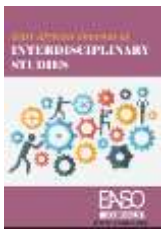

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Original Article

Evaluation of Social Capital Attributes as Predictors of Collective Actions among Smallholder Farmers in Tinderet Sub-County, Kenya

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ABSTRACT

Small farms make up 85% of farms worldwide. Similarly, in Kenya, the agriculture sector is dominated by smallholder farmers. To overcome constraints imposed by small units and for sustainable development, smallholders often organise themselves into groups or farmer-producer organisations (FPOs) to access services. They exploit elements of social capital; social networks, norms and trust to enhance cooperation for collective actions. It is often assumed that social capital attributes among farmers' groups are exploited for positive collective actions such as access to credits and the sale of aggregated produce. Social capital attributes, however, differ from one farmer organisation to another. This study evaluated levels of social capital attributes among farmers from value-chain-linked groups. The predictive value of the social capital indicators on the desired outcome of collective actions was investigated. Based on a retrospective study design, interviews were conducted on 72 farmers drawn from 9 FPOs with 215 members. Attitude scales ranked 1 to 5 were used to gather the opinions of participants on the attributes. Participants were sampled by purposive and multi-stage sampling schemes. Single-sample Wilcoxon test was used to analyse strength of each attribute among participants. Median value for indicators of social trust, social participation, norms, common vision and social networks were significantly higher than 'neutral,' $P < .05$. Collective actions in inputs-acquisition and produce-selling did not differ significantly from 'neutral' ($P > .05$). The mean for social capital attributes had strong predictive ability on collective actions as tested by Spearman's Rank analysis using SPSS; $R2 = .382$, $P = .000$. The collective actions in learning, inputs-purchase, produce-selling, price negotiations and market-information seeking could be predicted from the social capital attributes evaluated. It is recommended that stakeholders build capacity of FPOs, particularly for collective actions in inputs-acquisition and marketing of produce for sustainable development.

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INTRODUCTION

Agriculture remains an important contributor to the Gross Domestic Product (GDP) in Africa. Smallholder farms in particular have an important role to play, they make up about 85% of all farms worldwide, a majority of which belong to the rural poor. In Sub-Saharan Africa, the smallholders make up about 80%. In Kenya, the agriculture sector, also dominated by smallholders, plays a vital role in the rural economy contributing 33% of Gross Domestic Product (GDP) directly and another 27% indirectly through linkages with other sectors such as manufacturing and industry (FAO, 2023). The sector contributes 65% to export earnings and provides livelihood for more than 80% of the Kenyan population. Smallholder farmers often organize themselves into groups or farmer organisations to overcome the constraints imposed by their small units of individual farms. They leverage their collective strength to access credit, technology, and high-value markets and even enter into partnerships with private entities (Agarwal & Goyal, 2022). Among the smallholder farmers' constraints is their ability to handle marketing issues, their ability on this, is particularly limited. On their own, individual smallholder farmers face huge challenges due to a lack of economic strength (Ministry of Agriculture and Farmers Welfare, 2021). Their strength is increased through their aggregation into producer groups. The producer groups play a key role in enhancing the ability of smallholders to access inputs, markets and training to build their capabilities (IFAD, 2023).

Rationale for Farmer Producer Organizations

The capabilities of smallholder rural farm households are generally low and this aspect often forces them to come together to form organizations. When smallholders work together it makes it easier for them to access farm inputs, aggregate their produce and access regional and external markets (IFAD, 2022). Such farmers' organizations can be formal or informal, so that they are both registered and therefore formally recognized or unregistered and thus informal. Either way, these membership-based collective action groups serve their members who receive their livelihoods or part of it from agriculture (Master Card Foundation, 2020 as cited by Kampmann & Kirui, 2021). The farmers come together to form organizations in order to exploit the benefits of social capital. Whereas individualism means that everyone succeeds or fails because of their own actions and abilities, the social networks of formal organizations bring about mutual benefits to individuals and groups. Putnam (1993) as cited by Tristan (2021) explains that social capital refers to features of social organizations such as; networks, norms and trust among individuals, leading to cooperation for mutual benefits. Coleman (1988) argues that individuals engage in social interactions, relationships and networks for as long as benefits persist. On the same concept of social capital, Bourdieu (1988) as cited by Robison (2023a) argues that social relationships give individuals access to the resources of other members. This view means that there is some pooling of resources for mutual benefits; arguably the pillar of social capital. But what is this concept called social capital per se?

This study is based on Social Capital theory. The theory posits that social relationships are resources for human development (Tristan, 2021). The concept of social capital can be split into two

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aspects; the social context and the productive benefits that it has (the capital). Social capital has been viewed as the accrued actual or virtual resources gained by individuals or groups as a result of mutual relationships (Bourdieu, 1986 as cited by Tristan, 2021). The view by Putnam (1993) as explained by Tristan (2021) is that social capital is the mutual benefits that result from social networks, social norms and trust among individuals leading to their cooperation for mutual actions. On the other hand, Coleman (1988) views social capital as a group-asset resulting from individuals engaging in interactions, relationships and networking for mutual benefits (Tristan, 2021). Despite these apparently varied views on what constitutes social capital; one thing is clear it is the interaction among members of a society or group that generates some tangible or intangible resources to the benefit of the participants in the group either individually or as a group. It has been argued that the positive interactions or relationships between individuals or groups depend on what people have in common; what some scholars have referred to as commonalities (Robison, 2023a). This school of thought suggests that the absence of commonalities results in weak support for collective actions (Robison, 2023a). The commonalities here are understood to mean the things persons have in common or the values that they share (Robison, 2023b). These commonalities apply to smallholder farmer organisations.

