



**LUND**  
UNIVERSITY

Lund University Master of Science in  
International Development and Management

May 2019

**Farmer group approach to commercialization of smallholder agriculture.**

**Do social capital and collective action arrangements matter?**

**The case of indigenous chicken farmer groups in Mutare district, Zimbabwe.**

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## **Abstract**

The commercialisation of smallholder agriculture is increasingly recognised as key to economic development and poverty alleviation. Interventions to promote commercialisation of smallholder agriculture in most cases adopt the farmer group approach as an efficient collective action initiative for enhancing marketing performance. Understanding how farmer groups' social structure and collective action arrangements affect the commercialisation efforts is particularly important.

This study seeks to understand the effect of farmer group social capital and collective action arrangements on the farmer group approach to the commercialisation of smallholder agriculture. Further, to complement on this understanding and derive meaningful recommendations for future farmer group based smallholder agriculture commercialisation development interventions programmes design, the study explores the social capital related challenges faced by farmer groups, their sources and the farmer perceived solutions. Based on a mixed methods analysis, the study found that cognitive social capital and relational capital are important factors in the farmer group approach to the commercialization of smallholder agriculture. On the other hand, the study found no significant effect of structural social capital and collective action arrangements on the farmer group approach to the commercialization of smallholder agriculture.

**Keywords:** Farmer groups, Collective action, Social capital, Commercialization, Smallholder agriculture.

**Word Count:** 13523

## **Acknowledgements**

This study would not have been possible without the help and support from several persons. I would like to send my gratitude to respondents of this study, the time you invested in this study is greatly appreciated. I would also want to thank Practical Action, Sustainable Agriculture trust and Agritex Mutare District for facilitating my access to the study area as well as dedicating time and human resources for the success of this study. To my supervisor, Martin Andersson and my thesis group, your insights from the supervision sessions were valuable in shaping the direction of this study.

I must also express my very profound gratitude to my family for providing me with unfailing support and continuous encouragement throughout my years of study. This accomplishment would not have been possible without them. Thank you.

Finally, this study was conducted during my scholarship period at Lund University, thanks to a Swedish Institute scholarship.

## List of Acronyms

AGRITEX	Zimbabwe's department for Agricultural Technical and Extension Services
ANOVA	Analysis of variance
CCI	Crop commercialisation index
DFID	United Kingdom's Department for International Development
IDRP	Integrated Rural Development Programme
LFSP	Livelihoods and Food Security Programme
OLS	Ordinary least squares
SAT	Sustainable Agriculture Trust
SPSS	Statistical Package for the Social Sciences
ZimVAC	Zimbabwe Vulnerability Assessment Committee

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## 1.0 Introduction

In recent years, the importance of smallholder agriculture has been greatly recognized. Market access proponents go on to make a strong case that, for smallholder farmers to thrive in the global economy, it is necessary to create an entrepreneurial culture in rural communities (Lundy et al., 2002). This resulted in a move by governments and international organizations towards promoting commercialization of smallholder agriculture. Commercialization involves a transition from subsistence to increasingly market-oriented patterns of production and input use (Omiti et al., 2009; Von Braun, 1995; Wiggins et al., 2011). This transition is key to economic development and poverty alleviation in low-income countries.

The commercialization efforts have placed renewed attention on institutions of collective action, such as farmer groups, as an efficient mechanism for enhancing marketing performance (Kariuki and Place, 2005). Proponents of farmer group approach argue that collective action has the advantage of improving the position of smallholder farmers in markets including reducing transaction costs, obtaining the necessary market information, securing access to new technologies, increasing bargaining power and tapping into high-value markets. (Stockbridge et al., 2003; Kruijssen et al., 2007; Devaux et al., 2009; Narrod et al., 2009; Kaganzi et al., 2009).

There are many success stories of producer organizations leading to effective farmer participation in agricultural value chains. However, the process of establishing viable farmer groups is not simple: collective action and farmer organization are not a magic bullet (Chirwa et al., 2005; Shiferaw et al., 2007). The establishment of farmer organizations incurs transaction costs that imply that in some cases farmers may be better off not organizing (Stockbridge et al., 2003). In most cases, the failure of farmer groups to result in collective action hence not realizing the commercialization goal emanates from social capital related group level factors.

Many pro-poor farmer groups based commercialization efforts are hinged on the premise that the poor often lack essential assets for successful cooperation such as basic education, management and entrepreneurial skills, and financial capacity (Pingali et al., 2005; Stringfellow et al., 1997; Hulme and Shepherd, 2003). This trend is visible in Zimbabwe where efforts to promote commercialization of smallholder agriculture using the farmer group approach are biased towards human capital enhancement based on technical capacity building of farmer groups through training on agricultural production, new technology adoption, financial literacy, post-harvest management and marketing. The bias also extends to financial



capital enhancement through financial and material support to boost farmer groups' capital base. However, this approach puts less focus on intra-group social factors. Often, too little attention is directed at the farmer group social structure and dynamics and the farmer groups collective action arrangements<sup>1</sup>.

## **1.1 Study Aim**

The broad purpose of this study is to identify the underlying factors that affect commercialization efforts by smallholder farmer groups. Specifically, the study aims to examine the effect of farmer group social structure and dynamics and the farmer groups' collective action arrangements on the commercialization of smallholder agriculture through the farmer group approach. This is done through a mixed methods approach, investigating commercialisation efforts by indigenous chicken smallholder farmer groups in Zimbabwe through the social structure perspective to social capital and its three dimensions, structural, cognitive and relational dimensions.

## **1.2 Research Questions and Hypotheses**

In order to achieve the aim of this study, the following overarching research questions have been established

1. What is the effect of collective action arrangements on the farmer group approach to the commercialisation of smallholder agriculture?
2. What is the effect of farmer group social capital on the farmer group approach to the commercialisation of smallholder agriculture?

With the purpose of answering the overarching questions, the following sub-questions will be addressed.

- 1a). What is the effect of production and marketing arrangements on farmer groups' performance on the output market?

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<sup>1</sup> Collective action arrangements are referred to in this study as how farmers organise themselves around production and marketing in farmer groups.

- 2a). What is the effect of farmer group structural, cognitive and relational social capital on farmer group's performance on the output market?
- 2b). What are the social capital related challenges faced by farmer groups, their sources and the farmer perceived solutions?

The principal hypothesis of this study is that variations in the performance of smallholder farmer groups in commercialisation of their enterprises can be explained by the differences in the farmer groups' levels of social capital and the collective action arrangements they adopt. Precisely, the study will focus on testing the following hypotheses:

1. Farmer groups that produce and market collectively are better positioned to improve their performance on the output market.
2. Smallholder farmer groups with higher levels of social capital are better positioned to improve their performance on the output market.

## **2.0 Background**

This study examines commercialisation efforts by smallholder farmer groups in the rural part of Mutare district in Zimbabwe. Mutare district is located on the eastern part of Zimbabwe bordering Mozambique. The total rural population is 262,124 and 60,893 households (Zimbabwe National Statistics Agency, 2012). The main source of livelihood for rural households in this area is agriculture. However, the region has been hit hard by the negative effects of climate change characterised by the late onset, early cessation, and uneven geographical distribution of rainfall, as well as prolonged and frequent dry spells. The district is ranked as one of the districts with the highest food insecurity levels in Zimbabwe with 32% of the population being food insecure (ZimVAC, 2018). Moreover, the district has been reported to have high poverty levels at 79.4% (Zimbabwe National Statistics Agency, 2013).

The long experiences of uncertainty about weather patterns have spurred smallholder farmers in this area into looking for ways to address climate change related risks. Keeping small livestock such as indigenous chickens and goats mainly by women farmers is becoming more common. Most of the households keep a number of indigenous village chickens under traditional free-range semi-scavenging systems. Indigenous chickens are preferred because

they can thrive despite irregular supply of feed and water and with minimum healthcare. One of the most important positive characters of these indigenous chicken breeds is their hardiness, which is the ability to tolerate the harsh environmental condition and unimproved husbandry practices without much loss in production.

To help address these challenges several development interventions were and are being implemented in the area through the government of Zimbabwe complimented by local and international non-governmental organisations. Most of the interventions are on agricultural development focusing on increased productivity using climate-smart agriculture approaches. Taking advantage of and building on already existing community initiatives, the indigenous chicken value chain is one of the most popular intervention areas being focused on. One of the major programmes focusing on promoting this value chain is the United Kingdom's Department for International Development (DFID) funded Livelihoods and Food Security Programme (LFSP) implemented by Practical Action in partnership with Sustainable Agriculture Trust (SAT) in Mutare district. This programme uses the farmer group approach to commercialisation of smallholder agriculture where farmer groups receive production training including exposure to new production technologies, marketing training, and financial literacy training. Furthermore, the farmers receive financial support through smart subsidies, capital equipment donation and linkages to financial service providers. In addition to this, LFSP is supporting smallholder farmers under the indigenous chicken value chain through improved breeds that mature faster, have tender meat, and also produce more eggs. LFSP is further developing the indigenous chicken value chain by establishing the farmer group enterprises that offer indigenous chickens hatchery services to smallholder farmer indigenous chicken producer groups. This study focuses on the smallholder indigenous chickens farmer groups participating under the LFSP with the aim of commercialising their production.

### **3.0 Literature review**

The purpose of this chapter is to present some of the most relevant literature regarding the topics of commercialisation of smallholder agriculture and its associated subjects, the farmer group approach, collective action arrangements and social capital.

### **3.1 Introduction**

In recent years, the importance of smallholder agriculture has been greatly recognized. Market access proponents go on to make a strong case that, for smallholder farmers to thrive in the global economy, it is necessary to create an entrepreneurial culture in rural communities (Lundy et al., 2002). This resulted in a move by governments and international organizations towards promoting commercialization of smallholder agriculture

The commercialization efforts have placed renewed attention on institutions of collective action such as farmer groups, as an efficient mechanism for enhancing marketing performance (Kariuki and Place, 2005). Proponents of farmer group approach argue that collective action has the advantage of improving the position of smallholder farmers in markets (Stockbridge et al. 2003; Kruijssen et al. 2007; Devaux et al. 2009; Narrod et al. 2009; Kaganzi et al. 2009). However, studies have revealed contrasting findings on the efficacy of the farmer group approach in improving smallholder market performance. Investigations into the factors that affect farmer groups' market performance have to a larger extent ignored the effect of farmer groups' collective action arrangements and social capital. Few studies on the effect of social capital on farmer group market performance have concluded on contrasting findings. This leaves the question, 'Do social capital and collective action arrangements matter?' not fully answered, calling for further investigation.

### **3.2 Commercialisation of smallholder agriculture**

The commercialisation of smallholder agriculture involves a transition from subsistence to increasingly market-oriented patterns of production and input use by smallholder farmers (Omiti et al, 2009, Von Braun, 1995). It is about increasing smallholder farmer engagement with markets. (Wiggins et al, 2011; Bouis and Haddad, 1990). There is increased recognition of this transition as key to economic development and poverty alleviation in Sub-Saharan Africa where a significant proportion lives in rural areas. Further to this, the sub-Sahara African environment is becoming more dynamic, characterized by a growing population, urbanization, globalisation, policy reforms, technology improvement, food industry restructuring and climate change. This presents new opportunities and challenges calling for transformed agriculture and commercialisation of smallholder agriculture has been cited as a key strategy to the transformation process (Barrett, 2008; World Bank, 2008; Veronique and Tschiley; 2004)

However, when smallholder farmers engage with markets they encounter traders, processors, input suppliers, banks and other value chain actors, who operate at a larger scale with higher levels of capital and political influence (Wiggins et al, 2011). This has influenced different theoretical perspectives on the commercialisation of smallholder agriculture.

An optimistic perspective sees smallholder farming as having favourable distinctive features that position it better as compared to large-scale commercial farming. Chayanov (1925), an early proponent to this argued that smallholders have the ability to survive bad harvests and economic shocks that might lead to the bankruptcy of a commercial farm since they depend on unpaid family labour and can accept temporarily reduced implicit earnings (Wiggins et al, 2011; Brookfield, 2008). This is supported by other optimistic views, describing smallholder as a pillar of household livelihoods (von Braun and Kennedy, 1994) a cornerstone of rural development and poverty reduction (Pender and Alemu, 2007) and an indispensable pathway to economic growth (von Braun and Kennedy, 1994).

A contrary variant of this thinking sees smallholder farmers as entangled in an economy of affection where accumulated capital is likely to be redistributed rather than reinvested in the agricultural enterprises thereby slowing agricultural growth (Hyden 1980).

Another pessimistic perspective views markets as a place where unequal relations lead to differentiation. In the Marxian variant, capitalists end up with capital and land, and smallholder farmers end up as landless and further impoverished (Wiggins et al, 2011; Brookfield, 2008). Related to this, is a perspective that view large-scale farms as more efficient than smallholdings and expect that the large-scale farms will replace the smallholder farms increasing productivity and creating jobs for those leaving farming (ibid). In support of this perspective, Collier (2008) and Collier & Dercon (2009) argue that African smallholders are reluctant micro-entrepreneurs who have not chosen to be entrepreneurs but are there by default. They went on to postulate that, it would be better to let factors of production go large farms which could make better use of them (ibid).

From another perspective, smallholder farms are viewed as likely to suffer from one or more of the following market failures: insecure land rights; high transactions costs when dealing with larger concerns in supply chains; and the exercise of monopoly power by those larger operators (Wiggins et al, 2011). The exercise of monopoly power by larger operators can lead to the

exploitation of small farmers and insecure land rights and high transaction costs deter investment in smallholder agriculture (ibid).

