Original Research Article

Social Capital in relation to Market Participation of Smallholder African Indigenous Vegetable farmers in Vihiga County, Kenya

ABSTRACT

The contribution of smallholder agriculture to reducing poverty and hunger in low-income countries depends on sustainable access to markets. In Kenya, Vihiga County, various development practitioners have promoted the production of African Indigenous Vegetables (AIVs). However, AIVs marketing component has been given little attention. The farmers, therefore, have not taken advantage of the full potential of the gains of AIVs production and marketing to improve their livelihoods. Small holder farmers experience low market participation due to their non-competitiveness in the promising AIVs market. This could be associated with the low social capital among the farmers. This study sought to assess the status of social capital in relation to farmers' participation in the AIVs market. This was done through a household survey with AIVs farmers in January 2021. A total of 167 (106 female and 61 males) farmers were interviewed in Sabatia and Emuhaya sub counties in Vihiga County. Purposive sampling was done to target AIVs farmers. The study results indicate that though there were more female (63%) farmers in the study site there was a significant difference (P=.002) between the sex of the AIVs farmers interviewed in the two study sub counties. The study results also show that, majority of the farmers (76%) did meet the demand for AIVs needed in the market. Despite the deficit in the demand for AIVs, most farmers had not taken advantage of the available market by producing more AIVs during peak season. A likert scale analysis of the farmer's social capital reveal that there is a strong (3.5) bonding social capital among the farmers however, the bridging social capital is lower (3.0). This indicates a weak social network among the farmers to the outside world which can greatly hinder their participation in the high end AIVs markets. The study concluded that, there is demand for AIVs, however, the farmers have not positioned themselves to tap the available market opportunities. The bridging social capital is also low, this can hinder their participation in the market. There is need for capacity building of farmers on marketing and networking to improve their participation in AIVs market.

Keywords: Social capital, Marketing, African Indigenous Vegetable, Kenya

1. INTRODUCTION

The contribution of smallholder agriculture to reducing poverty and hunger in low-income countries depends on sustainable access to markets (Wiggins & Keats, 2014). Increased

market participation of the poor has been found to be vital in lifting rural households from poverty (Mathenge, Place, Olwande, & Dagmar, 2010). However, smallholder farmers' participation in markets at different levels has remained low due to various challenges. The challenges encountered by smallholder farmers include; high production risks, low market linkage, low bargaining power, high transaction cost, weak technical capacity, lack of reliable market information and limited human and social capital (Okoye, Abass, Bachwenkizi, Asumugha, & Alenkhe, 2016; Ouma et al., 2010). Lack of proper coordination among smallholder farmers limits their ability to bargain for higher prices and denies them the chance to exploit economies of scale from bulking together their individual small volumes (Wambugu, Okello, & Nyikal, 2010). Consequently, smallholder farmers face low prices that dampen their incentives to commercialize and expand production (Poulton, Kydd, & Doward, 2006). In Vihiga County, despite the enormous promotion of production of African Indigenous Vegetables (AIVs) by various research and development organizations, smallholder farmers' participation in AIVs market is still low. Most studies trying to understand factors influencing smallholder farmers' market participation have mainly focused on land size, distance to the market, age, education level and household head as the factors that influence market participation. The role of social capital in facilitating smallholder farmer market participation has been given little attention. This study sought to explore the role of social capital in market participation of smallholder AIVs farmers.

According to various researchers, social capital consists of groups, organizations, relationships, networks, attitudes, and values that govern interactions among people and facilitate productive action, cooperation, innovation, knowledge and information access hence contributing to economic and social development (Nato, Shauri, & Kadere, 2016; Winters, Davis, & Corral, 2002; Woolcock, & Narayan, 2000). Social capital ownership can give rise to more favourable exchange terms, transaction cost reductions, and a wider range of options for coping with risks, through social networks and organizations (Brown & Ashman, 1996). A study by Taruvinga et al., (2017), revealed that elements of social capital namely, flow of resources, quality of information, cooperation, trustworthiness and inclusion in decisions are important predictors of enterprise success. The theory of social capital offers insights into social functioning and how networks and links can be utilized to contribute to positive outcomes for individuals, groups and communities (North, 2004). Social capital can therefore be looked at in terms of the networks, groups, norms and trust that a group of people have for productive purposes. In this study social capital was viewed as the collective norms, trust and networks that AIVs farmer groups need for improved participation in the AIVs market.