Successful relationships that foster social capital in farmers' organizations, however, are expected to differ from region to region and from one context to another. As Robison (2023a) argues, the absence of commonalities (common interests) between group members often results in relationships of apathy and even hostilities between individuals or groups. The consequence of this is negative social capital. Negative social capital within a group is indicative of the presence of conflicts or some form of social tension among the members. Whereas the notion of social capital is critically important in many ways for sustainable rural development, it is hindered in rural areas by many factors such as rivalries, social tensions and conflicts brought about by differences in status, classes and other circumstances (Rivera *et al*., 2018). Authors on the subject of social capital explain that two important attributes of social capital are imperative if positive social capital is to be realized. First is the bonding among group members to build within-group trust and collective actions, second is bridging; building out-group trust or building vertical social networks and ensuring there is inclusion and taking advantage of diversity (Rivera *et al.,* 2018).

According to Rivera *et al.*, (2018), the concept of social capital remains controversial; authors focus on different dimensions in operationalizing the concept. The author documents examples of scholars with different approaches; some focusing on trust (Fukuyama, 1995), others on objective and subjective association with reciprocity (Paxton, 1999), trust and norms of cooperation (Knack & Keefer, 1997), links between people who know each other (Putnam *et al*., 2003) and sharing of common interests (Cohen & Prusak, 2001). Apparently, all the authors appear to observe that social capital is grounded in social relations among people who want to achieve shared goals. This study focused on the indicators of positive social relations among groups of people who desire to work together; individuals who tend to have something in common or tend to behave as such. The individuals in the groups at least had something in common.

The presence or the perception of commonalities between individuals or groups, while it is a precursor for positive social interactions and a buildup of social capital, is arguably not the only factor that contributes to the shared benefits. The norms and the social values may be part of what the people have in common. They may have similar interests in their socio-economic activities; however, their attitudes and trust are critically important in creating a favourable environment for mutually beneficial action as argued by Biresaw(2019). The social norms which specify what people regard as proper or not proper (Keefer & Knack, 2003) may be held in

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common by individuals in a group or society, but the trustworthiness varies across individuals (Keefer & Knack, 2003). This study focuses on this and other aspects of social capital such as individual attitudes.

Attitude, Trust and Cooperation as Elements of Social Capital

Attitude is defined by the Merriam-Webster (online) dictionary as "a mental position with regard to a fact or state, a feeling or emotion toward a fact or state". This definition suggests that just like trustworthiness the aspect is expected to vary across individuals and contribute differently to social capital. In line with this, Biresaw (2019) considered trust and attitudes as cognitive forms of social capital. Both the attributes of attitude and trust are viewed as contributing to cooperation among individual group members and between groups. They may influence behaviours such as sharing information freely, listening to others and recognizing each other's achievements in social networks. These behaviours have been referred to by Robison (2023b) as 'relational goods'. The author has defined relational goods as intangible signals that are exchanged in social networks. It is tenable that these attributes are derived from the attitudes of individuals towards others and their actions. Whereas relational goods appear to relate to positive attitudes, there is what Robison (2023b) also refers to as 'relational bads' which contribute to negative social capital. Such 'relational bads' within a social network include mistrust and being secretive, withholding of information or sometimes expressing hostilities towards each other. This again appears to suggest that the 'relational bads' reduce the efficacy of trust and cooperation in contributing to social capital. In view of the apparent nexus between attitude, trust and cooperation this study treats attitude as contributing to other attributes such as trust and adherence to societal norms thus contributing to cooperation for collective actions.

Social Norms

What is the role of social norms in all this? It is generally agreed that social norms dictate how people view facts and behaviours; either as proper or improper (Coleman, 1990 as cited by Keefer & Knack, 2003). They constitute the unwritten societal rules and belief systems. This includes spelling out what we believe others approve of or the expectations of the individual and that of others (UNICEF, 2021). It is tenable that when people adhere to the unwritten societal rules, they relate well and ultimately trust and cooperate with one another. But then the right attitude is also expected to contribute to the adherence to social norms. On the contrary, when they break the norms, they end up relating badly, failing to trust and cooperate with one another and compromising any efforts aimed at teamwork and collective actions. This apparent nexus between the various attributes of individuals is expected to determine relationships among the members of a farmers' group.