From the arguments against smallholder agriculture, it was expected the days of small farms to be numbered, the advance of capitalism would rapidly see them disappear as large farms would emerge and dominate agriculture. Contrary to those expectations smallholder farms have proved remarkably resilient surviving all various shocks and continuing to dominate the African countryside. Nagayets (2005) postulated that there are approximately 33 million smallholder farms in Africa, representing eighty per cent of all farms in the region. Further to this, smallholder farmers account for a significant share of agricultural production with their contribution growing in many instances. According to Spencer (2002), ninety per cent of all agricultural production in Africa is derived from small farms.

This resilience by smallholder farming have left Governments and development partners with no choice but continue to support smallholder farmers through commercialization initiatives. However, smallholder farmers still continue to face the challenges of integration and competitiveness in new markets. As a response to some of these challenges a farmer group approach is being employed as a farmer collective action approach to link farmers to better-paying commodity markets

### **3.3 Farmer groups and commercialisation of smallholder agriculture**

There is increasing evidence that farmer groups are an effective approach to improve the capacity of smallholder farmers to beat the market failures in markets of developing countries hence enabling them to achieve commercialisation goal. Proponents of farmer group approach argue that collective action has the advantage of improving the position of smallholder farmers in markets including reducing transaction costs, obtaining the necessary market information, securing access to new technologies, increasing bargaining power and tapping into high-value markets. (Stockbridge et al. 2003; Kruijssen et al. 2007; Devaux et al. 2009; Narrod et al. 2009; Kaganzi et al. 2009). From the demand side, buyers prefer to work with farmer groups as they are better able than individual farmers to provide a consistent supply of quality products (Vorley et al., 2007).

There are several success stories of farmer groups leading to effective farmer participation in markets. For example, Nyabyumba smallholder potato growers in Uganda pooled their financial resources from personal savings and loans, increased their production, became more competitive and secured a lucrative market for their products and later established a savings and credit co-operative (Kaganzi et al,2009). Kruijssen et al, 2007 revealed how a group of smallholder women farmers in Thailand initiated the idea of processing and was able to purchase valuable equipment that transformed their products, attract a better price and develop new market opportunities. Smallholder green beans growers in Kenya, Ethiopia, and Zambia, organized themselves into farmer groups and were able to enter into European markets (Okello, et al, 2007).

However, the process of establishing viable farmer groups is not simple, collective action and farmer organization are not a magic bullet (Chirwa et al, 2005; Shiferaw et al, 2009). The establishment of farmer organizations incurs transaction costs that imply that in some cases farmers may be better off not organizing (Stockbridge et al., 2003). From another perspective, rural areas are viewed as so marginal that interventions to facilitate market access are ill-advised. Arguing in this corner, Hitchins et al. (2004) refer to the existence of a viability void in the rural areas where the rationale and efficacy of income generation promotion is questionable and of a low priority compared to relief or social protection measures.

### **3.4 Determinants of smallholder farmer groups' commercialisation**

The efficacy farmer groups approach to commercialisation of smallholder agriculture depends on many factors as rural areas differ and farmer groups are also not uniform. Studies have found mixed evidence of the effectiveness of farmer groups in facilitating smallholder farmers' access to markets hence spurring commercialization. (Okello, 2005; Narrod et al., 2008; Obare et al, 2006; Shiferaw et al, 2007).

Markelova et al (2009) borrowing from the literature on factors that affect collective action, in natural resource management, identified three broad categories of factors that are likely to affect collective action that facilitates smallholder market participation: group characteristics and institutional arrangements, Types of products and markets, and the external environment.

The interest of this study is more on the effect of group characteristics and institutional arrangements on collective action that facilitates smallholder market access. Group

characteristics include group size, group maturity level, norms and social capital, physical capital, group leadership and group composition by socio-economic status and gender. Institutional arrangements include the organisational structure, operational arrangements and rules (Markelova et al, 2009). Findings suggest that more mature groups with strong internal institutions, functioning group activities, and a good asset base of physical capital are more likely to improve their market situation. ( Markelova et al, 2009, Kruijssen et al,2007; Barham and Chitemi,2008; Wambugu et al, 2009)

Whereas literature exists on factors that affect collective action initiatives to improve farmer groups' group market performance, they in most cases ignore the farmer group social capital. Furthermore few studies on the effect of social capital on the market performance of smallholder farmers came to conflicting conclusions. Barham and Chitemi (2008) postulated that structural social capital and cognitive social capital are not significant factors in a group's ability to improve its market situation. On the other hand, Wambugu et al (2009) concluded that that social capital increases the level of commercialization for smallholder farmers and attention must, therefore, be given to social capital, in the design of development strategies that target the commercialization of smallholder agriculture through producer organizations. Further, Kibirige (2006) find that bonding social capital had a positive and significant impact on household commercialisation index of maize in the Eastern Cape Province of South Africa.

In addition, studies that have factored in institutional arrangements focused more on rules ignoring operational arrangements. For example, Markelova et al (2009) cite clearly defined group boundaries as facilitating collective action. Stockbridge et al. (2003) postulated that provisions for monitoring and enforcement are important for ensuring transparency in marketing activities. Agrawal (2001) and Ostrom (1990) went on to argue that provision for the farmer groups to craft their own rules increases the likelihood that rules will be understood and adapted to local conditions. However, these studies put less focus on farmer groups' operational arrangements. Farmers organise themselves in different ways resulting in different collective action arrangements depending on what activity or activities are the farmers engaged collectively. This results in different group structures as indicated below:

1. Farmers organised for collective learning or extension, collective production and collective marketing
2. Farmers organised for collective learning or extension only with individual production, and marketing



### 3. Farmers organised for collective marketing only with individual production

These different farmer group operational arrangements involve different levels and demands of collective action and incur different levels of transaction costs. Therefore it is important to understand if the different collective action arrangements affect farmer groups' market performance and if yes, which collective arrangement best facilitate farmer groups' market performance.

## **4.0 Theories and Concepts: Towards an analytical framework**

### **4.1 Social capital theory**

The first systematic analysis of social capital was produced in the 1980s by Pierre Bourdieu. He defined social capital as “the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition” (Bourdieu 1985, p. 248). He went to assert that “the profits which accrue from membership in a group are the basis of the solidarity which makes them possible” (Bourdieu 1985, p. 249). This was followed by Loury (1977, 1981), even though he did not go on to develop the concept of social capital in detail his work paved the way, for Coleman's more refined work on the role of social capital in the creation of human capital (Coleman 1988: p. S98, 1990, p. 302).

This marked the genesis of the social capital concept that enjoyed a remarkable rise to prominence across most social science discipline (Woolcock and Naraya, 2000). Different scholars came up with different definitions of social capital. For example, Baker (1990) defined social capital as a resource that actors derive from specific social structures and then use to pursue their interests. Schiff (1992) defined social capital more broadly as the set of elements of the social structure that affects relations among people and are inputs or arguments of the production and/or utility function. Burt (1992) viewed it as friends, colleagues, and more general contacts through whom you receive opportunities to use your financial and human capital.

However, despite the definitional differences, the consensus is growing in the literature that social capital stands for the ability of actors to secure benefits by virtue of membership in social networks or other social structures (Häuberer, 2011). This is more captured by the widely used

Putnam's definition of social capital as features of social organization, such as networks, norms, and trust that facilitate coordination and cooperation for mutual benefit (Putnam 1993). However, there are objections raised against Putnam's view of social capital. A major critique of Putnam's view is that it focuses only on the positive effects of social capital without considering the negatives (Häuberer, 2011). Portes and Landolt (1996) argue that there is also "negative" social capital. They further argue that common norms create conformity, which restricts both individual freedom and business initiative. Portes (1998) summarized four negative consequences of social capital as, exclusion of outsiders, excess claims on group members, restrictions on individual freedoms, and downward levelling norms. Putnam (2000) responded to this criticism by recognizing "the dark side of social capital" and that strong social capital may counteract tolerance.

This study adopts Putnam's definition of social capital as features of social organization, such as networks, norms, and trust that facilitate coordination and cooperation for mutual benefit and further recognise the negative consequences of social capital.

#### **4.1.1 Social capital and farmer group market performance**

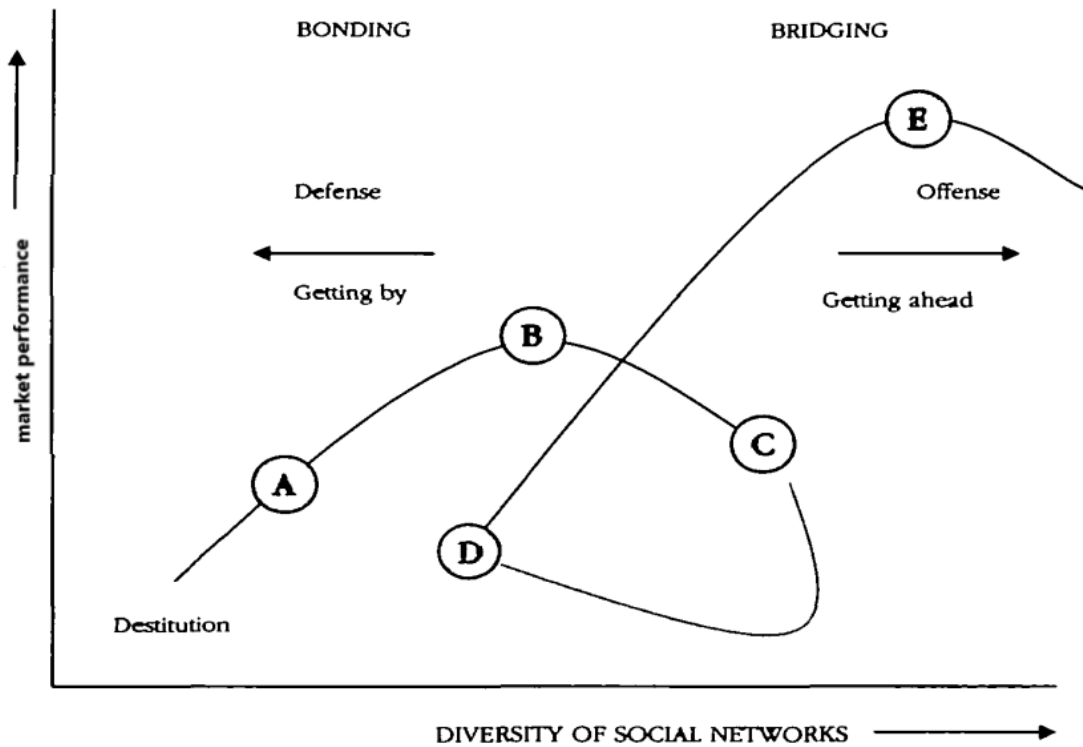
Social capital is a double-edged sword, it can provide a range of valuable services farmer group members, ranging from reducing transaction costs, obtaining the necessary market information, securing access to new technologies, increasing bargaining power, tapping into high-value markets and emergency cash. But there are also costs in that the close ties within farmer groups can place considerable noneconomic claims on members' sense of obligation and commitment, with negative economic consequences.

Furthermore, as farmers' market performance changes over time, so too does the costs and benefits associated with social capital generated from the farmer group. In support of this assertion, Granovetter (1995) postulated that economic development takes place through a mechanism that allows individuals to draw initially on the benefits of close community membership but that also enables them to acquire the skills and resources to participate in networks that transcend their community, thereby progressively joining the economic mainstream.

Borrowing from Woolcock (2000)' social capital and poverty transition illustration, Granovetter's insights can be demonstrated graphically and applied to farmer groups' market

performance. Figure 1 shows that as the social networks of the farmers become more diverse hence increase in levels of social capital, so too does their market performance.

**Figure 1. Social capital and farmer market performance**



*Source: Woolcock (2000). Adapted to suit the needs of the study*

Smallholder farmers gain access to improved knowledge, improved technology and financial services on the basis of their membership in farmer groups. This helps them to change their mind-sets towards market-oriented production, expand their agricultural enterprises and improve their market performance (A). The positive impact of their farmer groups on farmer market performance soon reach a limit (B). If more farmers continue to join the group, its resources may become overwhelmed, thereby reducing the benefits of long-established members(C). More ambitious farmers may find that obligations and commitments to their colleagues present obstacles to further advancement (Woolcock 1999). These farmers will partially divest themselves of their immediate community ties (D) and find a potentially more diverse network with higher levels of social capital and more market opportunities (E).

#### **4.1.2 Measuring social capital**

There is substantial debate over the possibility and practicability of measuring social capital. Measurement challenges emanate from complexities of separating form, source and consequences of social capital (Onyx and Bullen 2001). Trust, for example, some authors equate it to social capital (Fukuyama 1995), some consider it a source of social capital (Putnam et al. 1993), and some see it as a product of social capital (Lin 1999). Furthermore, it is difficult to measure social capital directly and the use of proxy indicators is necessary.

Approaches to measuring social capital have ranged from simply using one indicator (e.g. trust) to using complicated groups of indexes. Several recent innovative studies have attempted to quantify social capital using a wide range of indicators. For example, Narayan (1997) and Narayan and Pritchett (1999), based on data from a survey of 1,400 households in 87 villages across Tanzania developed an index of social capital at the household and community levels. The index included group functioning, financial and in-kind contributions to groups, participation in decision-making, and heterogeneity of membership. However despite these recent advances, obtaining a single, true measure of social capital still remains elusive. This is mainly because social capital has constructs that are inherently abstract and require subjective interpretation in their translation into operational measures and most comprehensive definitions of social capital are multidimensional, incorporating different levels and units of analysis (Grootaert et al. 2002; Narayan and Cassidy 2001).