In the agricultural sector, some studies have revealed the strength of social capital in different areas. Bandiera & Rasul (2006) found the influence of family and friends (bonding social capital) to have a greater positive influence on the adoption of technologies up to the point where many people in the network have adopted the technologies. A study by (Muange, Schwarze, & Qaim, 2014) found that it is information networks outside a farmer's village rather those inside the village that determined the intensity of exposure to improved cereal varieties in Tanzania. On the other hand, Fafchamps & Minten (2002) found out that more networked traders in Madagascar had higher profit margins compared to the less networked traders. In a study on the commercialization of AIVs, Mwema & Crewett (2019) recommended strengthening network linkages among farmers, as they are more likely to increase levels of commercialisation for indigenous crops.

In Vihiga County, smallholder AIVs farmers do not get the full potential of growing AIVs due to low market participation. Though social capital could be one of the avenues for improving AIVs market participation, there is no empirical evidence of the contribution of social capital in facilitating increased market participation by smallholder farmers. This study aimed at assessing social capital in relation to market participation among smallholder AIVs farmer groups in Vihiga County, Kenya.

2. METHODOLOGY

2.1 Study area

The study was carried out in Vihiga County. Vihiga a county was chosen as the study site since a number of research and development bodies have trained farmers on AIVs production but the marketing aspects have been given little attention. According to Vihiga County Integrated Development Plan [CIDP] (2018), Vihiga County is located in the western region of Kenya, in the Lake Victoria Basin. The County has five sub-counties, namely Hamisi, Emuhaya, Luanda, Sabatia and Vihiga. The county covers a total area of 531.0 Km^2. Its altitude ranges between 1,300 m and 1,800 m above sea level and slopes gently from west to east. The county is categorized into two main agro-ecological zones, the upper and lower midlands. The upper midland zone comprises Hamisi, Sabatia and parts of Vihiga Sub counties. The lower midland zone comprises Emuhaya and Luanda. The county experiences an equatorial climate with well distributed rainfall throughout the year with an average annual precipitation of 1900 mm. The rainfall ranges from 1800 – 2000 mm while the temperatures range between 14ºC - 32ºC, with a mean

of 23ºC. Long rains are experienced in the months of March, April and May which are the wettest while short rains are experienced in the months of September, October and November. The driest and hottest months are December, January and February (Vihiga County Integrated Development Plan, 2018-2022).

According to the 2019 Kenya population and housing census, Vihiga County had a population of 590,013 with a household population density of 143,365. The average number of persons per household is 4.1 (Kenya National Bureau of Statistics [KNBS], 2019). The average farm size in the county is 0.4 hectares for small scale farmers and 3 ha for large scale farmers. Crop production is the mainstream of the county's economy and contributes about 64 per cent to the county's income. Out of the total labour force, over 80% are engaged in small farm agricultural and livestock production activities. The county has 209 market centers and two major towns namely, Mbale and Luanda (Vihiga County Integrated Development Plan, 2018).

2.2 Population and sample

The general population of the study was all the farming households in Vihiga County. The Vihiga CIDP, (2018) report shows that 80% of Vihiga county population are farmers. The county has a total of 143,365 hence 114,469 households are farmers. According to Sustainable Organic Farming Initiative (SOFDI), a Non-Governmental Organization (NGO) working with farmers on organic local vegetable production in Vihiga County, there are approximately 2000 farmers involved in local vegetable production and have been trained on AIVs production (SOFDI, raw data). The target population, therefore, was the 2000 trained AIVs farmers in Vihiga County. The accessible population was the farmers who were actively involved in AIV production and belonged to a farmer group. According to SOFDI there are approximately 570 farmers who are actively involved in AIV production and belong to farmer groups within the County. This was taken as the accessible population for the study

2.3 Sample size

The sample size was derived from the accessible population of 570 AIVs farmers. The population was known, therefore the sample size was determined by Yamane, (1967) theorem using the following formulae.