Statement of the Problem

There are diverse dimensions to social capital, but overall it is about positive social interactions among individuals and groups for their mutual benefit. The shared goals or mutual benefits among rural farming communities arguably may include enjoying economies of scale through joint purchasing of farm inputs, joint sale of aggregated farm produce, joint produce price negotiations, joint learning and information sharing. In this regard, informal farmers' organizations have emerged in many developing countries to undertake some of these collective actions. The informal farmers' organizations commonly referred to as Common Interest Groups (CIGS) in Kenya, are deliberately formed farmers' organizations that bring together smallholder farmers to achieve these goals. But how common are their common interests or their vision? To what extent do they trust one another? Are the attitudes conducive to the buildup of social capital? To what extent do they associate with reciprocity? Cooperate with one another; exhibit social participation. To what extent do they learn/share information in their social relations? The current study investigates a few of these aspects in the multi-dimensional notion of social capital among Common Interest Groups of

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smallholder farmers in Tinderet sub-county, Nandi County, Kenya. How about negative social capital? Do the CIGs also suffer from negative social capital?

To what extent do the CIGs suffer from the inability to resolve conflicts amicably in the spirit of subjective and objective association? Do conflicts result in negative social capital? The absence of common interest; referred to by Robison (2023a) as commonalities often results in relationships of apathy or a lack of interest leading to negative social capital. Negative social capital is characterized by hostile and destructive acts resulting in inferior benefits from the interactions (Robison, 2023b). It is arguable that such destructive and defensive acts result in conflicts among individuals or groups involved in the social network. Such conflicts sometimes are so intense and irreversible to a point the FPO is unable to function and ultimately becomes dormant or even completely collapses. Despite the significant potential role that farmer organizations can play as they exploit social capital, there is a considerable knowledge gap regarding the attributes of social capital and the derived benefits from social capital among smallholders.

Research Questions

- What are the levels of social capital attributes among the members of the existing farmer-producer organizations?
- Do social capital indicators among the group members have predictive value on the desired outcome of collective actions for mutual benefits?

CONCEPTUAL FRAMEWORK

Indicators of the Elements of Social Capital

Positive Social Capital Attributes of Individuals as Input Variables

The willingness for joint actions that lead to mutual benefits among group members is largely derived from positive social capital attributes such as trust and teamwork. Seven attributes of individuals were assessed as indicators of the elements of social capital. The attributes were a measure of a willingness to participate or the attitude towards;[1] teamwork (as an indicator for social participation), [2]mutual trusts (social trust), [3] amicable resolutions of conflicts when they occur in a manner of give and take (reciprocity) and[4]groups being managed as per the expectations of the society (compliance with the social norms). The others were;[5]positive views towards group approach as the best way for sustainable socio-economic development (a common vision), [6]positive views towards diverse joint activities (social networking) and [7] positive views towards participation in financial engagements within groups (Financial credit networks). The seven indicator variables were deliberately selected to coincide with variously mentioned documented elements of social capital as captured from a literature review. A strong willingness for group teamwork was taken as an indicator for high social participation, mutual trust for social trust, amicable resolutions of conflicts for mutual reciprocity, groups managed based on society expectations as an indicator for adherence to social norms, groups being viewed as the best way to go for sustainable socio-economic development as an indicator for a common vision, participation in financial engagements as an indicator of social networks for access to financial resources and groups being viewed to have diverse roles as an indicator of social networks. These attributes contribute to positive social capital. Do these social capital attributes exist among smallholder farmers in Tinderet Sub County? And if they do, do they contribute significantly to joint actions among the smallholder farmers? The current study investigated.

Mutually Beneficial Actions as an Outcome

This study was based on the premise that common interests of the farmers' organizations revolve around joint beneficial activities such as joint purchasing of farm inputs, joint bargains or negotiations for produce prices, joint seeking of market information, aggregation of farm produce to facilitate joint selling and joint learning/information acquisition on agricultural practices and marketing. In this study, the joint activities were treated as a potential outcome of

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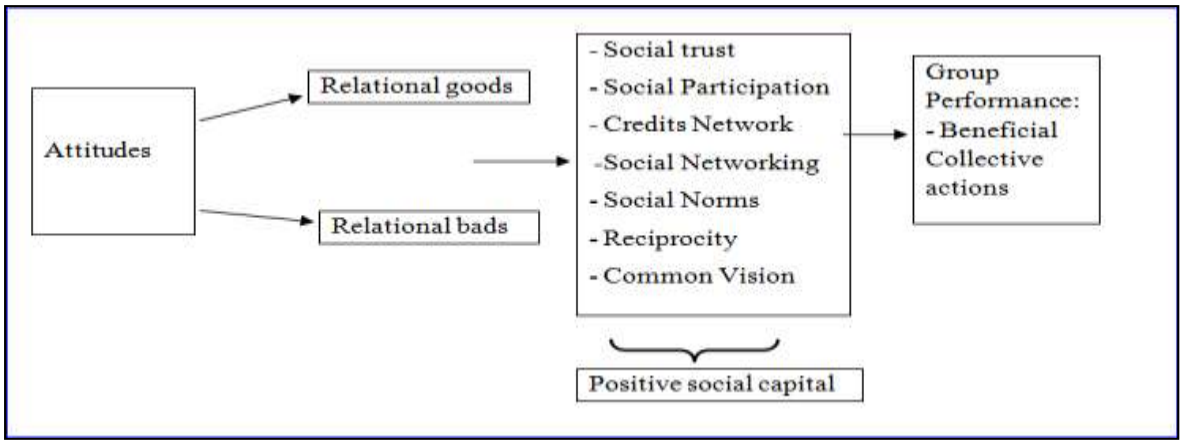
positive social capital among groups of farmers. Such collective actions were expected to result from the willingness of the participants to engage in the collective actions. Their attitude and willingness to engage were estimated by the positive social capital indicators as illustrated in the conceptual framework (*Figure 1*).

