS) for household level income index

Variables	Unstandardized coefficients		Standardized coefficients	t	Sig. (P)
	B	Std. Error	Beta		
(Constant)	.437	.229		1.907	.058
Land holding size (LHS)	-.093**	.026	-.263	-3.559	.000
Trust to traders (TT)	.006	.024	.018	.246	.806
Existing area under vegetable crop (EAVC)	.802**	.165	.375	4.869	.000
Market distance (MD)	-.002	.007	-.027	-.369	.713
Access to road (RA)	.187**	.053	.259	3.539	.001
Social capital index (SCI)	-.230	.303	-.058	-.760	.448
R = 0.46	Significance F = 0.00				
R ² = 0.21	Standard error = 0.30				

** Significant at (P< 0.01) level

This implies relationship between social capital and income index is not direct but as social capital significantly contributes to adoption of vegetable farming which has significant role in income index. The income index shows significant positive correlation with adoption index (0.37, P<0.01 level, two tailed). Here it can be concluded that social capital indirectly affects income index of the vegetable farming for the farm households. Income index is affected by many other factors like productivity of land and level of application of modern technologies, available market size, availability of irrigation facility and local climatic conditions. In this model these

factors which might have important role in economic performance of the household with respect to vegetable farming are not included so it is difficult to draw direct conclusion about social capital and income index for vegetable farming by this study.

The large land holding size has negative significant coefficient which shows income from vegetable farming has less contribution in farm income for the large land holders or they get larger proportion of their farm income from crops other than vegetables. Other significant coefficient is found for existing area under vegetable crops which is obvious, larger area under vegetable crops contributes more in farm income for the households. The road access for the farm household has positive and significant coefficient. Access to road is most important for the transportation and marketing of the vegetable products, which has direct role in adoption of vegetable farming and generated income.

7.2.3 Site level performance measures

Three indices covering community participation, average adoption and gender equity were calculated to measure site level performance of the vegetable production program empirically. Some sites are better in participation and gender equity but poor in scale of adoption and other sites show the opposite picture making difficulty to conclude the performance of the program at site level (Table 7.5). A program performance index is calculated weighting these measures as mentioned in Chapter Three to get a conclusion about performance of the program in different sites.

Community participation index: The community participation index is found highest for Pratappur site (0.74) and lowest for Dasrath Chand Municipality (0.19). This variation in participation of the households is affected by many social, economic, physical, leadership related factors. On average, the community participation in the program is found at 44 percent, which shows a large number of the households are outside the program umbrella. Out of twenty sites, only four sites have more than 50 percent participation of the community households (Table 7.5).

Women's participation index: The second selected measure for site level performance of the program is women's participation index, which shows the gender equity in the program. The minimum level of women participation is found in Geta and Gurukhola site, which is 35 percent and highest 74 percent in Suda of Kanchanpur district (Table 7.5). The observed trend of women participation is higher in Terai sites in comparison to sites in hills and mountains. Women plays important role in farming activities and their participation in groups provide opportunities to enhance their knowledge and skills which ultimately support to achieve program objectives. Women's participation in groups is key entry point to promote women empowerment and gender equity in agriculture development programs.

Table 7.5 Vegetable production program performance measures in different sites

Site name	Community participation index (CPI)	Women's participation index (WPI)	Average adoption index (AAI)	Program performance index (PPI)
Amargadi	0.52	0.52	0.67	0.59
Bhagwati	0.46	0.46	0.10	0.30
Bhatkanda	0.37	0.43	0.99	0.66
Chapari	0.42	0.46	0.62	0.52
Dasrath Chand Municipality	0.19	0.44	0.69	0.47
Dehimandu	0.40	0.56	0.50	0.48
Dhangadi	0.40	0.57	0.67	0.56
Dipayal	0.34	0.44	0.53	0.45
Dodhara	0.49	0.62	0.24	0.40
Geta	0.34	0.35	0.78	0.54
Ghurukhola	0.55	0.35	0.64	0.55
Jogbuda	0.46	0.72	0.33	0.45
Khalanga	0.48	0.49	0.56	0.52
Kumali Deval Hat	0.43	0.48	0.81	0.61
Malakheti	0.37	0.47	0.42	0.41
Pratappur	0.74	0.62	0.68	0.69
Siddhaswor	0.42	0.45	0.54	0.48
Suda	0.37	0.74	0.36	0.44
Tikapur	0.37	0.62	0.33	0.40
Tilachaud	0.57	0.70	0.57	0.60
Average	0.44	0.52	0.55	0.51