$$n = \frac{N}{1 + N(e)^2}$$

Where n is the desired sample size, N is the population size and e is the acceptable error (0.07) to obtain a representative sample

Therefore**:**

$$n = \frac{570}{1 + 570\ (0.07)^2}$$

n= 150

2.4 Data collection

Primary data was collected using a pre tested semi structured questionnaire. The questionnaire was installed into Open Data Kit (ODK) software. The data was collected through face to face interviews with the farmers. Data collection assistants were trained on the key aspects of the questionnaire so as to have a common understanding of the questions, data collection ethics and use of ODK in collecting the data. The questionnaire was divided into three main sections. Section one aimed at collecting data on the demographic characteristics of the farmers e.g. age, education, land size. Section two comprised questions on marketing and market participation of farmers in the AIVs market while section three asked about aspects of social capital such as group membership, farmer participation in groups, and conflicts in groups.

2.5 Statistical analysis

Data was analysed using SPSS software. Descriptive statistics which include percentages, frequencies and mean were used to show the status of various demographic characteristics in the study sites. The Chi-square test was used to determine if there was any significant difference in various study variables.

3. RESULTS AND DISCUSSION

The demographic characteristics of the farmers interviewed were age, sex, land size and marital status of the farmer. The study results indicate that there was a

significant difference (P=.002) between the sex of the AIVs farmers interviewed in the two study sub counties. Female AIVs farmers were more in Sabatia (64%) than in Emuhaya (40%). The mean age of the respondent in the two sites was 54 years. The mean land size was 1 acre both in Emuhaya and Sabatia. This indicates that most of the AIVs farmers were smallholder farmers. Majority of the farmers (47%) had attained primary education as the highest level of education. Though most of the farmers interviewed were married across the study sites, the percentage of those married was significantly higher (P=0.016) in Emuhaya than in Sabatia. A possible explanation for this is that Sabatia is more urban than Emuhaya, and hence it is influenced by the urban area effects.

Table 1: Socio economic characteristics of the AIV farmers interviewed

Variable	Characteristic	Emuhaya (n=81)	Sabatia (n=86)	Total (n=167)	Test statistics (χ^2)
Sex (%)	Female	39.6	60.4	63.5	0.002*
Age	min	25	19	19	
	max	78	77	78	
	Mean	55.8	53.2	53.5	
	Std deviation	11.7	13.89	12.9	
Land size	min	0	0	0	
	max	5	3	5	
	Mean	1.0	1.0	1.0	
	Std deviation	0.87	0.89	0.88	
Level of education (%)	None	21.0 (17)	10.5 (9)	15.6(26)	
	Primary	46.9 (38)	47.7 (41)	47.3(79)	0.486
	Secondary	22.2 (18)	27.9 (24)	25.1 (42)	
	Certificate/vocational	4.9 (4)	4.8 (4)	5.4 (9)	
	Diploma	3.7 (3)	7.0 (5)	5.4 (9)	
	University	1.2 (1)	1.2 (1)	1.2 (2)	
Marital status (%)	Married	95.1 (77)	83.7 (72)	89.2 (18)	0.016*
	Not married	4.9 (4)	16.3 (14)	10.8(18)	

Bridging social capital contributes to farmers' linkage to more markets. The study results indicate most farmers sold their AIVs to small scale consumers. Over 80% of the farmers both in Sabatia and Emuhaya sell their AIVs to small scale consumers. The second most common customers were retailers and brokers. Though large scale consumers such as supermarkets, hotels, hospitals and schools can provide better AIVs market prices, very few farmers (4%) had attempted to sell their

vegetable to this category of consumers. Most of the farmers relied on the immediate markets within the community (Figure 1). A study by (Di Falco, S., Bulte, 2013) showed that bonding social capital negatively influenced the adoption of land management practices. This was associated with close kinship ties that create a free rider problem. Equally, farmers' reliance on smalls scale AIVs consumers who are likely to be within their community or kinship may negatively affect the pricing and sale of AIVs.