Figure 1: Conceptual Framework on the build-up of social capital for collective group actions



METHODOLOGY

Study Site

This study was carried out in the Tinderet sub-county of Nandi County Kenya (Figure 2). Tinderet is one of the six sub-counties of Nandi County in Kenya. The sub-county covers an area of about 557 Km^2. It has a population of about 20,172 farm households (KNBS, 2019), a majority of whom are smallholder farmers.

Figure 2: Map of Nandi County, Kenya, showing the study area

(**Source**: Google Maps, 2023); https://www.google.co.ke/maps/place/Tinderet/)

Study Design

The study used a retrospective study design. Interviews were conducted to elicit information on the opinions of farmers who were already members of smallholder farmer organizations. The smallholder farmers were organized into

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common interest groups (CIGS). The term 'Common interest groups' in this context refers to Farmer Producer organizations that are single-commodity based; consequently, CIGs and FPOs are used interchangeably in this study. The farmers who were organized into three value chains as CIGs were purposively selected to participate in the study. Farmers in the study area participated in three value-chain-based enterprises; Vegetables, indigenous chicken and Dairy. Purposive and multi-stage sampling techniques were used to select the participants for the study. One-third of the groups were selected from each of the three value chains. The groups were purposely cross-checked to ensure they had been in existence for at least over three years. Two out of 4 administrative Wards were purposively chosen based on enterprises, to participate in the study. From the two Wards, one-third of the administrative locations were randomly selected to participate. About one-third of the members from each common interest group within the location were then randomly selected in a third stage selection of the participants (*Table 1*).

Table 1: Structure of the sample

Value Chain	No. of Groups selected and (membership)	No. of Participants sampled
Vegetables	3 (78)	26
Dairy	2 (55)	19
Indigenous chicken	4 (82)	27
	9 (215)	72

A structured interview was conducted by trained interviewers who were conversant with the value chains. The pre-determined sets of questions were asked in the same way guided by an interview schedule with both open-ended and closed questions. One of the merits of the structured interview is that it provides uniform information that can be a source of comparable data and secondly, it requires fewer interviewing skills (Kumar, 2011). Since the study adopted a retrospective design, the participants provided data based on their past. This was an appropriate study design since the principal character of interest, social relationships within groups, had already occurred. The FPOs selected for the study had been in existence for over 3 years. In this regard, the participants were already exposed to the treatments; the social interactions within the FPOs had already occurred. These participants were requested to provide honest opinions and information through memory recall.

Data Analysis

Descriptive and inferential statistics were used to analyse the data. The ordinal data collected from the 72 participants were converted into continuous data by ranking, summing and averaging. The resultant continuous data on the views were subjected to a one-sample Wilcoxon Signed-Rank Test to analyse their deviation from a hypothesized median of 3. The pre-determined median of 3 coincided with neutral views on the statements presented. The calculated statistic was compared with the critical value at a significance level of .05. Descriptive data such as means and standard deviations were generated from the summed-up continuous data. The predictive ability of the indicators of social capital on the outcome variable was tested using Spearman's Rank correlation analysis. All the computations were done on Statistical Package for Social Sciences (SPSS) Version 27.

RESULTS AND DISCUSSION

Socio-Demographics

The participants were aged between 23 and 73 years with a mean age of about 43 years. A majority of 44.4% had completed primary-level education (*Table 2*). Gender-wise, 40.3% were females and 59.7% were males. In regard to education a majority had primary level education (44.4%), 23.3% had secondary school level as illustrated in *Table 2*.