While it is difficult to measure social capital directly, it can be inferred from its powerful effects. The choice of indicators to measure social capital is also guided by the scope of the concept and the breadth of the unit of observation used (Collier 2002).

A good starting point in measuring social capital is deciding on the different types of social capital guided by theoretical preferences and relevance to the context of the study. Social capital can be viewed from different perspectives, for example, the network perspective and the social structure perspective (Claridge, 2017). The network perspective stresses the importance associations both vertical and horizontal amongst people, community groups or firms' (Woolcock and Narayan 2000, p. 230). This network perspective focuses on the importance of bonding, bridging and linking social capital. On the other hand, the social structure perspective focuses on the importance of structural, cognitive and relational social capital.

Another important consideration in the measurement of social capital is the level of analysis that is individual, group or organisational, community and national (Claridge, 2017). Measures at the national level may be of little or no relevance at the organisational or individual level and it is important to ensure that the measure is appropriate for the level of analysis. Lastly, the focus and interests of the study at hand are important, that is whether the interests of the study are in the source, form or consequences of social capital (Ibid).

This study adopts the social structure perspective to social capital as it relates more to the social structure of smallholder farmer groups which is the focus and interest of this study. Furthermore, this study will measure social capital at the farmer group level of analysis. In sections below the social structure, perspective and the group level of analysis will be further explored as a basis for methodological considerations for this study.

#### **4.1.3 Social structure perspective**

The social structure perspective focuses on the importance of structural, cognitive and relational social capital. Structural social capital is a dimension of social capital that relates to the properties of the social system and of the network of relations as a whole (Nahapiet and Ghoshal, 1998). It describes the arrangement and pattern of connections between people including the roles, rules, precedents, and procedures that form part of this arrangement (Uphoff and Wijayaratna, 2000).

Cognitive social capital is a dimension of social capital that relates to resources providing shared representations, interpretations, and systems of meaning among parties (Nahapiet and Ghoshal, 1998). It is the shared language and codes that provide the foundation for communication (Gooderham 2007).

Relational social capital is a dimension of social capital that relates to the characteristics and qualities of personal relationships such as trust, obligations, respect and friendship (Gooderham 2007). The key aspects of the relational dimension of social capital are trust and trustworthiness, norms and sanctions, obligations and expectations, and identity and identification (Nahapiet and Ghoshal, 1998). However, it is important to note that these dimensions are conceptual distinctions useful for facilitating analysis but in practice, social capital involves complex interrelations between the three dimensions (Claridge, 2017).

#### 4.1.4 Group and Organisation Level Measures

The context of the group is an important consideration for measuring social capital at the group level (Claridge, 2017). Furthermore, the nature of the group, its activities and purpose will determine the aspects of social capital that are important and therefore what data is relevant (Ibid). Table 1 below presents the social capital dimensions, characteristics and group level measures/indicators.

**Table 1 Social Capital dimensions, characteristics and group level measures/indicators**

<b>Social capital Dimension</b>	<b>Structural</b>	<b>Cognitive</b>	<b>Relational</b>
<b>General Description</b>	Social structure	Shared Understandings	Nature and quality of relationships
<b>Characteristic</b>	<ul style="list-style-type: none"> <li>• Network ties and configuration</li> <li>• Roles, rules, precedents, and procedures</li> </ul>	<ul style="list-style-type: none"> <li>• Shared language, codes, and narratives</li> <li>• Shared values, attitudes, and beliefs</li> </ul>	<ul style="list-style-type: none"> <li>• Trust and trustworthiness</li> <li>• Norms and sanctions</li> <li>• Obligations and expectations</li> <li>• Identity and identification</li> </ul>
<b>Group level measures or indicators</b>	<ul style="list-style-type: none"> <li>• Network structural characteristics (e.g. network links, network centrality, network density, network diversity, network size, network frequency, network redundancy, institutional network, etc.)</li> <li>• network ties (strong ties, weak ties, government officials ties, tie strength, bonding ties, bridging ties, linking ties, structural holes, etc.)</li> <li>• association membership and institutional links</li> <li>• trust</li> </ul>	<ul style="list-style-type: none"> <li>• shared norms, values and obligations</li> <li>• reciprocity</li> <li>• shared goals and mission</li> <li>• attitudes and beliefs</li> </ul>	<ul style="list-style-type: none"> <li>• social connections and ties with               <ul style="list-style-type: none"> <li>- close acquaintances</li> <li>- various external stakeholders (e.g. political leaders, government bureaucratic officials, and community leaders);</li> </ul> </li> <li>• interpersonal trust</li> </ul>

*Source. (Claridge, 2017). Social Capital Research and training*

## 4.2 Agricultural Commercialisation

There are various definitions of agricultural commercialization that differ in breath and focus. These definitional differences have also affected its measurement. Some authors view agricultural commercialisation as increasing the proportion of agricultural output sold on the market. (Govereh et al., 1999; Okezie et al., 2008), or increased cash crop production (Kennedy and Cogill, 1987). This view is critiqued as narrow and oversimplifying the commercialisation

concept by omitting critical elements like production purpose and farmer's behaviour in resource acquisition and allocation (von Braun and Kennedy (1994) and Jaleta et al., 2009). Poulton et al. (2008) view production purpose and farmer's behaviour in resource acquisition and allocation as more critical in defining commercial production than product type, the scale of production or production location.

A broader view to commercialisation defines it as an agricultural transformation process in which farmers shift from mainly consumption-oriented subsistence production towards the market and profit-oriented production systems (Brush and Turner, 1987; von Braun and Kennedy, 1994; Pingali and Rosegrant, 1995). This process involves farmer increased integration into the exchange economy; deliberate moves to competitively satisfy market needs for profit; increased recognition of farming as a business, participation in both input and output markets, adoption of efficient technologies as well as strong formal linkages with other value chain actors (von Braun and Kennedy, 1994; Pingali and Rosegrant, 1995, 2004; Jaleta et al. 2009).

#### **4.2.1 Measuring levels of agricultural commercialisation**

There is no universally agreed way of measuring agricultural commercialisation. As noted above, the measurement of agricultural commercialization is influenced by its definitional variations that differ in breath and focus. The degree of commercialisation can be seen as a simple binary distinction of whether or not the farmer sells any of his or her farm output (Wiggins et al, 2011). This simple measure will be easy to compute but it is a weak measure as it would treat most farmers as commercialising since most farmers sell part of their produce.

An improvement on this measure is grading commercialisation by the absolute amount sold, either by volume or value, thereby producing a continuum of degrees of commercialisation (Wiggins et al, 2011). For example studies in Zambia by the Integrated Rural Development Programme (IDRP) defined commercialised farmers as those who sold more than 30 bags of maize per annum (Sugiyama 1987; Kakeya & Sugiyama 1987).

Furthermore, indices to measure the degree of commercialisation have been proposed. These consider the proportion of farm output marketed. An example is the crop commercialisation index (CCI) suggested by Strasberg et al (1999). ):  $CCI = [\text{Gross value of all crop sales} / \text{Gross value of all crop production}] \times 100$ . An advantage to this approach is the non-use of crude distinctions as commercialized and non-commercialized (Grovereh et al., 1999). However, this

index had interpretational weaknesses. For instance, consider the case when a farmer producing five indigenous chickens and sell all and another farmer producing forty indigenous chickens and sell twenty. The CCI will tell us that the first farmer is fully commercialized (100%) while the second is semi-commercialized (50%).

Other dimensions to measuring agricultural commercialisation level look at the degree of participation in input markets. The argument here is, as farms become more commercial they tend to rely less on own-produced inputs and instead depend more on markets to supply their inputs. Thus commercialisation is measured as [Value of inputs acquired from market/ Value of agricultural production] (von Braun & Kennedy 1994). Other measures go on to factor in the profit motive within the farm business as an indicator of commercialisation (Pingali & Rosegrant (1995: 171)).

For this study, indigenous chicken value chain products marketing is the focal activity for targeted farmer groups. The farmer groups' mean level of commercialization is calculated as the value of indigenous chickens and by-products sold by the sampled farmer groups' members, divided by the average number of farmers in the groups from January to December 2018. That is

*Farmer groups' mean level of commercialization =*

$$\frac{\text{Indigenous chickens and by – products sold by the sampled farmer groups} \times \text{average market value}}{\text{number of group members}}$$

Thus the study measures commercialization as the level of farmer groups' performance on the indigenous chicken value chain output market or the gross annual revenue from the indigenous chicken value chain per member farmer. This measure borrows from the CCI but uses a livestock value chain instead of a crop value chain. Furthermore, as a deviation from the CCI, this measure does not take into consideration the value of total production. This is a deliberate move to deal with the respondents recall bias. It was noticed during data collection that it was difficult for farmer respondents to give accurate amounts of indigenous chickens and by-products such as eggs and chicks produced during the course of the year. Furthermore, record keeping was not consistent across groups especially on production figures compared to sales figures.



## **5.0 Methodology**

### **5.1 Research design**

This study seeks to understand the effect of farmer group social capital and collective action arrangements on the farmer group approach to the commercialisation of smallholder agriculture. Further, to complement on this understanding and derive meaningful recommendations for future farmer group based smallholder agriculture commercialisation development interventions programmes design, the study explores the social capital related challenges faced by farmer groups, their sources and the farmer perceived solutions. The first part is tackled using quantitative methods to estimate the magnitude and direction of the effect of social capital and farmer production and marketing arrangements on farmer group market performance. The second part is addressed through inductive qualitative approaches based on the participants' views and perceptions of social capital related challenges they face working in groups, their sources and perceived solutions. The philosophical standpoint taken on the second part is from an interpretivist epistemological position (Bryman 2008:15, 19; Creswell 2009:6). The study adopts a mixed methods approach that focus on collecting, analysing, and mixing both quantitative and qualitative data in a single study. With this mixed methods approach the study adopts a concurrent nested or embedded design with one phase of data collection in which priority is given to the quantitative approach that guides the study, while the qualitative approach is embedded or nested into the study providing a supporting role. Hence, the qualitative approach is addressing a different question than the primary research question (Creswell, 2003).

Using a mixed methods approach is important because of a limitation of much of the quantitative social capital literature is that while it identifies interesting and statistically significant relationships between variables, the causality and the policy implications are often not clear (Wong Kwok-fu, 2001). By integrating qualitative analysis we can better interpret results and arrive at conclusions with clear development implications. However, proper planning was needed as mixed methods approaches can be expensive and time-consuming.

## 5.2 Study Sample

The unit of analysis for the study is farmer groups participating in the indigenous chicken value chain. A list of farmer groups participating in the indigenous chicken value chain with the primary objective of commercialisation in Mutare district was obtained from the Sustainable Agriculture Trust offices. The total number of farmer groups on the list was sixty. With a sampling frame of sixty farmer groups, a sample size was calculated at ninety five per cent confidence interval and a ten per cent margin of error. The result was a sample size of thirty-eight farmer groups. To allow for non-sampling errors such as data recording errors, a sample of forty farmer groups was selected from a sampling frame of sixty farmer groups using systematic random sampling approach with the help of the field extension officer for the area. Furthermore, an oversampling by five farmer groups was done as contingency allowance in case of non-response by farmers forming part of the main sample.

The sample of forty indigenous chicken farmer groups covered five wards of Mutare district and twenty-six villages. The number of groups varied per ward ranging from five farmer groups per ward to twelve farmer groups. On average, the sampled groups have been in existence for four years. The number of farmer members per group ranged from five members to twenty members with an average of eleven members per group and a mode of ten members. The total number of member farmers for the sampled groups was 428 with the majority (76.4%) being female farmers (see table 2). This domination by female farmers was expected as indigenous chickens are viewed in the study area as an asset for the female members of the household. A further look at leadership positions by gender presented in table 3 below, indicated that all leadership positions were dominated by female farmers. However, despite constituting only 23.6% of the total number of farmers, 45% of the groups had the highest leadership position of group chairperson being occupied by male farmers. Furthermore, female farmers were more trusted to run the treasury of the farmer groups as 95% of the groups had their group treasure position held by female farmers.

**Table 2 Study Sample**

	Ward	Number of Villages	Number of Groups	Farmer group members		
				Male	Female	Total
	25	3	5	18	34	<b>52</b>
	26	6	8	35	70	<b>105</b>
	27	7	10	12	74	<b>86</b>
	28	7	12	35	115	<b>150</b>
	36	3	5	1	34	<b>35</b>
<b>Total</b>	<b>5</b>	<b>26</b>	<b>40</b>	<b>101</b>	<b>327</b>	<b>428</b>

**Table 3 Leadership positions by gender**

Leadership Position	Male	Female
	% of groups	
Group chairperson	45.0	55.0
Group vice chair	17.5	62.5
Group treasurer	5.0	95.0
Group secretary	17.5	82.5
Group vice secretary	12.5	55.5
Group committee member 1	32.5	50.0
Group committee member 2	15.0	62.5
Group lead farmer	10.0	25.0

### 5.3 Data collection

Different methods of data collection were used, thus enabling methodological triangulation as data collected from the different sources were compared and points of intersection were identified. The main data set consists of primary data from structured farmer group interviews. Other data sources include focus group discussions, key informant interviews and observations. The data collection process took six weeks from the 22<sup>nd</sup> of January 2019 to the 1<sup>st</sup> of March 2019.