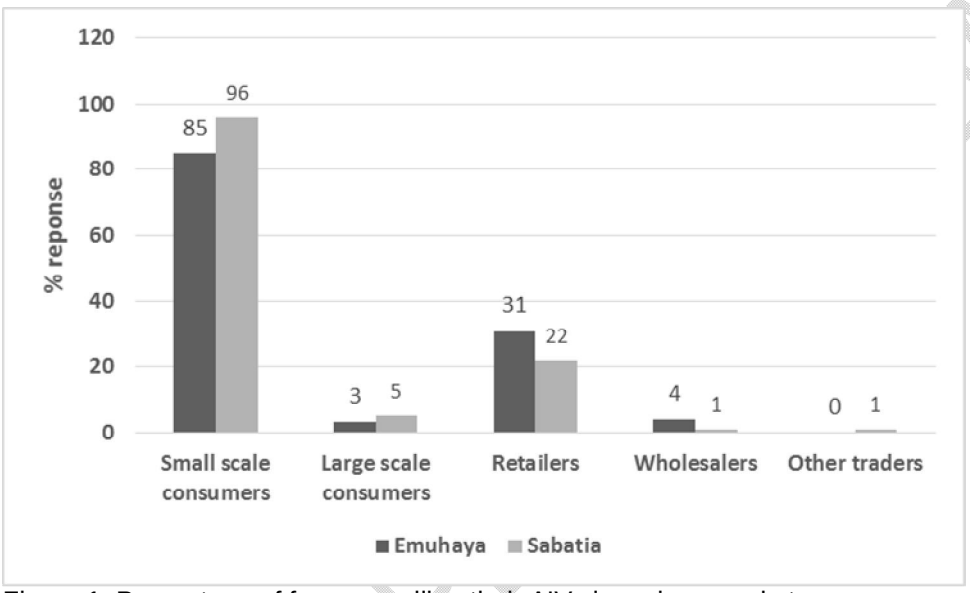

Figure 1: Percentage of farmers selling their AIVs in various markets

Results also showed that most of the farmers sold more than 50% of the AIVs they produced on their farms. However, majority of the farmers (76%) did meet the demand for AIVs needed in the market. The farmers interviewed noted that when they are not able to supply to their customers, they mostly refer them to their fellow farmer farmers (87%), while during low demand periods the farmers mostly sell their vegetables at a low price (68%), produce seed (39%), give to livestock (38%) and some give freely (36%) (Table 2). Despite the fact that farmers experience excess supply and shortage of supply during specific periods, the percentage of farmers who do not do targeted production of AIVs was significantly higher (P=.032) than those who do targeted production.

Table 2: Handling peak and off peak AIVs seasons

Variable	Emuhaya n = 55	Sabatia n = 51	Overall n =106	Test statistics
Handling AIVs in high demand period (%)				

Sale processed/preserved AIVs	7	5.5	6.3	
Refer them to other farmers	84.2	89.2	86.6	
Do nothing	14	9.1	11.6	
Handling AIVs low demand period (%)				
Sale at low price	67.3	68.2	67.9	
Preserve/value addition	10.9	5.9	8.5	
Give to livestock	41.8	33.3	37.7	
Produce seed	29.1	49.0	38.7	
Give freely	34.5	37.5	35.8	
Do target production of AIVs (%)				**χ^2 test**
No	48.8	65.8	57.1	.032*
Yes	51.3	34.2	42.9	

Social network in AIVs marketing

Sources of market information is key to market linkage for better market prices. Results in Table 3 shows that majority of the farmers interviewed seek market information from their fellow farmer (68%) and from farmer groups (57%). Though media is one of the modern market information avenues, most of the farmers did not seek information from the media (6%). These results indicate that the bridging social capital among the AIVs farmers in the study area is low since most farmers seek information from within themselves. This is likely to hinder farmers' market participation to a higher level where they could get better income.