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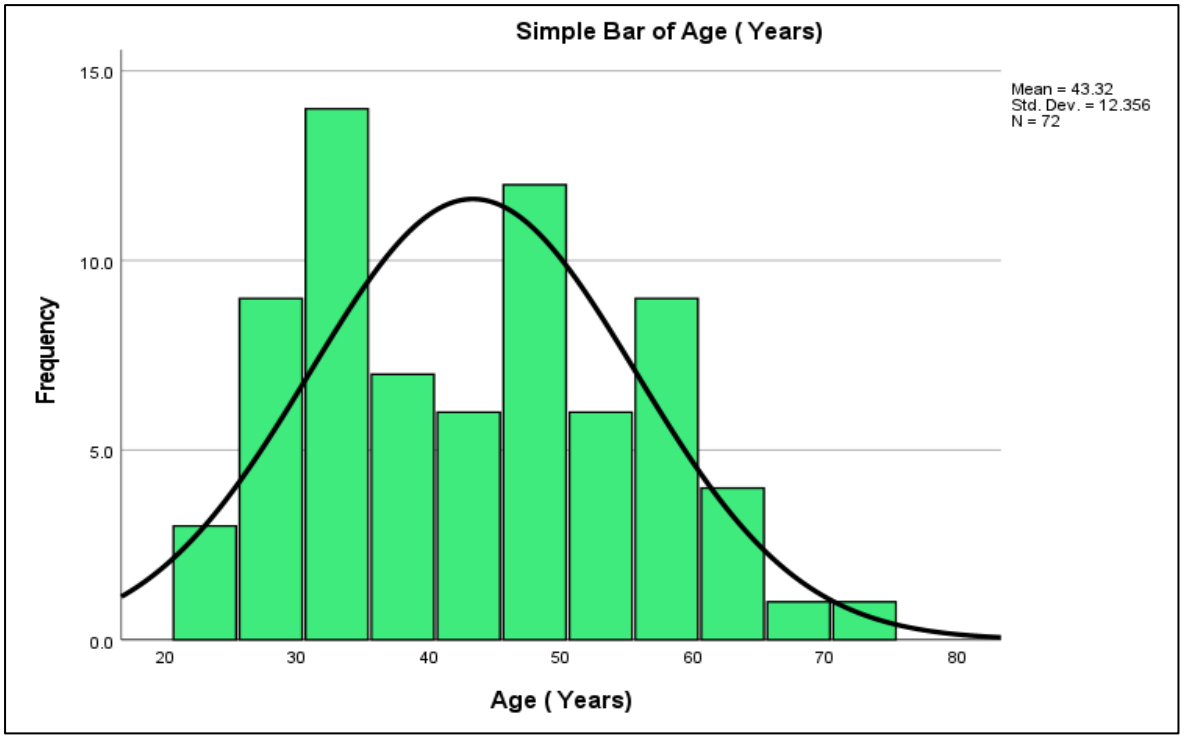
Table 2: Education levels and gender of the respondents

		Frequency	Percent
Education	No Formal Education	5	6.9
	Primary	32	44.4
	Secondary	17	23.6
	Certificate/Diploma	14	19.4
	Degree	4	5.6
Gender	Male	43	59.7
	Female	29	40.3
	Total	72	100.0

The ages of the participants showed a fairly high coefficient of variation of about 28.5%, suggesting a fairly high dispersion of the ages away from the mean. The age of the respondents has implications for inclusivity in the farmers' organizations. The inclusion of all age categories in the FPOs is desirable; particularly for purposes of inclusion of the youths who have a high level of technological know-how and an ability to take on significant levels of risks (Ministry of Agriculture Livestock Fisheries and Irrigation, MOALF&I, 2018). Some reports suggest that youth engagement in agriculture is declining and may have adverse effects on food security (Afande *et al.*, 2015). The current observation in regard to youth involvement in FPOs suggests some level of parity among age categories as illustrated in *Figure 3*.

Figure 3: Age distribution of the participants



Social Trust

To establish the opinions of the respondents on the social capital attributes a summated rating scale was used. The results for all the seven attributes investigated are illustrated in *Figure 4*. Trust among the group members as measured on a ranking scale was tested for the strength of its presence by a single-sample Wilcoxon signed-Rank test against a median of 3. A value that was significantly less than 3 (neutral) would be treated as very weak, a value significantly greater than 3 a strong attribute. A one-sample Wilcoxon test revealed that the level of trust among the participants was significantly higher than the

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hypothesized median of 3 (Z = 3.357, P = .001). Descriptive statistics revealed a mean value of 3.6 with a standard deviation of 1.23. The attribute was thus strong among the participants. The attribute contributed significantly to joint learning, joint inputs purchase, joint price negotiations and joint seeking of market information (P<.05) as measured by Spearman's Rank correlation coefficient (*Table 3*). The attribute showed a weak linkage with the joint selling of farm produce; r_s = .20, P = .092. According to Rea and Parker (1992), a rank coefficient of between .10 and .20 is regarded as weak, above .20 to below .40 as moderate, above .40 to below .60 as relatively strong, above .60 to < .80 as strong and above .80 as very strong (Kotrlik *et al*., 2011). This observation means that individuals who perceived their group members as being trustworthy were more likely to report positively on their joint activities in learning, inputs-purchase, price negotiations and market-seeking (*Table 3*).

Table 3: Correlation between social trust attribute and collective actions

Collective actions	r_s	P	description
Learning	0.418	.000	Relatively strong
Inputs purchase	0.234	.048	Moderate
Price negotiations	0.408	.000	Relatively strong
Market seeking	0.219	.065	Weak
Selling of produce	0.200	.092	Weak

Social trust is often viewed as an important element in social capital (Danau *et al*., 2015). The current finding on the links between social trust and collective actions is consistent with the argument by Serewitu (2021) that where there is a high social capital most likely members are willing to participate in collective actions.

Social Participation

The participants' views on the extent to which they worked as a team varied as illustrated in *Figure 4*. Overall, they exhibited high social participation attributes as measured by their mean score on the extent to which they worked as a team within their groups (Mean 4.0 ±1.101). Their median score was significantly correlated positively with joint learning, inputs purchase and price negotiation, but showed a weak link with market-information seeking (*Table 4*).