#### 5.3.1 Farmer group interviews

Farmer group interviews were conducted using a structured farmer group questionnaire (see appendix 1). The questionnaire was administered to a total of forty farmer groups. The targeted respondent for the farmer group questionnaire was any member of the farmer group leadership adequately knowledgeable about the farmer group activities and records. However, in some cases where members of the group leaders were not available, the farmer group questionnaire was administered to ordinary group members with knowledge of the group activities. The questionnaire covered several variables aimed at gathering empirical material on the farmer

group's level of commercialisation, levels of social capital, human capital, financial capital and other control variables such as distance to the nearest motorable road, distance to the nearest city and other income generation activities the group is engaged in.

### **5.3.2 Observation and review of farmer group records.**

Where possible the farmer group records were reviewed to validate some of the information provided by farmer groups during the farmer group interview. Reviewed documents included: Farmer group constitution, sales records, meeting minutes, meeting registers, asset registers, and also the observation of farmer group assets

### **5.3.3 Key informant interviews.**

The purpose of key informant interviews was to identify farmer groups and develop a sampling frame as well as investigate social capital related challenges faced by extension service providers in dealing with farmer groups and perceived solutions. The key informants were three officers from the Agricultural Technical and Extension Services (AGRITEX) Zimbabwe a government department under the Ministry of Agriculture and three field officers from the Sustainable Agriculture Trust (SAT), a non-governmental organisation working in the target area on amongst other areas of focus, promoting commercialisation of smallholder agriculture.

### **5.3.4 Focus Group Discussions**

The purpose of the focus group discussions was to explore the social capital related challenges faced by farmer groups, their sources and the farmer perceived solutions. Due to challenges associated with mobilising farmer groups for focus group discussions, the focus group discussions were conducted to farmer groups mobilised by SAT for their own development programming activities related to indigenous chickens. A total of four focus group discussions were conducted

## **5.4 Reliability, validity and limitations of the study**

The study was conducted with time, human and financial resource constraints and this raise reliability and validity concerns as well as presents some limitations to the study. One of the

issues with the study is a relatively small sample size of forty farmer groups. Furthermore, due to challenges faced in mobilising farmers for focus group discussions four focus group discussions were conducted. This affects the generalizability of the study findings across the whole district. Moreover, even though a systematic random sampling was conducted for respondents, the sample could not be maintained during the data collection process due to the inaccessibility of some households due to impassable roads associated with the rain season.

This study attempts to quantify social capital. Social capital has constructs that are inherently abstract and require subjective interpretation in their translation into operational measures. Much of the data used to measure social capital tend to be opinion, feeling or belief that is heavily influenced by the way in which it is collected. Furthermore, the wording of a question can significantly influence the response. Even though a pre-test of the questionnaire was done to fine-tune the wording of questions and ensure a standardised way of questioning, it is still worth mentioning the sensitivity of data to measure social capital.

## **5.5 Ethical considerations.**

The ethical considerations of this study did not have to address any significant issues. The research focus was not touching on sensitive issues to the participants. All research participants were given as much information as might be needed about the research to make an informed decision about whether or not they wish to participate. This information included the aim of the study, what the study will cover, the time requirements for the interviews and focus group discussion as well as the participant's right to withdraw from the study at any time without being asked reasons for withdrawal. Prospective participants were given an opportunity to ask questions before the interviews and discussions. All participants volunteered to participate in the study without compensation.

However, indigenous chickens are culturally regarded in the study area as assets for the women at the household level and hence most indigenous chicken value chain groups are composed of women. This meant that the majority of my respondents for the study were women. The study area is highly patriarchal and to avoid potential conflicts with men and also avoid causing conflicts between couples, access to married women was done through their husbands. Furthermore, husbands were allowed to be part of the interview process even as silent observers

and, if the husband was not at the household during the interview, the interview was conducted at an open space rather than inside the house.

The study coincided with the peak of the agricultural season in Zimbabwe hence the farmers were busy and had limited time to respond to the survey as well as participate in focus group discussions. To minimise the loss of productive time on the farmers' side, the interviews and focus group discussions were conducted mid-afternoon when the farmers took a break from farming activities.

## **5.6 Data Analysis**

### **5.6.1 Quantitative data analysis**

Data analysis started with a univariate analysis procedure to describe and get an understanding of the study sample as well as explore the data patterns of the key variables for the study. Target variables for univariate analysis were the dependent variable: farmer market performance and the explanatory variables, social capital and farmer group production and marketing arrangements. The univariate analysis mainly focused on generating frequencies and other descriptive statistics.

Bivariate analysis was further conducted to generate frequencies of different combinations of production and marketing arrangements as well as estimate the level of association between farmer groups' production and marketing arrangements. Further to this, a two-way analysis of variance (two-way ANOVA) was conducted to estimate the main effects of production and marketing arrangements on farmer groups performance on the indigenous chicken value chain output market. Further, the two-way ANOVA was also used to estimate the interaction effect of these two variables on farmer groups' performance on the indigenous chicken value chain output market.

To assess the effect of social capital and farmer groups' production and marketing arrangements to farmer group indigenous chickens output market performance, an indigenous chickens output market performance equation was estimated using the ordinary least squares (OLS) method. Indigenous chickens output market performance measured as gross revenue from the indigenous chicken value chain per farmer member was estimated as a function of social capital, production arrangements, marketing arrangements, financial capital factors, human capital factors, distance from the group project site or central point to the nearest

motorable road , distance from the group project site or central point to the nearest town/city , number of years of group existence, and number of other value chains the group is engaged in.

### **5.6.2 Qualitative data analysis**

Qualitative data analysis process started in the field with the outline of main themes during the focus group discussion process. Observational data were also recorded during the focus group discussion process. This data included systematic recording of specific events, nonverbal communication, gestures and behavioural responses. All the focus group discussions were recorded and later transcribed for further analysis. Data from the transcript was supplemented with the observational data. Transcripts from the focus group discussions were further analysed through a computer-assisted approach to content analysis using NVivo 12 Plus. The computer-assisted approach to content analysis has the advantage of maintaining the rigour of traditional content analysis while greatly reducing the time and cost required to complete such analyses. Guided by the research question three categories were assigned to the text as follows: social capital related challenges, sources of challenges and perceived solutions. Coding was done according to identified social capital related challenges and analysis of frequencies of codes was done to rank the challenges according to how often the challenges were raised by farmers. Lastly, the sources of challenges and perceived solutions were matched to the challenges.

## **6.0 Results and Discussion**

### **6.1 Dependent variable: Farmer groups level of commercialization**

As the primary dependent variable of this study, farmer groups' level of commercialisation is measured by farmer groups' average gross revenue or gross revenue per member farmer from the indigenous chicken value chain. This is calculated as the value of indigenous chickens and by-products sold by the sampled farmer groups' members, divided by the average number of farmers in the group from January to December 2018. That is

*Farmer groups' mean level of commercialization =*

$$\frac{\text{Indigenous chickens and by – products sold by the sampled farmer groups} \times \text{average market value}}{\text{number of group members}}$$

Table 4 below presents the farmer groups' participation and performance in the indigenous chicken value chain output market. Participation in the output market from January to December 2018 by the sampled farmer groups was high with 95% of the farmers participating. The product mostly sold by the farmer groups was the indigenous chickens with 95% of the farmer groups selling up to a total of 4838 indigenous chickens collectively with the maximum number of indigenous chickens sold by an individual group standing at 800. The prices<sup>2</sup> for indigenous chickens ranged from \$4.00 to \$13.00 averaging at \$8.97. Other products sold include indigenous chickens chicks, sold by 30% of the farmer groups at an average price of \$2.32 per chick, indigenous chickens eggs sold by 25% of the farmers at an average price of \$8.85 per crate of thirty eggs, and indigenous chickens manure sold by 2.5% of the farmer groups at an average price of \$2 per wheelbarrow.

The average total revenue or revenue per member farmer for the sampled farmer groups range from \$0.00 to \$598.00. This means there are farmer groups (5%) that failed to sell any output from the indigenous chickens' value chain between January and December 2018, despite being engaged in the value chain for commercial purposes. Despite high participation levels by farmer groups on the indigenous chicken value chain output market, the market performance was very low with 75% of the farmer groups failing to go above \$100 in terms of annual gross revenue per farmer member. This means on average, for 75% of the farmer groups, each farmer member managed to get at most \$ 8.33 gross income per month from the indigenous chicken value chain which approximates to the value of one chicken.

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<sup>2</sup> Prices are quoted in dollars representing the Zimbabwean bond note and US\$ that were rated as 1:1 during the study period.



**Table 4 Farmer groups’ participation and performance on the indigenous chicken value chain output market**

	Proportion of farmer groups	Minimum Statistic	Maximum Statistic	Sum Statistic	Mean Statistic
Crates of Indigenous chickens eggs sold January to December 2018	25%	0	60	173	4
Indigenous chickens eggs price per crate		\$5.00	\$12.50		\$ 8.85
Indigenous chickens chicks sold January to December 2018	30%	0	350	1077	27
Indigenous chickens chicks price per chick		\$1.00	\$5.00		\$ 2.32
Indigenous chickens sold January to December 2018	95%	0	800	4838	121
Indigenous chickens price per chicken		\$4.00	\$13.00		\$ 8.97
Wheelbarrows of Indigenous chickens manure sold January to December 2018		0	10	10	0.25
Indigenous chickens manure price per wheelbarrow	2.5%	\$2.00	\$2.00		\$ 2.00
Group average total revenue		\$0.00	\$598.00		\$ 118.77

## 6.2 Explanatory variables

### 6.2.1 Social Capital

This study measures social capital at the farmer group level of analysis. Further, it adopts the social structure perspective to social capital as it relates more to the social structure of smallholder farmer groups which is the focus and interest of this study. The social structure perspective categorises social capital into three dimensions of structural, cognitive and relational social capital. Guided by the list of measures or indicators for each dimension, the farmer group survey questionnaire was structured in a way to extract information regarding the indicators stated in table 1 above.

This information on multiple indicators was used to create three composite measures of social capital representing the three dimensions of structural social capital, relational social capital and cognitive social capital. This approach borrows from Narayan and Pritchett (1997) social capital index at the household level. Their social-capital index was anchored on three dimensions of social capital: household membership in groups, characteristics of those groups in which the households were members, and the individual’s values and attitudes, particularly their definition and expressed level of trust in various groups and their perception of social cohesion. These three dimensions were combined into a single numerical index where the contribution of each group to social capital is an equally weighted sub-index.

However contrary to Narayan and Pritchett's unity of analysis this study focuses on social capital at the farmer group level, not at the household level. Furthermore, this study focuses on different dimensions to social capital as Narayan and Pritchett, and view structural, cognitive and relational social capital as distinct dimensions to social capital whose effects on farmer group collective action towards commercialisation can be investigated separately. Hence three indexes of social capital, structural social capital index, cognitive social capital index and relational social capital index were created.

#### **Cognitive Social Capital Index.**

The cognitive social capital index consists of five items based on an ordinal scale of five categories, from strongly disagree to strongly agree. These items measured the respondent's levels of agreement with statements regarding the farmer groups' shared norms, values, goals and vision, obligations, reciprocity, attitudes and beliefs. The reliability test indicates an inter-item correlations mean of .478. (See appendix 2).

#### **Relational Social Capital Index.**

The relational social capital index consists of eleven items based on an ordinal scale of five categories, from strongly disagree to strongly agree. These items measured the respondent's levels of agreement with statements regarding the farmer groups' trust, social connections and ties with extension service providers, suppliers of factors of production and output buyers as well as amongst group members. The reliability test indicates a Cronbach's Alpha of 0.855. (See appendix 3).

#### **Structural Social Capital Index.**

The structural social capital index consists of nine items based on ordinal scales of a different number of categories. The data were normalised for all variables to have the same range of five categories. These items measured the respondent's levels of agreement with statements regarding the farmer groups' network ties and configuration, roles, rules, precedents, and procedures. The reliability test indicates an inter-item correlations mean of .200. (See appendix 4)

### 6.2.2 Farmer group production and marketing arrangements

On the production side, the farmers organised themselves into three different production arrangements, individual farmer autonomous production, individual farmer production with group supervision and joint production at one or more production unit(s). Most (50%) of the farmer groups have their members producing autonomously without interference from the group on their production processes. Similar to the production side, the farmers organised themselves into three different marketing arrangements as indicated in table 5 below. The majority (52.5%) of the farmer groups had their members engaged in individual marketing without interference from the group (see table 5).

**Table 5 Farmer group production and marketing arrangements.**

<b>Indigenous chickens production arrangements</b>	Frequency	Percent
Farmer individual production without interference from the group	20	50.0
Farmer individual production with supervision from the group leader or group members	9	22.5
Joint group production at one or more production unit(s)	11	27.5
<b>Indigenous chickens marketing arrangements</b>		
Farmer individual marketing without interference from the group	21	52.5
Farmer individual marketing with joint market search and or market price and terms negotiations	8	20.0
Joint group marketing	11	27.5

Table 6 presents findings of a further investigation into the relationship between production and marketing arrangements through a Chi-Square test. The investigation showed that there is a significant association between production arrangements and marketing arrangement. A further post-test confirmed a strong association with a Cramer's V is of 0.885. This was expected as farmers who engage in joint production will end up engaging in joint marketing and the sharing of income at a later stage.

