Bridging the Gap: Exploring Agricultural Innovation Processes and Knowledge Circulation among Actors in Coffee Farming Sector: The case study of Daro Labu District, Ethiopia

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By

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Dedication

I dedicate this thesis in loving memory of my Grandmother, Meymuna Adem, for her unforgettable love, care and kindness. She has my eternal gratitude for all she had done for me. May her kind and loving soul rest in peace forever!

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Acronyms

CBD	Coffee Berry Disease
CBOs	Community Based Organisation
CIP	Coffee Improvement Programme
CSA	Central statistical Authority
CWD	Coffee Wilt Disease
DA	Development Agent
DOARD	District Office of Agriculture and Rural development
ECX	Ethiopian Commodity Exchange
FFS	Farmer Field School
FGDs	Focus Group Discussion
FRG	Farmer Research Group
HU	Haramaya University
IAP2	International Association of Public participation
ICT	Information and Communication Technology
JARC	Jimma Agricultural Research Centre
MARC	Mechara Agricultural research Centre
NARS	National Agricultural Research System
NGOs	Non-Governmental Organisations
PA	Peasant Association
ZOARD	Zonal Office of Agriculture and Rural development

Abstract

Despite decades of research and policy intervention efforts made by different actors, the rate of coffee innovation development and knowledge circulation was extremely low and poverty remains high among households of coffee producers**.** Apart from transferring hardware technologies to increase on-farm production and productivity, attention has not been given to factors influencing patterns of actor's interactions and social networks to enhance social learning, communication, participation and negotiation to promote pro-poor innovations. However, recently, it is increasingly being appreciated that what is important for social change is not only knowledge about technology and production, but also institutions (formal and informal), organisations including their attitude, practices, incentives) for collective learning and innovations, policy environment to avoid institutional and market failure. Yet, factors influencing inter-organisational interaction and networking among actors are not explored and documented to draw future innovation lessons and strategies. Hence, the purpose of this study was to explore factors influencing patterns of interactions and social networks among actors, mainly policy and institutional to effectively supporting innovation processes and knowledge circulation in coffee farming sector in Daro Labu District, Ethiopia. Another purpose was to find out role played by different actors to increase innovation and innovative knowledge. To carry out this study qualitative case study research approach derived from both conceptual framework, literature review and based on empirical data was utilised. The primary data was collected through FGDs, individual in-depth interviews and personal observations. A total numbers of 33 respondents/actors from public and private actors were administered to collect the data. The pretested checklists were used to guide the entire discussion. The qualitative information has been systematically categorized, tabulated and summarized. Accordingly, the results of the study found that different actors have different conflicting views that drive or constrain patterns of interaction and relationships with each other's. Among many factors, lack of shared vision, limited communication gap, lack of incentives for collaboration, lack of resources, lack of leadership and management are the factors that leads to loss of trust relationships. Regarding social networks and learning it is indicated that there is no functional body that links formal and informal networks to create functional learning mechanism among actors. On the other hand, the research finding indicate that participation of actors during technology development, linkage and negotiation processes that are supposed to accelerate the rate of innovation development and knowledge circulation among actors was very limited. Besides, a communication strategy exist among actors to circulate knowledge (scientific or indigenous innovation) among actors was limited. The findings also confirmed despite dynamics of changing of Ethiopian agricultural sector policy and intervention, innovation trends tends to follow linear models of technology dissemination through mainly public actors. In spite of, few policy visions such as commercialisations, decentralisation and newly introduced coffee marketing policy, other policy approach like extension approach are not supportive to ensure actors participation to speed up coffee innovation , social learning and knowledge circulations.

Key words: Innovation processes, social networks, social learning, participation, knowledge circulation

CHAPTER ONE: INTRODUCTION

This chapter presents background information on agriculture and coffee production in Ethiopia and the study area. It explores the major factors influencing coffee production and highlights the agriculture and rural innovation system of the country. Finally the chapter provides problem statement and the objectives of the study and research questions.

1.1. Background information

In Ethiopia, agriculture is the most important economic sector contributing 43% of the GDP, 85% of the foreign earnings and employing 85% of the labour force (Deresa, 2010). Hence, the capacity of the nation to address food insecurity, poverty, and to bring sustainable national economic growth and development is highly dependent on the improvement of the agriculture. Coffee plays a crucial role in Ethiopian economy. The country is the centre of origin and diversity of Arabica coffee (Coffee Arabica L.) with different types with unique flavour and taste. The crop plays a crucial role in Ethiopian economy and is the most important foreign currency earner generating over 40% of total export earnings, and about 10% of Gross Domestic Product (GDP). It provides livelihood for over 15 million people engaged in production, processing and marketing. The crop is grown in different parts of Ethiopia, though the main production areas are East, South and South western parts (CTA, 2003). However, the potential of the sector has not fully exploited both in terms of productivity and quality. Previous attempts to improve coffee production and productivity did not bring significant impact.