Table 4: Correlation between teamwork attributes and collective actions

Collective actions	r_s	P	description
Learning	0.367	.002	Moderate
Inputs purchase	0.262	.026	Moderate
Price negotiation	0.422	.000	Relatively strong
Selling	0.162	NS	Weak
Market-information	0.203	.088	Weak

The arguments by Abdul-Rahaman and Abdulai (2020) suggesting that members who belong to farmer groups have enhanced coordination and are likely to spend in purchasing inputs and accessing improved technologies is in tandem with the current findings in regard to inputs purchase and joint learning respectively. The views by Danau *et al.* (2015) are that a teamwork spirit may be created when farmers are working in a group.

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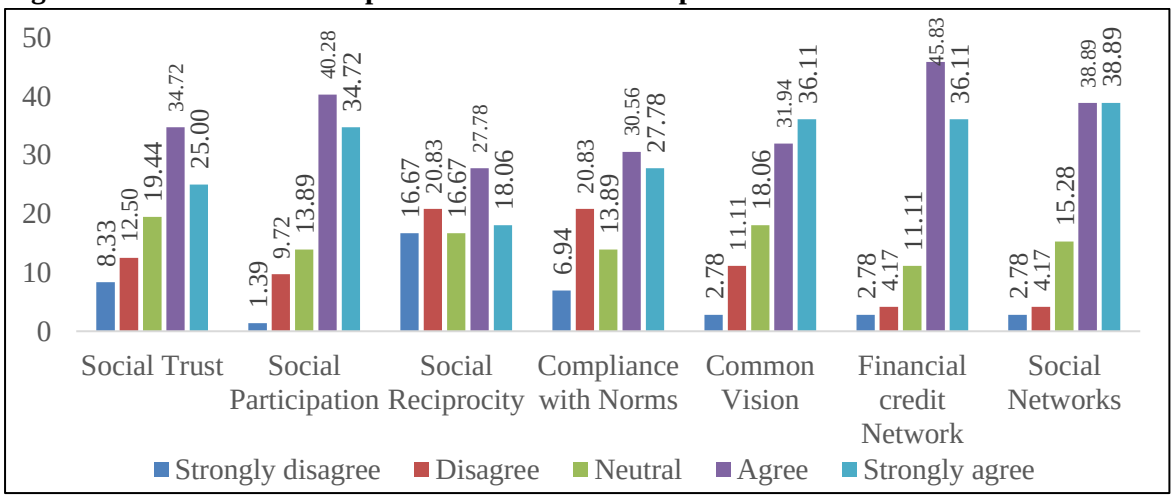
Figure 4: Distribution of Responses based on social capital indicators



Reciprocity

The median value for reciprocity did not differ significantly from neutral with a mean of 3.1±1.38, but it varied among participants as illustrated in *Figure 4*. This attribute of social capital was weak. This observed weak score suggests the possibility of unresolved social tensions within the farmers' organizations. It tends to indicate that the existing conflict resolution mechanisms within the groups may be inadequate. The attribute had a significant positive correlation with joint inputs purchase and joint selling ($P< 0.05$) as demonstrated in *Table 5*.

This observation may probably be due to the farmers who had previously engaged with a contractor to produce some vegetables for export as captured in the unstructured comments. They may have benefited from close observation by the buyer to ensure they purchased the correct inputs and ultimately marketed the produce together. According to Abdul-Rahaman and Abdulai (2020) members who belong to farmer groups are likely to influence each other in the purchase of inputs. This observation is consistent with the current finding suggesting a relatively strong link between working together amicably and joint purchase of farm inputs.

Table 5: Correlation between Reciprocity and collective actions

	r_s	P	Description
Learning	0.100	NS	Negligible
Inputs purchase	0.460	<.001	Relatively strong
Produce selling	0.268	0.023	Moderate
Price negotiations	.041	NS	Negligible
Market information	.077	NS	Negligible

Social Norms

This attribute was indicated by the extent to which the management of the FPOs met the general society's expectations. The indicator differed significantly from neutral ($P < .05$), with a mean score of 3.5±1.30 and diverse views as illustrated in *Figure 4*. The correlation between the attribute with joint activities was largely moderate and significant ($P< .05$) as depicted in *Table 6*. This observation implies that FPOs somehow meet the expectations of the general society where they are located.

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Table 6: Correlation between Social-norms compliance and collective actions

	r_s	P	Description
Learning	0.365	.002	Moderate
Inputs purchase	0.282	.016	Moderate
Produce selling	0.401	<.001	Moderate
Price negotiations	0.330	.005	moderate
Market information	0.252	.033	Moderate

Common Vision

The concept of a common vision among the participants was indicated by the extent to which individuals in the group viewed the farmer-producer group as the best way to achieve development in agricultural enterprises. The opinions were as diverse as illustrated in *Figure 4*. This attribute posted a mean score of 3.9±1.12. This indicates a strong positive attitude towards groups for positive growth among the smallholders. The additional comments collected during the survey indicate that a majority of the participants had benefited from donor-funded projects; a factor that may have been responsible for the apparently high scores for a common vision. This social capital attribute, however, did not show any significant correlation with the selected collective actions (*Table 7*).