**Table 6 Relationship between production and marketing arrangements**

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	62.700a	4	0.000
Cramer's V	0.885		

Further analysis of production and marketing arrangement combinations the farmer groups are engaged in revealed that most (47.5%) of the groups are engaged in farmer individual production and marketing without interference from the group. These farmer groups are

organised around collective action on extension services only. Farmer group approach to extension service provision is a strategy used by extension service providers to easily reach out to the farmers and thereby reducing the transaction costs to extension provision. The next common combination of production and marketing arrangement is group joint production and joint marketing practised by 27.5% of the farmer groups (see table 7). Discussions with farmer group survey respondents around production and marketing arrangements indicated a shift by farmers from joint production and joint marketing arrangements to farmer individual production and marketing. Autonomous production and marketing was a preferred arrangement by the farmers as it involves lower levels of collective action and quick and easy decision making in a constantly changing market environment. Furthermore, this shift is embedded in the LFSP programme design where joint production units are established as demonstration sites where farmers jointly receive extension on good production practices. In turn, these farmers are expected to adopt and implement good production practices at the individual farmer level.

**Table 7 Indigenous chicken production and marketing arrangements combinations**

	<b>Frequency</b>	<b>%</b>
Farmer individual production and marketing without interference from the group	19	47.5
Production with supervision from the group and individual selling with joint market search	7	17.5
Joint production and joint marketing	11	27.5
Farmer individual production without group interference and individual selling with joint market search	1	2.5
Farmer individual production with supervision from the group and individual marketing without group interference	2	5.0

### 6.3 The effect of production and marketing arrangements on farmer groups' performance on the indigenous chicken value chain output market

Table 8 OLS regression results. Test of significance using Pearson's R

	$\beta$	P Value
<b>Social Capital</b>		
Cognitive Social Capital Index	2.847	<b>0.030**</b>
Relational Social Capital Index	4.025	<b>0.014**</b>
Structural Social Capital Index	-2.360	0.150
<b>Collective Action Arrangements</b>		
Production with supervision from the group and individual selling with joint market search (dummy)	-37.998	0.550
Joint production and joint marketing (dummy)	90.288	0.065
Farmer individual production without group interference and individual selling with joint market search (dummy)	258.849	0.065
Farmer individual production with supervision from the group and individual marketing without group interference (dummy)	-53.660	0.745
<b>Financial Capital</b>		
Average loan amount	1.626	<b>0.006**</b>
Average cash contributions by group members	0.284	0.346
Average group asset value	0.076	0.931
<b>Human Capital</b>		
Group Size (number of members)	-5.126	0.416
Average age of group members	-2.461	0.636
Average age of group leadership	-7.969	0.086
Sex of group chairperson _female (dummy)	-85.851	<b>0.037**</b>
Group average level of education_ some secondary but not completed form 4 (dummy)	102.126	0.146
Group average level of education_ completed form 4 (dummy)	183.691	0.107
Group leadership average level of education_ completed grade 7 (dummy)	76.469	0.304
Group leadership average level of education_ some secondary but not completed form 4 (dummy)	-182.318	0.076
Group leadership average level of education_ completed form 4 (dummy)	-227.660	0.094
<b>Other control variables</b>		
Distance from the group project site, or central point to the nearest motorable road	-10.338	0.277
Distance from the group project site, or central point to the nearest town/city	0.757	0.596
Number of years of group existence (Group age)	-13.716	0.173
Number of other value chains	-29.590	0.122

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	F	Sig.
.964a	.930	.814	71.75093	1.777	8.033	.000 <sup>b</sup>

Using an OLS linear regression model, the relationship between farmer group performance on the indigenous chicken value chain output market and farmer groups' production and marketing arrangements was estimated. Results in table 8 indicate that farmer group production and marketing arrangements were not significant predictors of farmer groups' performance on the indigenous chicken value chain output market.

To further verify these findings a two-way ANOVA was estimated. The results of the two way ANOVA in Table 9 further indicate non-significant results for both the main effects of production and marketing arrangements on farmer groups' performance on the indigenous chicken output market. This indicates that no variance in farmer groups' performance on the indigenous chicken's value chain is significantly explained by production and marketing arrangements. This is further evidenced by small Eta squared values of 0.007 and 0.001 respectively. Furthermore, the interaction effect of farmer group's production and marketing arrangements was not significant. This also indicates that the interaction between farmer group production and marketing arrangements did not significantly affect the farmer groups' performance on the indigenous chicken value chain output market as further evidenced by a small Eta squared value of 0.024. In this study, farmer groups' performance on the indigenous chicken value chain output market is used as the proxy to farmer groups' level of commercialisation. The results above showed that there was no significant effect of production and marketing arrangements on the farmer groups' levels of commercialisation.

**Table 9 Two-way ANOVA results on the effects of production and marketing arrangements on farmer groups' performance on the indigenous chicken value chain output market**

Source	F	Sig.	Partial Eta Squared
Production arrangements	0.219	0.643	0.007
Marketing arrangements	0.020	0.888	0.001
Production arrangements * marketing arrangements	0.829	0.369	0.024

#### **6.4 The effect of social capital on farmer groups' performance on the indigenous chicken value chain output market**

Table 9 presents the results of the least squares regression fitted to test the effect of social capital on farmer groups' performance on the indigenous chicken value chain output market. In this model social capital is subdivided into three dimensions of cognitive, relational and

structural social capital. Results show that cognitive and relational social capital positively affect the farmer groups' performance on the indigenous chicken output market. A unit increase in the index of cognitive social capital increased the farmer groups' performance on the indigenous chicken output market by 2.847 units and a unit increase in the index of relational social capital increased the farmer groups' performance on the indigenous chicken output market by 4.025 units. This means that a unit increase in the cognitive social capital index increased the gross annual revenue per member farmer by \$2.85 whilst a unit increase in the relational social capital index increased the gross annual revenue per member farmer by \$4.03.

Farmer groups' performance on the indigenous chicken value chain output market is used as the proxy to farmer groups' level of commercialisation. The results above showed that cognitive social capital and relational capital affects the farmer groups' levels of commercialisation. Cognitive social capital was measured through indicators on shared norms, values, obligations, goals and mission, reciprocity, attitudes and beliefs. This study showed that groups with shared norms, values, obligations, goals and mission, acting with higher levels of reciprocity and with belief and positive attitudes are likely to have higher levels of commercialisation. On the other hand, relational social capital was measured through indicators on trust and trustworthiness, norms and sanctions, obligations and expectations, identity and identification. This study also showed that groups with close social connections amongst members, close acquaintances and external stakeholders characterised by high levels of trust, with respect of obligations and expectations and with members who are proud to be identified with the group are likely to have higher levels of commercialisation. This is contrary to findings by Barham and Chitemi (2008) who postulated that cognitive social capital is not a significant factor in a group's ability to improve its market situation.

However, the results showed no significant impact of structural social capital on farmer groups' performance on indigenous chicken value chain output market. Structural social capital was measured through indicators on network ties and configuration, rules and procedures. The sampled groups operate within the same network circles with closely identical ties and configuration. Furthermore, it is easier for development partners to work on improving the structural social capital of groups through connecting them to suppliers, buyers and extension service providers as well as making sure rules and procedures for group operations are in place through facilitating the drafting of group constitutions. This confirms findings by Barham and Chitemi (2008) who concluded that structural social capital is not a significant factor in a group's ability to improve its market situation.

## 6.5 Other control variables.

The other control variables that affect the farmer groups' performance on indigenous chicken value chain output market are the average loan amount obtained by the farmer groups between January 2018 and December 2018 and the sex of group chairperson. The average loan amount obtained by the farmer groups had a significant positive effect on the farmer groups' performance on indigenous chicken value chain output market. A \$1 increase in the amount of loan obtained by the farmer group per member farmer increased the group's gross annual revenue per member farmer by \$1.63. Farmer groups that obtained loans were better positioned to improve their commercialisation levels. The loans were obtained from the groups' internal savings and lending (53.8%) and the bank (42.3%). Bank loans were obtained as asset or input loans where the groups will get chicks, feeders, drinkers and feed instead of cash whilst ISAL loans were obtained as cash. Both loan options involved strict mechanisms to ensure loan repayment. The fear of failing to repay the bank loans and face legal action as well as fear to repay ISAL loans and face social exclusion from the group acted as extra motivation for the farmers to push their products on the output market.

Despite constituting only 23.6% of the total number of farmers, 45% of the groups had the highest leadership position of group chairperson being occupied by male farmers. According to the results of the least squares regression, male-led farmer groups were better positioned to improve their commercialisation levels compared to female-led farmer groups. Female-led farmer groups realised \$85.85 gross annual revenue per farmer member less compared to male-led farmer groups. With the keeping of indigenous chickens being historically identified as an agricultural activity for the female member of the household usually the female spouse, it will be expected female-led farmer groups to perform better than male-led farmer groups. However, before commercialisation interventions, the keeping of indigenous chickens was not done for the purpose of actively engaging with the output market but as household assets that will be disposed in times of distress and as a source of meat for household special occasions. Furthermore, women's daily schedule is so overloaded with the traditional female chores preparing food, fetching water and wood, and caring for children and elders (Gittinger et al, 1990). It is often a struggle for women to find adequate time to actively engage with the market and puts them at a disadvantage compared to their male counterparts.



## **6.6 Social capital-related challenges faced by farmer groups, their sources and farmer perceived solutions**

From the analysis of focus group discussions data, the farmers pointed out four major social capital related challenges they are facing as indigenous chickens farmer groups. These challenges include; 1. Domination and disregard of groups and community rules and regulations by powerful members of the community, 2. Lack of trust, 3. Free rider problem and 4. Barriers to exit from the farmer group. In the section below, sources of the identified problems and farmer perceived solutions to the identified challenges are further explored.

### **6.6.1 Domination and disregard of groups and community rules and regulations by powerful members of the community**

When development programmes are being introduced into new communities, there is a tendency by development agents (NGOs and Government departments) to identify opinion leaders within the communities and use them as change agents and role models in the adoption of innovations (Hameed and Sawicka, 2017). From the economic perspective of projects' implementation, it is efficient to diffuse an innovation through opinion leaders as they multiply the efforts, by carrying the message to more possible adopters (ibid). However, over the years and through cycles of multiple development programmes these opinion leaders tend to consolidate their position and become more powerful than other community members and even community leadership. This comes in with a sense of entitlement and ownership of development programmes by opinion leaders at the community level where all communication between the community and development agents will end up being channelled through the opinion leaders. Furthermore, this consolidation of power by the opinion leaders leads to their domination over other farmers and community leadership and disregard of groups and community rules and regulations. One of the farmer participants during the focus group discussion pointed out that:

*“...there are individuals with a monopoly of information, those with resources to visit development agents' offices and have developed close relations with development partner staff. They feel entitled to do whatever they want, even selling chicks without following proper group procedures. They even go on to form a clique of close allies that are loyal to them and who in turn get favours of being selected for exchange visits.”*

A key informant interview with development agents' staff brought out a different perspective. According to the key informant, the laggards, because they are usually left behind, they will always try to stifle progress for selfish reasons. The key informant went on to point out that the laggards are usually jealousy of early adopters' progress and success and will view the being proactive of early adopters as favouritism by development agents and use it as a reason for lack of progress on their side.

According to the farmers, there is a need for development partners to dilute their engagement with opinion leaders, engage the legitimate community leaders such as village heads and ward councillors more. There is also a need to engage elected group leadership on matters to do with the farmer groups instead of communicating through the opinion leaders.

### **6.6.2 Lack of Trust**

Lack of trust amongst group members, especially amongst ordinary group members and those in positions of group leadership was pointed out as one of the social capital related challenges faced by the farmers. To a lesser extent trust issues were also raised between farmers and extension workers. Trust can be viewed both as an outcome and an antecedent of relationships. It forms a basis for relationships, and thus generates social capital and can also be viewed as a close consequence of social capital (Woolcock, 1998 Putman, 2000). Trust matters because of relational risk, which is a sense of being vulnerable to actions of others, and yielding a possibility of loss (Luhmann 1988; Chiles and McMakin 1996).

Lack of trust amongst group members was reported to be emanating from superstition and cultural beliefs where group members are afraid to challenge the opinions and actions of certain group members because of suspicion of witchcraft. Further probing on this issue revealed cases claimed to be genuine where members of some groups died because of suspected cases of witchcraft. This fear shrinks the space for democracy on group decision making. Lack of trust between group leadership and ordinary group members was due to lack of transparency and accountability in dealing with group funds by the group leaders. In some cases, this was only suspicion of misuse of funds without clear evidence, and this was common in cases where a group leader acquires a new asset at his or her household and group members become suspicious of the new development. Trust issues between farmers and extension workers were flagged on the mistrust of farmers on close relationships between extension workers and other

farmers in the community. These relationships, in the eyes of other farmers, seem to favour and elevate the ‘friends’ farmers at the expense of others.

The farmers’ perceived solution to the lack of trust amongst group members is the targeting of youths in group-based development interventions. The youths were perceived to be less superstitious and less involved in generational family grudges and if facilitated to work together at a younger age, they will be able to improve trust level and social cohesion in the communities for future generations. For lack of trust between group leadership and ordinary group members, the farmers perceive continual training in group leadership, transparency and accountability as a solution given that groups continue to evolve with new members joining and new leaders selected. Active involvement of and communication through legitimate community leaders and group leaders was the perceived solution for trust issues between farmers and extension service providers.