Table 3: Sources of market information

Source of market information	Sub-County					
	Emuhaya		Sabatia		Overall	
	n	%	n	%	n	%
Co-farmers	46	65.7	52	69.3	98	67.6
Farmer group	43	61.4	39	52.0	82	56.6
Buyer	22	31.4	35	46.7	57	39.3
Extension gent	9	12.9	5	6.7	14	9.7
Media	4	5.7	4	5.3	8	5.5

The study also sought to find out how many traders AIVs farmers are networked with. The results indicate that farmers in the study sites are more networked within their villages than they are outside their villages. Within the village, the farmers interact with approximately 8 AIVs traders. However, outside the village, the farmers interacted with approximately 5 AIVs traders (Table 4).

Table 4: Mean number of traders known by the farmers

Variable	Sub-County								
	Emuhaya			Sabatia			Overall		
	Mean	n	SD	Mean	n	SD	Mean	n	SD
Number of AIVs traders farmers interact with within the village	8.2	81	8.3	7.2	85	7.8	7.7	166	8.1
Number of AIVs traders farmers interact with outside the village	5.7	80	5.4	4.7	85	4.9	5.2	165	5.2

Status of bonding and bridging social capital in AIVs farmer groups

Micheels and Nolan (2016) mention that farmers with greater bridging and linking social capital likely have a greater capacity to acquire and assimilate knowledge about new (cutting-edge) technologies and practices coming from sources external to the farm (known as absorptive capacity). The level of cohesion within a group is a pointer to the strength of social capital within a group and the success of a group's activities. The study used weighted score where 1=very weak and 5=very strong to assess the group's stability in social capital. Different aspects of bonding social capital such as level of togetherness, trust and cooperation were measured while farmers' trust in the networks they interact with was used to measure the strength of bridging social capital. Results in Table 5 show that the bonding capital in both Sabatia and Emuhaya sub counties were strong with most of the indicators of bonding social capital scoring 3.5. On the other hand, bridging social in the two study sites was average since most of the indicators used to measure bridging social capital scored 3. Micheels and Nolan (2016) note that farmers with greater bridging and linking social capital have higher chances of obtaining and assimilating knowledge about new technologies and practices from external sources. However, results from this study showed that bridging social capital was high in the study

sites, however, bridging social capital among small holder farmer groups was still low. This may hinder their networking and participation in the higher level AIVs markets such as supermarkets, urban markets, schools and hotels.

Table 5: Level of bonding and bridging social capital in AIVs farmer groups

Sub county	Variables	Average (n)	Strong (n)	Very Strong (n)	Very Weak (n)	Weak (n)	Weighted average rank
Emuhaya	**Bonding social capital**						
	Togetherness in the group	33	25	12	4	3	3.5
	Trust within the group	28	31	8	3	6	3.5
	Cooperation among group members	28	28	10	2	9	3.5
	Trust to the group leadership	24	20	21	6	6	3.6
	Trust on the agriculture information accessed from group members	36	24	10	1	6	3.5
	Average score						**3.52**
	Bridging social capital						
	Trust the agriculture information accessed neighbors	44	14	1	9	12	2.8
	Trust the agriculture information from ministry of agriculture	34	14	13	12	7	3.1
	Trust the agriculture information from NGOs/CBOs	37	13	10	7	13	3.1
	Trust the agriculture information from research institution/university	29	4	13	20	14	2.7

Trust the marketing information from traders	46	17	4	5	8	3.1
Trust the information from AIVs consumers who buy from you	46	19	4	5	6	3.1
Average score						**2.98**
Bonding social capital						
Togetherness and cohesion in the group	22	47	8	3	2	3.7
Trust within the group	21	43	15	2	1	3.8
Cooperation among group members	19	46	13	2	2	3.8
Trust to the group leadership	15	45	17	2	3	3.9
Trust on the agriculture information accessed from group members	33	42	6	1	0	3.6
Average score						**3.76**
Bridging social capital						
Trust the agriculture information you accessed neighbors	50	20	1	2	10	3.1
Trust the agriculture information from ministry of agriculture	32	17	13	5	15	3.2
Trust the agriculture information from NGOs/CBOs	30	16	12	11	14	3
Trust the agriculture information from research	20	12	13	15	22	2.8

institution/university						
Trust the marketing information from traders	33	30	0	9	12	3
Trust the information from AIVs consumers who buy from you	34	29	4	6	11	3.2
Average score						**3.05**

Causes of low social capital in AIVs farmer groups

Farmer groups provide an essential entry point for improving agricultural production and income (Nyang and Webo 2010). However, if the bonding social capital is not well developed in farmer groups, they will not get the benefits of working as a group. Results in Table 5 show that there was a significant difference (p=.030) in the various conflicts experienced within the groups across the study sites. Time management, financial accountability, decision making and leadership wrangles were respectively the most common challenges experienced in both Emuhaya and Sabatia. Lack of strategies to deal with conflict in groups may lead to reduced bonding social capital. The groups are therefore likely to spend most of their time solving conflicts as opposed to planning for developmental activities within the group.