Source: Field survey, 2005

Average adoption index: The commercialization of the vegetable production in sites is only possible when the households adopt vegetable farming in full scale. The average adoption index in different sites ranges from lowest 0.1 for Bhagwati of Darchula district to highest 0.99 for Bhatkanda of Dadeldhura district (Table 7.5). In Bhagwati site the adoption is low due to many constraints but in case of Bhatkanda the farmers are growing vegetables in full scale as cash generating enterprise. This range of adoption index shows some communities already adopted vegetable production as a commercial enterprise using their full potential land but other still in preliminary stage.

Program performance index: This is the combined measure of performance of program in three aspects participation, adoption and equity. The program performance index showed Pratappur site is best and Bhagwati is poorest in vegetable production program performance among twenty selected sites (Table 7.5). Among selected twenty sites ten sites are below fifty percent performance level. On average, the performance of the program in twenty sites is found 0.51, which shows the program, is not performing so well.

7.2.4 Role of social capital at site level performance

7.2.4.1 Role of social capital on community participation

The community participation index is regressed with a number of explanatory variables including social capital index as mentioned in methodology section (Model-3). The objective of this model is to find the contribution of social capital to promote the household participation in vegetable production groups.

The regression result shows that social capital stock in communities significantly contributes (B 1.17, $P < 0.05$) to promote household participation in the groups and ultimately vegetable production program. The regression coefficient implies: one unit increase in social capital stock (index value) in communities increases community participation by 1.17 units when other explanatory variables

held constant (Table 7.6). The neighborhood ties, embedded trust, cooperation and proactivity among the households are the catalysts to enhance community participation in the program. In communities where generalized trust (thin trust) is low and members are less trustworthy people are more reluctant to join in groups even though they foresee benefits by participating in groups. Wider and dedicated community participation in vegetable production groups depends on community cohesion, which is the product of existing thin trust, neighborhood networks and general ethical norms. The participation of households in cohesive and functional farmers' groups is further catalyzed by the level of inter personal trust (thick) and trust in government agencies. It can be concluded here that the whole evolution process of group and its dynamics over time is largely contributed by the social capital stock available in communities.

Table 7.6 Result of linear regression (OLS) for community participation index

Variables	Unstandardized coefficients		Standardized coefficient	t	Sig.(p)
	B	Std error	Beta		
(Constant)	-0.542	0.389		-1.394	0.193
Social capital index (SCI _c)	1.170*	0.457	0.490	2.562	0.028
Distance from the nearest market (MD)	0.011*	0.005	0.405	2.316	0.043
Market access (MA)	-0.051	0.042	-0.206	-1.235	0.245
Availability of input (IA)	-0.064	0.038	-0.280	-1.673	0.125
Average potential land per household for vegetable production (APLVF)	-0.126	0.110	-0.243	-1.143	0.279
Average land holding size ha (ALHS)	-0.096	0.046	-0.387	-2.107	0.061
Average annual off farm income (AAOI)	-	1.79E-006	-0.319	-1.827	0.098
Trust to traders (TT)	0.056	0.064	0.159	0.865	0.407
Trust in government officials (TGO)	0.081*	0.034	0.389	2.376	0.039
R = 0.89	Significance F = 0.010				
R ² = 0.79	Standard error = 0.069				

* Significant at (P < 0.01) level

Similarly, the level of trust to government officials positively contribute (Beta 0.389, $P < 0.05$) in community participation in vegetable production program. One unit increase in trust to government officials increases participation by 0.08 units in the program when other variables are constant (Table 7.6).

Among other variables only the distance from market has positive significant coefficient. This indicates that the communities far from the market have greater tendency to participate in groups (Table 7.6). The communities near the markets have larger choice of activities to perform and more independent for input and output marketing. In case vegetable farming, the households in the communities far from the market have higher tendency to participate in groups input accessibility and output marketing.