### **6.6.3 Free rider problem**

Farmer groups are institutions of collective action and in the context of commercialization of smallholder agriculture, they are viewed as an efficient mechanism for enhancing marketing performance (Kariuki and Place, 2005). This view is based on the argument that collective action has the advantage of improving the position of smallholder farmers in markets including reducing transaction costs, obtaining the necessary market information, securing access to new technologies, increasing bargaining power and tapping into high-value markets. (Stockbridge et al. 2003; Kruijssen et al. 2007; Devaux et al. 2009; Narrod et al. 2009; Kaganzi et al. 2009). Collective action occurs when a number of people work together to achieve a common objective. However, as reported by the farmers during the focus group discussions, in most cases there are individuals that either do not put any effort at all or their effort falls far short of the average effort put by other group members. One of the farmer participants during the focus group discussions pointed out that:

*“We are only seven present at this meeting from a group of 13 farmers and the seven of us here present have been working hard on improving the group business and when the business improves then someone not contributing to group efforts continues to benefit from our efforts. What does it make us feel as people who work hard?”*

This challenge is mostly associated with groups where the production and marketing arrangements demand higher levels of collective action. These are groups that produce together and market together, and also where financial contributions were made to acquire jointly owned group assets. In this case, the returns to group efforts become non-excludable amongst group members and hence 'public goods' to group members. If other members believe that the collective action will occur without their individual contributions, then they may try to free ride. This is a collective action problem arising when the private incentives faced by individuals are not properly aligned with their shared group goals.

Olson (1965) postulated that coercion or some other device must be present in order for a group of individuals to act in their common interest. He further suggested that collective action problems can be solved by the use of selective incentives. These selective incentives might be extra rewards contingent upon taking part in the action or penalties imposed on those who do not. However, for the farmer groups that participated in the focus group discussion, it was viewed as a better and fair option to impose penalties than rewards due to amongst other things difficulty in agreeing on objective criteria of judging good behaviour for rewards. The farmer groups' constitutions act as the book of rules where penalties are pronounced and upon which members will be penalised for bad behaviour. However, in most cases, the farmer group constitutions remain paper tigers. A review of five farmer groups' constitution showed that all members who failed to turn up for group meetings without proper explanation will have to pay a fine of between \$.50 and \$1.00 for every meeting missed. A further review of the farmer groups records showed that not even a single farmer had paid the fine despite complaints by the group members of farmers not attending group meetings.

With the realisation of the shortcomings of the group level constitutions, the farmers perceived the involvement of traditional leaders such as village heads, headman and chiefs as a solution to the enforcement of group level rules and regulations. Traditional leaders in Zimbabwe are constitutional creatures provided for under the Traditional Leaders Act [Chapter 29:17] of the constitution of Zimbabwe. This gives them the powers to assist their constituency by all means in their power and to arrest and securing offenders against the law as well as preside over and consider all matters affecting the interests and wellbeing of all inhabitants in their jurisdiction.

#### **6.6.4 Barriers to exit from the groups**

Barriers to exit from the farmer groups are one of the social capital related challenges raised by the farmers during focus group discussions. These barriers to exit were identified by the farmers as obstacles in the path of a farmer who wants to leave a given group. This challenge was identified to be mainly associated with farmer groups that acquired a group owned assets such as incubators, feeders, drinkers, and fowl runs either through smart subsidies where farmer contribute part of the asset cost or own purchase by the group where members make equal contributions to cover the cost of the assets. The source of this problem is the lack of clearly defined property rights when it comes to the group owned assets. Property rights, in this case, are the enforced constructs for determining how the group assets are owned, managed and used.

A review of five farmer groups' constitutions where the farmer groups possessed group owned assets showed that for two groups, the constitution was totally silent on ownership of group property. Further probing from the group members on the ownership status of the assets revealed that the group members assumed it to be common knowledge amongst group members that the assets were group owned and were recorded in the group asset register. For the remaining three groups there were lines in the group constitution indicating that the group assets are equally owned by group members based on equal contributions towards the asset cost.

In all these cases the property rights were not clearly specified. Often missing is a specification of how the property rights can be exchanged and how these exchanges are enforced. For example, when a farmer wants to drop out of the group, most of the farmer groups' constitutions were silent on what will happen to this farmer's rights to the group owned asset. For one of the groups, the constitution stated that a farmer who decides to drop out will forfeit his or her rights to the group owned asset without compensation. This lack of clarity on how the property rights can be exchanged and the forfeiture of rights for group-owned assets without compensation for the contribution made to the cost of the asset by farmers who decide to drop out of groups act as barriers to exit from the groups. These barriers often cost the farmer financially to leave the group and may prohibit the farmer from doing so. If the barriers to exit are significant the farmer may be forced to continue being a member of a group that no longer serves his or her interest. This further perpetuates the free rider problem and causes disharmony amongst the group.

Furthermore, from the discussion on social capital and market performance in section 4.1.1 above, it was noted that as farmers' market performance changes over time, so too does the costs and benefits associated with social capital generated from the farmer group. As positive impact of farmer groups on farmer market performance reaches a limit (B) and diminishes to (C) more ambitious farmers may find that obligations and commitments to their colleagues present obstacles to further advancement. These farmers will seek an exit from the existing groups to join a potentially more diverse network with higher levels of social capital and more market opportunities (E). In order for this movement to happen without friction barriers to exit must be minimal.

The farmer perceived solutions to the challenge of barriers to exit is well-drafted group constitutions with clearly defined property rights to the group owned assets with a specification of how the property rights can be exchanged and how these exchanges are enforced. The exchange mechanisms should aim for Pareto optimal solutions that will cater to the needs of an exiting farmer without making the farmer group worse off.

## **7.0 Conclusion**

This study aimed to examine the effect of farmer group social structure and dynamics and collective action arrangements on the farmer group approach to commercialization of smallholder agriculture. Based on a mixed methods analysis of indigenous chicken farmer groups' output market performance, it can be concluded that cognitive social capital and relational capital are important factors in collective action initiatives to the commercialization of smallholder agriculture. These results indicate that farmer groups with shared norms, values, obligations, goals and mission, acting with higher levels of reciprocity and with belief and positive attitudes are likely to have higher levels of commercialisation. Further, groups with close social connections amongst members, close acquaintances and external stakeholders characterised by high levels of trust, with respect of obligations and expectations and with members who are proud to be identified with the group are likely to have higher levels of commercialisation.

On the other hand, the study found no significant effect of structural social capital and farmer groups' production and marketing arrangements on collective action initiatives to the commercialization of smallholder agriculture. However, this might not mean that these factors

are of no importance to collective action initiatives to the commercialization of smallholder agriculture. The sampled groups operate within the same network circles with closely identical ties and configuration. Furthermore, extensive work has been done on improving structural social capital factors of network ties and configuration, rules and procedures by various development agents. Farmer groups' production and marketing arrangements were also found to be in transition from a collective group based production and marketing arrangements to individual farmer production and marketing with group extension.

Understanding how outside agencies can work to alleviate poverty in diverse and poorly understood communities remains one of the great challenges of development. This is evident in interventions targeted at the commercialisation of smallholder agriculture where farmer groups based commercialization efforts are hinged on the premise that the poor often lack essential assets for successful cooperation such as basic education, management and entrepreneurial skills, and financial capacity. This introduces a bias towards building the human and financial capacities of communities and putting less effort into social capital.

A social capital perspective adopted by this study stresses that technical and financial soundness in development projects design and implementation is a necessary but insufficient condition for achievement of sustainable development outcomes. By applying a mixed methods approach, this study does not only highlight the importance of groups' social structure and dynamics but also highlight the social capital related challenges faced by farmers working in groups, their sources and farmer perceived solutions. This makes the study important in coming up with recommendations to inform collective action based development programs design and implementation resulting in programs design and implementation that will achieve intended development outcomes.

Three recommendations can be offered to inform collective action based smallholder farmer commercialisation programs design and implementation. First, for programme design, social institutional analysis should be used to identify existing institutions that govern the social interactions within a community as well as programme stakeholders and their interrelations. Since all development interventions occur in a social context characterized by a delicate mix of informal organizations, networks, and institutions, it is important to understand how a development programme or project will affect the power and political interests of the stakeholders. The design of an intervention needs to pay special attention to the potential for dominant groups to mobilize in ways that undermine the public good.

Second, it is critical to invest in the improvement of groups' social structure and dynamics. Finding ways and means by which to transcend social divides and build social cohesion and trust is crucial for economic development. This includes facilitation of group formation in which barriers to exit are minimal to allow for an easy exit from the group and evolution of the group into an entity with high levels of trust and social capital. Further targeting the youth has been also identified as a way of breaking generational mistrust and build sustainable higher levels of social capital within communities.

Lastly, groups' social structure and dynamics should be seen as a component of collective action based smallholder farmer commercialisation interventions. Impact assessments of collective action based smallholder farmer commercialisation interventions should include the potential effects of the intervention on the social capital of target communities. Social networks are very important to poor communities as they form the foundation of their safety nets and are one of the primary resources they have for managing risk and vulnerability. Development agents, therefore, need to find ways to complement these resources, rather than destroy or substitute for them.

However, to better understand the implications of the results of this study and come up with broad recommendations to cover a broad range of collective action based development interventions, more methodological work is needed on how to robustly capture the effect of groups' social structure and collective action arrangements on development outcomes. Although methodologically challenging and ethically questionable, it would be very useful to conduct some complex and longer-term studies such as randomised control trials or quasi-experimental approaches which sought to quantify the effect of social capital and collective action arrangements on key development outcomes.



## References

- Agrawal, A. (2001). Common property institutions and sustainable governance of resources. *World Development* 29 (10), 1649–167
- Barham, J. and Chitemi, C. (2008). Collective action initiatives to improve marketing performance: Lessons from farmer groups in Tanzania. *Food Policy* 34: 53–59
- Barrett, C.B. (2008). Smallholder market participation: Concepts and evidence from eastern and southern Africa. *Food Policy* 33 (4): 299-317.
- Bouis, H. E, and Haddad, J. L. (1990). Effects of agricultural commercialization on land tenure, household resource allocation, and nutrition in the Philippines. International Food Policy Research Institute.
- Bourdieu, P. (1985). The forms of capital. In Richardson, J.G. (Ed.) *Handbook of Theory and Research for the Sociology of Education*. New York: Greenwood, pp. 241–58.
- Brookfield, H. (2008) Family farms are still around: time to invert the agrarian question, *Geography Compass* 2(1): 108-126
- Brush, S.B., and Turner, B.L. (1987). The nature of farming systems and views of their change. In Brush, S. B. and Turner, B. L (Eds) *Comparative Farming systems*. NY: Guilford Press.
- Bryman, A. (2006). Integrating quantitative and qualitative research: how is it done? *Qualitative research*, 6(1), 97-113.
- Bryman, A. (2007). Barriers to integrating quantitative and qualitative research. *Journal of mixed methods research*, 1(1), 8-22
- Burt, R. (1992) “Structural Holes: The Social Structure of Competition,” In Nohria, N. and Eccles, R. (Eds) *Networks and Organizations: Structure, Form and Action*. Boston, MA: Harvard Business School Press
- Chayanov, A. V. (1925). Peasant farm organization, Original: Moscow: the Co-operative Publishing House
- Chile, T. H. and McMakin, J. F. (1996) “Integrating Variable Risk Preferences, Trust and Transaction Cost Economics,” *Academy of Management Review* 21(7): 73 – 99.
- Chirwa, E., Dorward, A., Kachule, R., Kumwenda, I. Kydd, J., Poole, N. (2005). Walking tightropes: supporting farmer organizations for market access. *Natural Resource Perspectives*, Number 99
- Claridge, T. (2017). How to measure social capital. *Social Capital Research and Training* <https://www.socialcapitalresearch.com/measure-social-capital/>, Accessed 2018-11-10

- Coleman, J. (1988). "Social Capital in the Creation of Human Capital" *American Journal of Sociology* 94 Supplement: S95-S120.
- Collier, P. (2002). 'Social capital and poverty: a microeconomic perspective.' Pp. 19 – 41 In Van Bastelaer, T. (Ed) *The Role of Social Capital in Development*. Melbourne: Cambridge University Press.
- Collier, P. (2008). 'Politics of Hunger – How Illusion and Greed Fan the Food Crisis', *Foreign Affairs*, 87,
- Collier, P. and Dercon, S. (2009). African agriculture in 50 years: smallholders in a rapidly changing world? Paper to FAO Expert meeting on How to feed the world in 2050, FAO, Rome.
- Creswell, J. W. (2012). *Qualitative Inquiry & Research Design, Choosing Among Five Approaches*. Thousand Oaks: Sage
- Devaux, A., Horton, D., Velasco, C., Thiele, G., Lopez, G., Bernet, T. (2009). Collective action for market chain innovation in the Andes. *Food Policy*, 34 31–38
- Durlauf, S. N. (1999). The Case 'Against' Social Capital. *Focus* 20: 1–5
- Durlauf, S. N., and Fafchamps, M. (2004). Social Capital. National Bureau of Economic Research, NBER Working Papers: 10485
- Fukuyama, F. (1995) *Trust, the Social Virtues and the Creation of Prosperity*, New York: Free Press.
- Gittinger, J.P, et al (1990). Household Food Security and the Role of Women. World Bank Discussion Papers
- Gooderham, P. N. (2007). "Enhancing Knowledge Transfer in Multinational Corporations: A Dynamic Capabilities Driven Model." *Knowledge Management Research & Practice* 5(1):34–43.
- Govere, J., Jayne, T. S., and Nyoro, J. (1999). Smallholder commercialization, interlinked markets and food crop productivity: Cross-country evidence in eastern and southern Africa. [http://www.aec.msu.edu/fs2/ag\\_transformation/atw\\_govere.pdf](http://www.aec.msu.edu/fs2/ag_transformation/atw_govere.pdf)
- Granovetter, Mark. (1973). "The Strength of Weak Ties." *American Journal of Sociology* 78:1360-80.
- Grootaert, C., and Van Bastelaer, T. (2002). Understanding and measuring social capital: a multidisciplinary tool for practitioners. Washington, D.C.: World Bank.
- Hameed, T.S, and Sawicka, B: (2017). The importance of opinion leaders in agricultural extension. *World Scientific* 76: 35-41