Farmer's constraints to marketing of AIVs

Farmers in Sabatia and Emuhaya sub Counties experience a myriad of challenges in AIVs marketing. Low market price (64%), meeting the required quantity 51% and quality (27%) were the main challenges that the interviewed farmers experience (Table 6). The low market price could be associated with the fact that the farmers do not do target production hence they all produce in the same period.

Table 6: Percentage of farmers reporting the constraints to marketing of AIVs

	Sub county		
Constraint	Emuhaya	Sabatia	Overall
Low market price	36.6	27.7	64.4

Meeting the quantity required	23.8	26.7	50.5
Meeting the quality required	7.9	18.8	26.7
High transaction cost	5.0	8.9	13.9
Don't meet the contractual requirement	8.9	5.9	14.9

Farmers belonging to a group is a form of social capital which may be beneficial if well utilized. The study sought to find out the activities that farmers do in their groups. The most common activities mentioned included; monitoring group members farming activities (64%), savings (51%) and provision of labour.

Table 7: Causes of group conflicts

Causes of group conflicts	Sub-County						
	Emuhaya		Sabatia		Total		
	n	%	n	%	n	%	χ^2 test
Time management	40	57.1	45	73.8	85	64.9	.030*
Financial accountability	31	44.3	21	34.4	52	39.7	
Decision making challenge	29	41.4	20	32.8	49	37.4	
Leadership wrangles	26	37.1	11	18.0	37	28.2	
Misunderstanding among members	4	5.7	2	3.3	6	4.6	
Lack of cooperation	1	1.4	4	6.6	5	3.8	
Different personal expectations	1	1.4	2	3.3	3	2.3	
Gossip	3	4.3	0	0.0	3	2.3	
Weak group leadership.	2	2.9	0	0.0	2	1.5	
Lack of transparency	1	1.4	1	1.6	2	1.5	
Total	70	100.0	61	100.0	131	100.0	

4. CONCLUSION

The study sought to find out the status of social capital in relation to farmers' participation in the AIVs market in Vihiga County, Kenya. Results indicate that majority of the AIVs farmers are small holder women who own a mean land size of

approximately 1 acre. Most of the interviewed farmers sell more than 50% of the AIVs they produce on their farms. However, these farmers are not able to meet the demand of AIVs during some periods of the year and they also experience seasons of plenty where they are not able to sell what they have. Despite this challenge, most the AIVs farmers do not do targeted production of AIVs. There is a need to train farmers on targeted production and selling of AIVs for improved income.

The study found that the bonding social capital within the farmer groups is stronger than the bridging social capital. There is trust and cohesion within the farmer groups. This was revealed by the level of trust they have in the information they receive from within themselves. However, they experience some challenges such as time management, financial accountability and leadership wrangles within the groups. For improved functioning of the groups, the farmers need to be trained on the advantages of working as a group, the importance of members' commitment to group activities and effective ways of dealing with aspects of group leadership and governance. These will improve the functioning of the groups' agriculture development activities. The trust level of information sought from other sectors (bridging social capital) was average. To improve farmers' participation in the AIVs market, the farmers need to be trained on the importance of building trust within their social networks for improved marketing of their AIVs.

CONSENT (WHERE EVER APPLICABLE)

Consent was sort from the farmers prior to the interview. Only those who were willing to participate were interviewed.

ETHICAL APPROVAL (WHERE EVER APPLICABLE)

The study was approved by the Kenya National Research Coordination Body

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APPENDIX

Appendix-1 MAP OF THE STUDY AREA