Coffee farmers in Ethiopia has been facing many challenges both internal (weak markets, weak research and extension linkage, limited infrastructure, policies, inadequate sharing of knowledge and limited linkage between actors, absence of institutional learning and partnership, poor development of innovation, other biotic factors like Coffee Berry Disease (CBD), Coffee Wilt Disease (CWD) and external (e.g. global market fluctuation) (Rahmato et al., 2005). According to Nuguse et al., (2007) the impact of extension on coffee productivity and quality is limited due a number of reasons such as the intervention employed being top-down and using non-participatory approach, where by extension agents are simply delivered, pre-packaged messages to farmers. He further explained that extension training was carried out in the form of formal class room education system with one-way flow of information and extension worker also tended individual contact approach and had limited coverage. Moreover, he elaborate that most of the interventions were production oriented, putting emphasis on transfer of certain technological packages that increase productivity. Besides there has been frequent change of institutional structure, involvement of different actors and intervention approach further jeopardizing the consistency with which the farmers received extension services. According to him, lack of adequate knowledge and skills on production of coffee with enhanced quality and its benefits, inadequate access to coffee processing facilities and other infrastructure, and inadequate differential reward for high quality coffee price at farm gate are constraints contributing to low production of coffee productivity and quality in Ethiopia. According to CSA (2008/09) mentioned by (Temsgaen, 2011) the national average productivity is below 665kg/ha, compared with 2100kg/ha of Vietnam and 1007kg/ha of India

According to (Spielman et al., 2007) ‘Ethiopian agricultural innovation system is growing complexity: new actors, policies and relationships are influencing the ways in which information and knowledge are accessed and used by farmers in their agricultural production decisions.’ He explained that this growing complexity suggests opportunities and challenges for farmers, while too little is known about how these opportunities can be effectively promote pro-poor innovation processes (see also Nuguse et al., 2007).

Extension approach in Ethiopia is criticized for putting attention on technological aspects. Technologies developed by public research organizations are passed on to public extension agents and disseminated to end users. According to Birhanu (2006) current extension system is almost exclusively funded and provided by the government through its district level office of Agriculture and Rural development and with NGOs operating in a limited and dispersed areas throughout the country. He explained that 'there are several weaknesses in this approach such as promotion of inappropriate technology, insufficient on farm and adaptive research, continuation of inappropriate criteria for research and extension staff, poor research and extension linkages and the lack of real participation of farmers.' In this traditional and linear technology transfer, innovation is perceived as a single product or commodity which is passed to the farmers. However, innovation is something which is different from this traditional approach. According to (Leeuwis, 2004) innovation is a processes of rising awareness of problematic situation, mobilizing interests in networks of stakeholders, new social and technical arrangements (which involves experiential social learning, exploration and negotiation among stakeholders), and co-ordination with in a networks of interrelated actors. In the views of (Woolthuis et al., 2005) research that takes innovation ideas and perspectives into account explains that exchange of technical knowledge are not the only priorities for innovation; multiple factors plays a crucial role including policy, legislation, infrastructure, funding and market linkage.

The context of coffee growing farmers in Ethiopia is also rapidly changing creating new opportunities and challenges. Among several challenges, improving coordination and collaboration between different public actors at different levels, and between public organisation and private actors (i.e. private companies and civil society organisations), shifting priorities and paradigms beyond traditional focus on technological aspects and yields to a more broad emphasis on value chain efficiency, market linkage, institutional innovations, flow of information between researchers, extension agents, investors and farmers (Rahmato et al., 2005; Spielman et al., 2007). Further, government policy has changed in favour of pro-poor, commercialisation of the production system, decentralisation and visualizes an increasing roles of new players (Van der Lee, 2010). Yet, whether these change was improving the well-being of the farmers are not known. What is now required is a more flexible arrangement in which networks of actors and policy organisation are interacting and response to the new circumstances (Hall et al., 2006).