- Häuberer, J. (2010). *Social Capital Theory Towards a Methodological Foundation*. Dissertation Charles University in Prague.
- Hitchins, R., Elliot, D., Gibson, A. (2004). *Making Business Service Markets Work for the Poor in Rural Areas: A Review of Experience*. Report for DFID. Springfield Centre, Durham, UK
- Hulme, D., Shepherd, A. (2003). Conceptualizing chronic poverty. *World Development* 31 (3), 403–423.
- Hyden, G. (1980). *Beyond Ujamaa in Tanzania: Underdevelopment and an Uncaptured Peasantry*, University of California Press
- IFAD (International Fund for Agricultural Development). (2001). *Rural poverty report 2001: The challenge of ending rural poverty*. Rome.
- Jaleta, M., Gebremedhin, B., and Hoekstra, D. (2009). “Smallholder Commercialization; Processes, determinants and Impact”, Discussion Paper No. 18; Improving productivity and market success of Ethiopian Farmers, Improving Market Opportunity, International Livestock Research Institute. pp 1.
- Kaganzi, E., Ferris, S., Barham, J., Abenakyo, A., Sanginga, P., and Njuki, J. (2009). Sustaining linkages to high value markets through collective action in Uganda. *Food Policy*, 34: 23–30
- Makeya, M., and Sugiyama, Y. (1987). Agricultural changes and its mechanism in the Bemba village of north-eastern Zambia. *African Study Monographs, Supplementary Issue*, 6: 1–13
- Kariuki, G., and Place, F. (2005). Initiatives for rural development through collective action: the case of household participation in group activities in the highlands of central Kenya. CAPRI Working Paper 43. IFPRI, Washington DC.
- Kennedy, E., Cogill, B. (1987). Income and nutritional effects of the commercialization of agriculture in southwestern Kenya. IFPRI Research Reports, No. 63. International Food Policy Research Institute (IFPRI), Washington DC, USA.
- Kibirige, D. (2016). Smallholder Commercialization of Maize and Social Capital in the Eastern Cape Province of South Africa. *International Journal of Economics, Commerce and Management* 4 (9).
- Kruijssen, F., Keizer, M., and Giuliani, A. (2007). Collective action for biodiversity and livelihoods. *LEIA Newsletter—Low-External Input and Sustainable Agriculture*, 23(1):6–8
- Lin, N. (1999): Social Networks and Status Attainment. In: *Annual Review of Sociology* 25: 467-487
- Loury, G. (1977). “A Dynamic Theory of Racial Income Differences” In Wallace, P.A and LaMond, A. (Eds) *Women, Minorities, and Employment Discrimination*. Lexington, MA: Lexington Books

- Luhmann, N. (1988). "Familiarity, Confidence, Trust," in D. Gambetta (ed.) *Trust: Making and Breaking of Cooperative Relations*, Oxford: Blackwell.
- Lundy, M., Ostertag, C., and Best, R. (2002). Value adding, agro-enterprise and poverty reduction: a territorial approach for rural business development. Rural agro enterprise development project paper, CIAT, Cali, Colombia
- Markelova, H., Meinzen-Dick, R., Hellin, J., and Dohrn, S. (2009). Collective action for smallholder market access. *Food Policy* 34: 1-7
- Nagayets, O. (2005). Small farms: current status and key trends, Information Brief, Research Workshop on The Future of Small Farms, Organised by IFPRI, Imperial College and ODI, Wye.
- Nahapiet, J., and Ghoshal, S. (1998). "Social Capital, Intellectual Capital, and the Organizational Advantage." *Academy of Management Review* 23(2):242.
- Narayan, D. (1997). *Voices of the poor: Poverty and social capital in Tanzania. Environmentally and Socially Sustainable Development Studies and Monographs Series, 20.* World Bank, Washington, DC.
- Narayan, D., and Cassidy, M.F. (2001). "A dimensional approach to measuring social capital: development and validation of a social capital inventory." *Current Sociology* 49: 59-102
- Narayan, D., and Pritchett, L. (1999). *Cents and sociability: Household income and social capital in Rural Tanzania.* Policy Research Working Paper 1796, The World Bank Social Development and Development Research Group, World Bank, Washington, DC.
- Narro, C., Roy, D., Okello, J., Avendano, B., Rich, K., and Thorat, A. (2009). Public-private partnerships and collective action in high value fruit and vegetable chains. *Food Policy*, 34: 8–15
- Obare, G. A., Shiferaw, B. A., and Muricho, G. (2006) *Leveraging Rural Institutions for Collective Action to Improve Markets for the Poor: Lessons and Policy Options.* Documentation. International Crops Research Institute for the Semi-Arid Tropics, Patancheru, Hyderabad, Andhra Pradesh.
- Okello, J. J., Narro, C., and Roy, D. (2007). Food safety requirements in African green bean exports and their impact on small farmers. IFPRI discussion paper 00737. Washington, DC.
- Okello, J.J., and Swinton, S.M. (2007). Compliance with international food safety standards in Kenya's green bean industry: A paired case study of small and large family farms. *Review of Agricultural Economics* 29:269-285
- Okezie, C.A., Nwonsu, A.C., and Okezie, C.R. (2008). An assessment of the extent of Commercialization of Agriculture in Abia State, Nigeria. *Agric. J.* 3(2):129-133.

- Olson, M. (1965). *The Logic of Collective Action: Public Goods and the Theory of Groups* (Revised ed.). Harvard University Press
- Omiti, J., Otieno, D., Nyanamba, T., and McCullough, E. (2009). Factors influencing the intensity of market participation by smallholder farmers: A case study of rural and peri-urban areas of Kenya. *African Journal of Agricultural and Resource Economics*, 3(1), 57–82
- Onyx, J. and P, Bullen. (2009). Measuring social capital in five communities. In *Journal of Applied Behavioural Science* 36(1): 23-42
- Ostrom, E. (1990). *Governing the Commons. The Evolution of Institutions for Collective Action*. Cambridge University Press, Cambridge, UK
- Pender, J., and Alemu, D. (2007). "Determinants of smallholder commercialization of food crops: Theory and evidence from Ethiopia," IFPRI discussion papers 745, International Food Policy Research Institute (IFPRI).
- Pingali, P. L., and Rosegrant, M.W. (1995). Agricultural commercialization and diversification: Process and policies. *Food Policy*. 20(3):171-185.
- Pingali, P. L. (1997). "From subsistence to commercial production systems: the transformation of Asian agriculture." *American Journal of Agricultural Economics* 79(2): 628- 634
- Pingali, P., Khwaja, Y., and Meijer, M. (2005). *Commercializing small farmers: Reducing transaction costs*. FAO/ESA Working Paper No. 05-08. Food and Agriculture Organization of the United Nations, Rome, Italy
- Portes, A. (1998). Social Capital: Its Origins and Applications in Modern Sociology. *Annual Review of Sociology* 24: 1–24
- Portes, A., and Landolt, P. (1996). The Downside of Social Capital. *The American Prospect* 26:18–21
- Poulton, C., Kydd, J., and Doward, A. (2006). Overcoming Market Constraints on Pro-Poor Agricultural Growth in Sub-Saharan Africa. *Development Policy Review*, 24 (3): 243-277
- Poulton, C., Tyler, G., Dorward, A., Hazell, P., Kydd, J., Stockbridge, M. (2008). *All Africa Review of Experiences with Commercial Agriculture: Lessons from Success and Failure*. Background Report for the World Bank Project "Competitive Commercial Agriculture in Sub-Saharan Africa", School of Oriental and African Studies, London.
- Putnam, R. (1993). The Prosperous Community. Social Capital and Public Life. *The American Prospect* 13: 35–42
- Putnam, R. (1995). "Bowling Alone: America's Declining Social Capital" *Journal of Democracy* 6(1): 65-78.

- Putnam, R. (2000): *Bowling Alone: The Collapse and Revival of American Community* (New York: Simon and Schuster).
- Sara, B. (1993). *No condition is permanent. The social dynamics of agrarian change in sub-Saharan Africa*, University of Wisconsin Press, Madison, WI
- Schiff, M. (1992). Social capital, labour mobility, and welfare. *Ration. Soc.* 4:157–75
- Shiferaw, B.A., Okello, J., and Reddy, R.V. (2007). Adoption and adaptation of natural resource management innovations in smallholder agriculture: reflections on key lessons and best practices. *Environment, Development and Sustainability*, 11(3):601-619
- Spencer, D. (2002). The future of agriculture in Sub-Saharan Africa and South Asia: Whither the small farm? In *Sustainable Food Security for All by 2020. Proceedings of an International Conference, September 4–6, 2001, Bonn, Germany*. Washington, D.C.: International Food Policy Research Institute
- Stockbridge, M., Dorward, A., Kydd, J. (2003). *Farmer Organizations for Market Access: A Briefing Paper*. Wye College, University of London, UK.
- Strasberg, P.J., Jayne, T.S., Yamano, T., Nyoro, J., Karanja, D., and Strauss, J. (1999). Effects of agricultural commercialization on food crop input use and productivity in Kenya. Michigan State University, International Development Working Papers No. 71. Michigan, USA
- Stringfellow, R., Coulter, J., Lucey, T., McKone, C, and Hussain, A. (1997). *Improving the Access of Smallholders to Agricultural Services in Sub-Saharan Africa: Farmer Cooperation and the Role of the Donor Community*. London, Overseas Development Institute.
- Sugiyama, Y. (1987). Maintaining a life of subsistence in the Bemba village of north-eastern Zambia. *African Study Monographs, Supplementary Issue*, 6: 15–32
- Uphoff, N., and Wijayarathna, C.N. (2000). “Demonstrated Benefits from Social Capital: The Productivity of Farmer Organizations in Gal Oya, Sri Lanka.” *World Development* 28(11):1875–90
- Veronique, T., and Tschirley, D.L. (2004). "How Institutions Mediate the Impact of Cash Cropping on Food Crop Intensification: An Application to Cotton in Sub-Saharan Africa." *World Development* 64: 298-310
- Von Braun, J. (1995). "Agricultural commercialization: impacts on income and nutrition and implications for policy." *Food Policy* 20. (3): 187-202
- Von Braun, J., and Kennedy, E. (1994). *Commercialization of Agriculture, Economic Development and Nutrition*, John Hopkins Press, Baltimore, MD.
- Vorley, B., Fearne, A., and Ray, D. (Eds.). (2007). *Regoverning Markets: A Place for Smallscale Producers in Modern Agrifood Chains?* Gower Publishing Limited, Hampshire, England

- Wambugu, S.N, Okello, J.J., and Nyikal, R.A. (2009). Effect of Social Capital on Performance of Smallholder Producer Organizations: The Case of Groundnut Growers in Western Kenya
- Wiggins, S., Argwings-Kodhek, G., Leavy, J., and Poulton, C. (2011). Small farm commercialization in Africa: Reviewing the issues. Future Agriculture. Research Paper 023
- Wong Kwok-Fu, S. (2001). What are the missing ingredients of the cake? Some reflections upon the notion of social capital, Human resources and local development, Staff Group III seminar. <http://www.ex.ac.uk/shipss/politics/research/socialcapital/other/wong.pdf>.
- Woolcock, M., and Narayan, D. (2000). "Social capital: Implications for development theory, research, and policy." The World Bank Research Observer 15: 225-249.
- World Bank. (2008). World Development Report 2008: Agriculture for development. 1818 H Street, NW, Washington, DC 20433, USA.
- Zimbabwe National Statistics Agency. (2012). Zimbabwe Population Census Report [http://www.zimstat.co.zw/sites/default/files/img/publications/Population/National\\_Report.pdf](http://www.zimstat.co.zw/sites/default/files/img/publications/Population/National_Report.pdf), Accessed 2019-01-17
- Zimbabwe Vulnerability Assessment Committee (ZimVAC). (2018). 2018 Rural Livelihoods Assessment Report. Food and Nutrition Council (FNC)

## APPENDICES

### Appendix 1. Farmer groups survey questionnaire.

#### Indigenous Chickens Farmer Group Survey Questionnaire 2019

*(The RESPONDENT should be a member of the leadership of the farmer group who participates in group activities and sufficiently knowledgeable about the farmer group activities)*

*First, ask the respondent(s) whether they are willing to participate in this survey interview. This discussion should encompass explaining a) the purpose of the survey, b) how long it will take, c) how the farmer group was chosen for participation. It is important also to explain that each farmer group's responses will be kept confidential. If this farmer group does not want to participate, this should be noted on the sample list, and a replacement household should be identified.*

SECTION A: Site and Location		
A1. District		
A2. Ward number		
A3. Village		
A4. Name of Enumerator		Phone number:
A5. Date of survey (DD/MM/YY)		

SECTION B: Group Characteristics	
B1 Name of respondent	
B2 Position of the respondent in the group	
B3 Sex of the respondent <i>Codes: 1= Male, 2= Female</i>	
B4 Name of farmer group	
B5 Which year was your farmer group formed (e.g. 1980)?	
B6 How many farmers were members of your farmer group as of 31 December 2018?	
B7. How many members dropped off your group between January and December 2018?	
B8 How many new members joined your group between January and December 2018?	