This observation of poor link between views on a common vision with collective actions may be interpreted to mean that although members of the producer organizations generally tend to have common vision, it ultimately does not strongly translate to joint actions. This suggests that other factors other than a common vision may be at play. In some of the unstructured comments sought, some participants cited "governance as a major challenge, poor management, and supervision by government required". These comments suggest a potential existence of disharmony within the groups and possibly attributed to poor governance within the groups. As reported by Rivera *et al.* (2018), sometimes rivalries, tensions and conflicts that are difficult to overcome compromise seriously on the social capital. The current study lends some credence to this argument.

Table 7: Correlation between common vision views and collective actions

	r_s	P	Description
Learning	0.181	NS	Negligible
Inputs purchase	0.040	NS	Negligible
Produce selling	0.217	.068	weak
Price negotiations	0.220	.064	weak
Market information	0.219	.064	Weak

Financial Networks

The extent to which the producer groups were useful for financial networking benefits received a high rating from the participants. A majority of the participants either agreed or strongly agreed with the usefulness of the FPOs for financial credit networks (*Figure 4*). The attribute had a mean score of 4.1±0.94. This suggests that the views towards groups as an avenue for accessing financial credits were strongly regarded among the group members. Interestingly, this attribute did not show any significant correlation with the selected joint actions (P > .05) as illustrated in *Table 8.*

This is an intriguing observation which can be translated to mean that the majority of the members of FPOs may be interested in their organizations only as a source of financial credit, but not for further cooperation like undertaking joint purchase of inputs or joint marketing of produce. It probably indicates that financial credits may be a stronger commonality as compared to other common undertakings among smallholder farmers. It is for the same reason that

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strong views were captured amongst the participants in praise of their organization for the 'table banking' component.

Table 8: Correlation between views on financial importance and collective actions in groups

Collective action	r_s	P	Description
Learning	0.191	NS	weak
Inputs purchase	0.024	NS	Negligible
Produce selling	0.210	0.076	weak
Price negotiations	0.171	NS	weak
Market information	0.380	< .001	Moderate

Social Networks

The concept of social network was assessed through the degree to which individuals in the producer organizations engaged in diverse socio-economic activities within the group. This was taken as an indicator of vertical and horizontal social connections that constitute social networking. This indicator posted a high mean score of 4.1 ± 0.98, suggesting that group members embraced social networking. The responses, however, were diverse as illustrated in *Figure 4*. The correlation between the scores with joint actions was not significant (*P*>.05) as shown in *Table 9*.

The observation made suggests that the strong social networks that existed among producer organizations may have been utilized for other diverse activities but did not benefit the desired outcome of joint purchase of inputs and aggregation of produce for joint sales. It suggests a weak link between the social capital attribute and the desired collective actions for socio-economic gains. The social networks that exist probably are utilized more for non-economic activities such as visiting and gifting each other as suggested in one of the unstructured comments. The positive social networking in particular would be expected to improve the smallholder farmers' access to markets as joint market-information seeking would be expected to benefit from it. Elisabeth and Martin (2010) have argued that high transaction costs adversely affect the entry of smallholder farmers as individuals into quality markets. With social networks in producer organizations, small-scale farmers are better able to take advantage of market opportunities.

The single-sample Wilcoxon test carried out to establish the strength of each of the seven social capital attributes revealed that one of the seven had a score that did not differ significantly from 3. The attribute of reciprocity which was measured by the extent to which the group members were able to exercise the spirit of give and take, even to resolve conflicts when they occur, posted a mean score that was not significantly different from neutral (P > .05) as illustrated in *Table 10*. This suggests that high levels of weakness in regard to this attribute exist amongst the FPOs.

Table 9: Correlation between Social networking and collective actions

Collective action	r_s	P	Description
Learning	0.208	0.079	weak
Inputs purchase	0.062	NS	Negligible
Produce selling	0.114	NS	Negligible
Price negotiations	0.095	NS	Negligible
Market information	0.077	NS	Negligible

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Table 10: Single Sample Wilcoxon Test (median = 3) for Social capital attributes (N=72)

Attribute tested	*Z* statistic	P value	median	Mean
High level of trust (social trust)	3.357	.001	4	3.6 ± 1.23
Teamwork (social participation)	5.785	.000	4	4.0 ± 1.01
Resolution of conflicts (Reciprocity)	.526	.599	3	3.1 ± 1.38
Management Compliance with Norms	3.206	.001	4	3.5 ± 1.30
Groups as the best way to go (Growth vision)	5.181	.000	4	3.9 ± 1.12
Groups for Financials (Credit networks)	6.107	.000	4	4.1 ± 0.94
Groups for Diverse Roles (Social Networks)	5.963	.000	4	4.1 ± 0.98

The significance level is .050.

Collective Actions

The views in regard to joint learning, joint purchase of inputs, selling of produce, price negotiations and market-information seeking varied among the participants as indicated in *Table 11*. The variables were significantly higher than neutral (P < .05), except for inputs purchase and produce selling (P > .05). This observation has implications in regard to the groups that were formed so that they can leverage their social capital to cut on the cost of farm inputs and to market their produce jointly so as to enjoy the economies of scale. The current observation suggests a weakness in the two potentially beneficial collective actions.