7.2.4.2 Role of social capital on women's participation

It is hypothesized that social capital stock existing in communities promotes the gender equity in agriculture extension programs. The women participation index is regressed with social capital index and other explanatory variables mentioned in methodology section (Model-4). The main objective of regression model is to find contribution of social capital to promote the women's participation in vegetable production program.

The result shows social capital stock available in communities significantly contributes (B 0.308, $P < 0.05$) to promote gender equity in vegetable production program. The communities endowed with richer stock of social capital facilitate women's participation in groups. The regression coefficient shows one unit increase in social capital index increases the women's participation by 1.308 units in farmers groups when other explanatory variables are held constant (Table 7.7). The trust and general ethical norms are important to promote the gender equity in development programs. In Nepalese social context where women are less educated and less exposed to outside world, the lack of general trust largely reduces women's participation in development programs.

Table 7.7 Result of linear regression (OLS) for women participation index

Variables	Unstandardized coefficients		Standardized coefficient	t	Sig.(p)
	B	Std error	Beta		
(Constant)	-0.275	0.312		-.881	0.394
Social capital index (SCI _c)	1.308**	0.454	0.530	2.882	0.013
Average land holding size ha (ALHS)	-0.200**	0.062	-0.775	-3.235	0.007
Average adoption index for vegetable crops (AAI)	-0.532**	0.112	-0.954	-4.768	0.000
Literacy rate female (FLR)	0.006	0.003	0.400	1.993	0.068
Trust in government officials (TGO)	0.031	0.036	0.144	0.866	0.402
Average annual off farm income (AAOI)	2.83E-006**	0.000	0.487	2.629	0.021
R = 0.824	Significance F = 0.010				
R ² =0.679	Standard error = 0.078				

** Significant at (P< 0.01) level

Among other variables average annual off farm income per household in the community have significant positive coefficients. This shows that higher income promotes gender equity in the program. In case of higher off farm income, male members are more involved in off farm employment and women have better opportunity to participate in groups. The average land holding size and average adoption index of vegetable farming have negative significant coefficients. The large landholders mostly do not keep interest in group activities. They keep interest in cash crops other than vegetables. In communities where the vegetables are grown in larger scale women participate less in group activities than men.

7.2.4.3 Role of social capital on average adoption rate (index) in the sites

It is hypothesized that existing social capital stock in the communities contributes in higher adoption of vegetable farming. The adoption index is regressed with social capital index and other explanatory variables mentioned in Chapter-III to know the contribution of social capital in adoption of vegetable farming in different sites (Model-5).

The empirical result shows that social capital stock in the communities contributes significantly (B 2.469, $P < 0.05$) in adoption of vegetable farming in the site. The regression coefficient for social capital index shows one unit increase in social capital stock in the site increase the 2.46 units of adoption index of vegetable farming when other explanatory variables are held constant (Table 7.8).

Table 7.8 Result of linear regression (OLS) for adoption index

Variables	Unstandardized coefficients		Standardized coefficient	t	Sig.(p)
	B	Std. error	Beta		
(Constant)	-1.424	0.552		-2.580	0.026
Social capital index (SCI _c)	2.469**	0.601	0.543	4.111	0.002
Average land holding size (ALHS)	-0.310**	0.055	-0.653	-5.614	0.000
Average annual off farm income(AAOI)	3.63E-006**	0.000	0.340	3.043	0.011
Total literacy rate (LR)	0.006	0.004	0.222	1.735	0.111
Womens participation index (WPI)	-1.123**	0.206	-0.611	-5.465	0.000
Availability of input (IA)	0.114*	0.050	0.265	2.263	0.045
Trust in government officials (TGO)	0.095	0.046	0.239	2.050	0.065
Trust to traders (TT)	0.167	0.087	0.250	1.921	0.081
R = 0.94	Significance F = 0.00				
R ² = 0.88	Standard error = 0.095				

** Significant at ($P < 0.01$) level

* Significant at ($P < 0.05$) level

The social capital expressed in the form of proactivity, general ethical norms, cooperation, collectivity, trust and networks promote the collective decision making to adopt new farm practices by community members. In communities where such attributes are lacking or are poor, the adoption of any new farm practices occurs at lower rate and in a scattered way. The communities with poor collective actions, proactivity, reciprocity and networks retard the flow of information about new practices, which negatively affect the adoption of new practices. Similarly when there is a lower level of thin trust, people do not pick up outsiders ideas easily which also negatively affect the wider adoption of new farm enterprises by the community people.