<b>SECTION C: Human Capital</b>		<b>Sex, Age and level of education of group members</b>	
<p><b>Codes:</b> Sex- Male= 1, Female = 2  Level of Education: 1= no school 2= some primary but not completed grade 7 3= completed grade 7 4= some secondary but not completed form 4 5= completed form 4 6=completed A' level 7 = Diploma/ Certificate after primary 8 = Diploma/ Certificate after secondary 9= Tertiary (degree)</p>			
	<b>Sex</b>	<b>Year of birth (e.g. 1980)</b>	<b>Level of education</b>
<b>C1.1 Group Leadership</b>			
<b>C1.1a</b> Group Chair Person			
<b>C1.1b</b> Vice Chair Person			
<b>C1.1c</b> Treasurer			
<b>C1.1d</b> Vice Treasurer			
<b>C1.1e</b> Secretary			
<b>C1.1f</b> Vice Secretary			
<b>C1.1g</b> Committee member 1			
<b>C1.1h</b> Committee member 2			
<b>C1.1i</b> Other Leadership position 1 (please specify)			
<b>C1.1j</b> Other leadership position 2 (please specify)			
<b>C.2 Other Group Members</b>			
<b>a</b>			
<b>b</b>			
<b>c</b>			
<b>d</b>			
<b>e</b>			
<b>f</b>			
<b>g</b>			
<b>h</b>			
<b>1</b>			

<b>SECTION D. Farmer Group Institutional Arrangements and Commercialization Level (market performance)</b>			
<b>D.1. What are the indigenous chicken's production arrangements for your group?</b>			
<b>Codes</b> 1 =Farmer individual production without interference from the group 2= farmer individual production with supervision from the group leader or other group members 3 = Joint group production at one or more production unit(s)			
<b>D.2. What are the indigenous chicken's marketing arrangements for your group?</b>			
<b>Codes</b> 1 =Farmer individual marketing without interference from the group 2= farmer individual marketing with joint market search and/ or market price and terms negotiations 3 = Joint group marketing			
<b>D3. Quantity of indigenous chickens and products produced and sold from January to December 2018.</b>			
<b>Product</b>	Quantity produced from January to December 2018 <i>(for groups engaged in individual farmer production estimate the total production by adding all the individual farmer production figures)</i>	Quantity sold from January to December 2018 <i>(for groups engaged in individual farmer marketing estimate the total sales by adding all the individual farmer sales figures)</i>	Average price per unit (at 1:1 US\$: Bond)
Indigenous chicken eggs produced for the market. <i>(These are eggs produced with the sole purpose of selling)</i>	<b>D3a</b>	<b>D3b</b>	<b>D3c</b>
Indigenous chicken chicks produced for the market. <i>(These are eggs produced with the sole purpose of selling)</i>	<b>D3d</b>	<b>D3e</b>	<b>D3f</b>
Indigenous chickens produced for the market. <i>(These are eggs produced with the sole purpose of selling)</i>	<b>D3g</b>	<b>D3h</b>	<b>D3i</b>
Indigenous chickens manure	<b>D3j</b>	<b>D3k</b>	<b>D3l</b>
<b>D4. What percentage of the total income form the indigenous chicken enterprise was used for the following:</b> <i>(Sum of D4a, D4b and D4c must give 100%)</i>			
	<b>D4a.</b> Reinvested back into the indigenous chicken enterprise		
	<b>D4b.</b> Invested in other income generating activities		
	<b>D4c.</b> Used for other non-income generating activities e.g. consumption, medication		

<b>SECTION E. Financial Capital</b>			
<b>E1. Did your group, or any member of your group receive a loan from January to December 2018?</b> <i>Codes: 0=No 1=yes (if yes proceed to E1a, if no skip to question E2)</i>			
<b>E1a.</b> Loan Number	<b>E1b.</b> Amount (USD) <i>(At 1:1, USD to Bond rate)</i>	<b>E1c.</b> How was the loan obtained? <i>Codes: 1=As individual farmers 2= As a group</i>	<b>E1d.</b> Source <i>Codes: 1= Bank 4 = MicroFinance Institutions 3 = ISAL 4 = SACCO 6 = Relatives, Friends, neighbors 5 = Other Specify</i>
<b>E2. Did the group members make any financial contribution towards group activities from January to December 2018?</b> <i>Codes: 0=No 1=yes (if yes proceed to E2a, if no skip to question E3)</i>			
<b>E2a.</b> If yes, what is the total value of member contributions (USD)? <i>(At 1:1, USD to Bond rate)</i>			

<b>E3. Assets owned by the group</b>			
<b>E3a.</b> Asset Name	<b>E3b.</b> Quantity	<b>E3c.</b> Estimated Value per unit	<b>E3d.</b> Source of Asset <i>Codes. 1= Smart subsidies (purchased with assistance from NGOs) 2 = Purchased by group members (without external assistance) 3 = Donation (without group financial input) 4 = Other specify</i>

<b>SECTION F. Social Capital</b>	
<b>F1. Structural Dimension</b>	
<p><b>F1a.</b> Does the group have a constitution?  <b>Codes:</b> 0= No, 1= Yes signed by the group members only 2= Yes signed by the group members and stamped by the police  (Ask for the constitution and verify)</p>	
<p><b>F1b.</b> Does the group have a document outlining the roles and responsibilities of members of the group leadership?  <b>Codes:</b> 0 = No, 1= Yes (Ask for the document and verify)</p>	
<p><b>F1c.</b> Does the group have links to extension service providers?  <b>Codes:</b> 0 =No, Yes = 1</p>	
<p><b>F1d.</b> If yes, which extension service providers? Select all that apply  <b>Codes:</b> 1= Agritex/LPD, 2= Private extension service providers, 3 = NGOs</p>	
<p><b>F1e.</b> Have the group or any member of the group received any training on the indigenous chicken enterprise from January to December 2018?  <b>Codes:</b> 0 =No, Yes = 1</p>	
<p><b>F1f.</b> If yes, how many times?</p>	
<p><b>F1g.</b> Have the group had any meetings with extension service providers from January to December 2018?  <b>Codes:</b> 0 =No, Yes = 1</p>	
<p><b>F1h.</b> If yes, how many times?</p>	
<p><b>F1i.</b> Have your group received any visits from the extension service providers from January to December 2018?  <b>Codes:</b> 0 =No, Yes = 1</p>	
<p><b>F1j.</b> If yes, how many times?</p>	
<p><b>F1k.</b> Does the group have links to input suppliers?  <b>Codes</b> 0 =No, Yes = 1</p>	
<p><b>F1l.</b> If yes, what type of links? Select all that apply  <b>Codes:</b> 1= informal links with no agreement, 2= informal links with a verbal agreement, 3 = formal agreement with a signed agreement</p>	
<p><b>F1m.</b> Does the group have links to indigenous chickens, chicks, eggs or manure buyers?  <b>Codes:</b> 0 =No, Yes = 1</p>	
<p><b>F1n.</b> If yes, what type of links? Select all that apply  <b>Codes:</b> 1= informal links with no agreement, 2= informal links with a verbal agreement, 3 = formal agreement with a signed agreement</p>	
<p><b>F1o.</b> Is the group a member of any association?  <b>Codes:</b> 0 =No, Yes = 1</p>	
<p><b>F1p.</b> If yes, how many associations?</p>	

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>F1q.</b> The relationship between the group and extension service providers is strong					
<b>F1r.</b> The group trusts the extension service providers					
<b>F1s.</b> The relationship between the group and the input suppliers is strong					
<b>F1t.</b> The group trusts the input suppliers					
<b>F1u.</b> The relationship between the group and the buyers is strong					
<b>F1v.</b> The group trusts the buyers					

<b>F2. Relational and Cognitive dimensions</b>	
<b>F2a.</b> Were there any conflicts amongst group members from January to December 2018? <i>Codes: 0 =No, Yes = 1</i>	
<b>F2b.</b> If yes, how many times? (cases)	
<b>F2c.</b> Were there any conflicts between the group and extension service providers from January to December 2018? <i>Codes: 0 =No, Yes = 1</i>	
<b>F2d.</b> If yes, how many times? (cases)	
<b>F2e.</b> Were there any conflicts between the group and input providers from January to December 2018? <i>Codes: 0 =No, Yes = 1</i>	
<b>F2f.</b> If yes, how many times? (cases)	
<b>F2g.</b> Were there any conflicts between the group and buyers from January to December 2018? <i>Codes: 0 =No, Yes = 1</i>	
<b>F2h.</b> If yes, how many times? (cases)	

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
<b>F2i.</b> There is high cohesion amongst group members					
<b>F2j.</b> The group members trust their group leadership					
<b>F2k.</b> The group leaderships perform its obligations to the satisfaction of the group					
<b>F2l.</b> The group members trust each other					
<b>F2m.</b> The group have a shared vision					
<b>F2n.</b> All group members work together to achieve the group vision					
<b>F2o.</b> All group members are proud to be part of and identified with the group					
<b>F2p.</b> All group members believe the group will succeed					
<b>F2q.</b> All group members believe there are better off being part of the group than not					
<b>F2r.</b> All group members strictly follow the group constitution					
<b>F2s.</b> When a member deviates from what is stipulated in the constitution measures are taken as guided by the constitution					
<b>F2u.</b> The group members support each other when faced with challenges even those not related to group activities? e.g. illness or death					

<b>SECTION G: Other Explanatory Variables</b>	
<b>G1.</b> What is the distance from the group project site, or central point to the nearest motorable road?	.....Kms
<b>G2.</b> What is the distance from the group project site, or central point to the nearest town/city?	.....Kms
<b>G3.</b> What other economic activities is the group engaged in? (e.g. other value chains, enterprises, ISALs) Please specify in the space provided below	
<b>G3a.</b>	
<b>G3b.</b>	
<b>G3c.</b>	
<b>G3d.</b>	
<b>G3e.</b>	
<b>G3f.</b>	
<b>G3g.</b>	

**Appendix 2. Cognitive Social Capital Index reliability test.**

<b>Inter-Item Correlation Matrix</b>					
	The group have a shared vision	All group members work together to achieve the group vision	All group members believe the group will succeed	All group members believe there are better off being part of the group than not	The group members support each other when faced with challenges even those not related to group activities? e.g. illness or death
The group have a shared vision	1.000	.673	.599	.614	.266
All group members work together to achieve the group vision	.673	1.000	.612	.533	.408
All group members believe the group will succeed	.599	.612	1.000	.535	.379
All group members believe there are better off being part of the group than not	.614	.533	.535	1.000	.162
The group members support each other when faced with challenges even those not related to group activities? e.g. illness or death	.266	.408	.379	.162	1.000

<b>Summary Item Statistics</b>							
	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Inter-Item Correlations	.478	.162	.673	.511	4.159	.027	5

**Appendix 3. Relational Social Capital Index reliability test.**

Inter-Item Correlation Matrix											
	The relationship between the group and extension service providers is strong	The group trusts the extension service providers	The relationship between the group and input supplier is strong	The group trusts input suppliers	The relationship between the group and buyers is strong	The group trusts the buyers	There is high cohesion amongst group members	The group members trust their group leadership	The group leaderships perform its obligations to the satisfaction of the group	The group members trust each other	All group members are proud to be part of and identified with the group
The relationship between the group and extension service providers is strong	1.000	.262	.340	.363	.494	.379	.383	.476	.444	.440	.477
The group trusts the extension service providers	.262	1.000	.346	.238	.427	.550	.331	.194	.289	.142	.113
The relationship between the group and input supplier is strong	.340	.346	1.000	.213	.309	.262	.263	.422	.314	.330	.320
The group trusts input suppliers	.363	.238	.213	1.000	.401	.482	-.080	.261	.224	.359	.396
The relationship between the group and buyers is strong	.494	.427	.309	.401	1.000	.780	.401	.277	.351	.416	.320
The group trusts the buyers	.379	.550	.262	.482	.780	1.000	.231	.302	.202	.334	.365



There is high cohesion amongst group members	.383	.331	.263	-.080	.401	.231	1.000	.384	.605	.277	.500
The group members trusts their group leadership	.476	.194	.422	.261	.277	.302	.384	1.000	.367	.585	.312
The group leaderships performs its obligations to the satisfaction of the group	.444	.289	.314	.224	.351	.202	.605	.367	1.000	.242	.523
The group members trusts each other	.440	.142	.330	.359	.416	.334	.277	.585	.242	1.000	.413
All group members are proud to be part of and identified with the group	.477	.113	.320	.396	.320	.365	.500	.312	.523	.413	1.000

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.855	.857	11

**Appendix 4. Structural Social Capital Index reliability test.**

<b>Inter-Item Correlation Matrix</b>									
	Links to extension service providers	Visit times binned	Meeting times binned	Training times binned	Types of links with suppliers	When a member deviates from what is stipulated in the constitution measures are taken as guided by the constitution	Type of links with buyers	Does the group have a constitution recode	All group members strictly follow the group constitution
Links to extension service providers	1.000	.415	.369	.022	.020	.355	.254	.361	.307
Visit times binned	.415	1.000	.225	.078	.124	.227	.226	.407	.001
Meeting times binned	.369	.225	1.000	.026	.076	.487	-.176	.217	.427
Tranning times binned	.022	.078	.026	1.000	.043	.121	.284	.284	.074
Types of links with suppliers	.020	.124	.076	.043	1.000	.133	.199	.105	.038
When a member deviates from what is stipulated in the constitution measures are taken as guided by the constitution	.355	.227	.487	.121	.133	1.000	.072	.235	.646
Type of links with buyers	.254	.226	-.176	.284	.199	.072	1.000	.363	-.008
Does the group have a constitution recode	.361	.407	.217	.284	.105	.235	.363	1.000	.159
All group members strictly follow the group constitution	.307	.001	.427	.074	.038	.646	-.008	.159	1.000

<b>Summary Item Statistics</b>							
	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Inter-Item Correlations	.200	-.176	.646	.823	-3.666	.029	9