Table 11: Single sample Wilcoxon test results (median=3) for outcome variables (n=72)

Collective action outcome	Z	*P* Value	Median	Mean
Learning	5.495	.000	4	3.9 ± 1.01
Inputs purchase	0.958	.338	4	3.2 ± 1.31
Produce selling	0.757	.449	3	3.1 ± 1.23
Price negotiations	3.124	.002	4	3.5 ± 1.20
Market information-seeking	5.069	.000	4	3.8 ± 1.10

Significance level at .05

Regression Results for Predictive Ability of Social Capital Scores on Collective Actions

A Spearman's regression analysis was run between the observed mean scores for the seven attributes of positive social capital and the observed mean scores for the five collective-action variables. The results are as indicated in *Table 12*.

Table 12: Regression between social capital and collective-action scores

Model	R	R^2	Adjusted R^2	SE	R^2 Change	F Change	df1	df2	F
1	.625	.391	.382	.61549	.391	44.879	1	70	.000

The social capital scores predicted the collective action scores, $R^2 = 0.382$, F (1, 70) > .001. The observed correlation coefficient of .625 suggests that the social capital scores were strongly correlated to the collective action scores (Kotrlik *et al.*, 2011). The adjusted R^2 value of .382 indicates that about 38.2% of the variation in collective actions among the smallholder farmers could be attributed to the seven indicators of social capital evaluated. The close relationship between the two sets of variables is illustrated in the scatter plot in *Figure 5*. The close links observed suggest that those FPOs that embrace the elements of social capital as captured in this study are more likely to embrace collective actions that are mutually beneficial to the members. The small-scale farmers who are constrained by challenges associated with their small production units have the opportunity to enjoy economies of scale by leveraging their social capital. The social capital attributes were significant predictors of collective actions (P < .05).

Mabuza *et al.* (2015) have argued that collective action is an important strategy to increase

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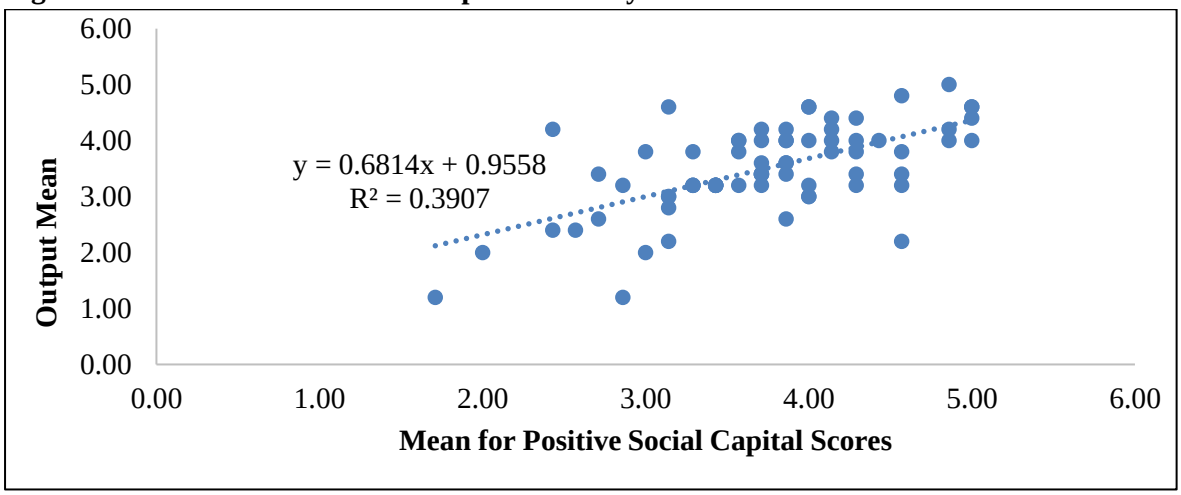
farmers' competitiveness in the value chains. Members who belong to farmer groups were more likely to benefit from inputs-purchase and training as similarly reported by Mudege *et al.* (2015). Collective actions have the ability to increase access to credit services and reduce the cost of transactions (Petcho *et al*., 2019). The farmers in groups are expected to benefit as they interact while sharing knowledge and experiences as observed by Ainembambazi *et al.* (2017). By leveraging on social capital for meaningful collective actions, the farmer groups enhance sustainable agriculture and food security as members get more access to agro-inputs, financial and other services (Ingutia & Sumelius, 2022). Murithi (2012) observed that farmers in groups were better able to access support services like in collecting market information, accessing input services, accessing credits, getting technical assistance and marketing of farm products.

Figure 5: Mean for Positive social capital scores by outcome indicators



CONCLUSIONS AND RECOMMENDATIONS

The selected social capital attributes were good predictors of the desired outcome of collective actions among the informal farmers' organizations. The proxy indicators for social trust, social participation, reciprocity, social norms, a common vision, social networking and financial credit networks were good predictors of collective actions among Farmer Producer Organizations. The resolution of conflicts through a give-and-take approach was weak among the participants. This has implications for the long-term benefits of social capital for sustainable development. The study revealed a weakness among the FPOs in regard to joint inputs acquisition and joint marketing of aggregated produce. It is recommended that stakeholders in sustainable agricultural development address weaknesses in the social capital attributes such as the weakness in conflict resolutions, joint actions in the purchase of inputs and aggregation of farm produce for joint marketing.

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