Among other variables, average land holding size and women participation in groups negatively affect the adoption rate of vegetable farming in the sites. Average annual off farm income and availability of input positively contributes in adoption rate of vegetable farming in the community. Off farm income is source of investment for vegetable farming which enhance the adoption rate of vegetable farming in the community. The availability of required inputs for vegetable farming in the site promotes the adoption rate of vegetable farming.

7.2.4.4 Role of social capital on overall performance of the program

The program performance index is regressed with social capital index and other explanatory variables mentioned in methodology section to know the contribution of social capital in overall performance of the program (Model-6). The empirical outcome shows that social capital stock in the farming communities significantly (B 1.347, $P < 0.05$) contributes in performance of the vegetable production program. The regression coefficient for social capital index shows one unit increase in social capital stock in the communities increases the program performance by 1.347 units when other explanatory variables held constant (Table 7.9). This shows social capital stock in the communities is the most important contributing factor to the performance of the vegetable production program. The trust to government officials by the community people also positively contributes to performance of the program.

Among other variables average land holding size have negative and significant coefficient. This shows that large land holding size per household negatively affects the performance of vegetable production program in the communities. Generally, large landholders have tendency to grow cereal crops and other cash crops rather than vegetables.

Table 7.9 Result of linear regression (OLS) for program performance index

Variables	Unstandardized coefficients		Standardized coefficient	t	Sig.(p)
	B	Std error	Beta		
(Constant)	-.962	0.344		-2.800	0.019
Social capital index (SCI _c)	1.347**	0.390	0.647	3.451	0.006
Distance from nearest market (MD)	0.002	0.004	0.096	0.602	0.561
Market access (MA)	0.004	0.035	0.020	0.121	0.906
Inputs availability (IA)	0.015	0.033	0.077	0.464	0.653
Average land holding size (ALHS)	-0.175**	0.035	-0.805	-4.952	0.001
Total literacy rate (LR)	0.003	0.002	0.237	1.373	0.200
Average annual off farm income (AAOI)	8.40E-007	0.000	0.172	1.123	0.288
Trust to traders (TT)	0.123*	0.053	0.405	2.332	0.042
Trust in government officials (TGO)	0.072*	0.029	0.397	2.504	0.031
R = 0.898		Significance F = 0.013			
R ² = 0.806		Standard error = 0.058			

** Significant at (P< 0.01) level

* Significant at (P<0.05) level

7.3 Summary

Social capital plays an important role in the adoption of vegetable farming by community households and its commercialization. The performance of vegetable production program in different aspects from service delivery to sustainability of program outcomes is contributed by social capital endowment in one or another way.

The empirical results showed that social capital endowment both at household and site level contributes positively to the performance of vegetable production program. The household level performance of vegetable production program measured as the adoption of vegetable farming by the household is affected by the social capital expressions differently. Regression results (OLS) showed that the neighborhood-bonding network of the household in the communities retards the adoption of vegetable farming by the household. Similar negative effect is found for interpersonal trust endowment of the households in the communities. Both bonding

networks and interpersonal trust are inter-related. When there is high interpersonal trust among the households, one seeks others suggestions and ideas to before adopting vegetable farming. Secondly, social capital expressed in the form of general ethical norms, general reciprocity, trust to government official, and general trust promotes the adoption of vegetable farming by the household. The social capital index does not show any direct relationship with income index for vegetable farming.

Social capital endowment in the communities promotes the participation of households in vegetable production groups, which is the most important for the success of the program. The regression result showed that social capital significantly enhances the participation of the households in vegetable production groups. The women's participation in vegetable production groups is also promoted by social capital endowment in the communities. Women's participation in vegetable production groups is most important for gender equity and women empowerment. Here it can be concluded social capital promotes gender equity in the community development programs through increased participation of women. Further more social capital increases the adoption of vegetable farming at larger scale in the community, which is most important to develop the commercial centers of vegetable production. The bridging and linking networks supported with high level of generalized trust reduces narrow self interest of the group/individual and inspire to work for the betterment of the community as a whole and catalyze the promotion of new farm enterprises like vegetable farming.