1.2 Coffee production in Daro Labu district and justification for the research

Daro Labu district is the top coffee growing area in the province. The major coffee land races grown in the district is 'Shumbure', 'Abadir' and 'Bunaguracha' are the major ones. According to CSA (2008/9 and Desse, 2008) cited by (Temesgen, 2011) from the total production of about 79,744.22 quintals of coffee produced in the province (i.e. west Haraghe) in the cropping year 2008/9, the contribution of Daro Labu district is 40%.

Despite, potential topography and climate condition of the district, coffee growing farmers are confronted with different constraints ranging from production, processing and marketing problems. According to (Temesgen, 2011) coffee growing farmers in Daro Labu District has been confronting with different problems like limited knowledge on management practices, drying, storage and handling etc. According to him this cause is attributed due to lack of training, lack of exploring farmer's innovation to document and scale up learning opportunities, lack of motivation and incentives for value adding by extension approach. He further explained lack of investment on the relationships between actors especially- lack of mistrust and transparency in the value chains between the farmers and other marketing actors at different stages. He further explained that top down need setting, poor accesses to information and know how, looking farmers as input supplier rather that partner, information distortion from one actors to another in the marketing of the product makes it more obstacle

for value chain operators especially for the pro-poor not to not to fulfil the quality standard requirements.

In the district, diverse public and private actors are involved and mandated for improving the livelihood of coffee farming households with different forms and approaches of coffee intervention goals. These are producers (coffee growing farmers), District office agriculture and rural development, Mechara Agricultural Research Centre, Jimma Agricultural Research Centre, Ethiopian commodity Exchange (ECX), traders from Mechara and Mecata coffee Centre and others supportive structure (i.e. Finance, credit and saving enterprise). However, improving the production and productivity of coffee sector remains the major challenges of the district.

Recently, growing literatures realizes the efforts and resources committed for top-down technology/innovation development as of little significance unless attention is given for actor's interaction and collaboration, participation and joint-experiential learning. For example, if we have an understanding about which factors make an innovation likely to be drive, and make a farmer more likely to be an adopter, this might help to guide future diffusion and innovation processes. On the other hand, if we believe innovation is an investment for the farmers, and the costs are important factors for farmer's decision before dissemination, why we do not acknowledge factors influencing the decision?
Nowadays, an emergence of new paradigms is putting farmer's role at the heart of innovation process. According to (Leeuwis, 2004) innovation require the integration of ideas, knowledge, experiences and creativity from variety of actors (farmers, researchers, service providers, communication worker etc.) and the need to bring together, mobilised and connected with each other.

Agricultural innovation is beyond developing new technologies/ideas by agricultural researchers and moves down developed technology and ends with the adoption of farmers and finally farmers are blamed as 'laggard' for his /her decision under dynamic and complex environment. Rather, it is the results of interplay and networking among actors with in institutional setting and pulling multi-stakeholder platform together. Knowledge of each actor (farmers, researchers, development agent and others) are equally important. Hence, exploring factors constraining inter-organisational collaboration and networks, and institutions that govern attitude, practices and incentives that influence relationships among diverse coffee actors could contribute to closing this gap.

1.3. Problem statement

Despite decades of research and development intervention efforts made by different actors, the rate of coffee innovation development and knowledge circulation was extremely low and poverty remains high among households of coffee producers. Among many causes of the problems limited patterns of interactions and social networks among actors at different levels that hindered innovation processes and knowledge circulation thought to have contributed to the prevalence of the problems. Apart from transferring hardware technologies to increase on-farm production and productivity, attention has not been given to factors influencing patterns of actor's interactions and social networks to enhance social learning, communication, participation and negotiation to promote pro-poor innovations. However, it is increasingly being realised that what is important for social change is not only knowledge about technology and production, but also institutions and organisations including their attitude, practices, incentives) for collective learning and innovations, and government policy to avoid institutional and market failures.

Exploring the described research problem from adopter and non-adopter sides is a traditional way of looking farming societies taking into consideration different factors which are challenging innovation capacities of farmers, and simultaneously under circumstances in which many actors and networks involved in innovation processes. Hence, is there any

alternative way of looking these research problem that provides better picture of factors which drive innovation processes and knowledge circulation and also respectful for actors involved in innovation process in coffee sector? Furthermore, if certain behaviour, attitude and practices of the individual, group or community and/or institutions would appears to favour diffusion of innovations and knowledge circulation, why not create this space? The significance of this research is therefore to come up with factors influencing patterns of interaction and social networks, and role of actors to supporting innovation process and increase innovative knowledge among coffee sector.

1.4. Research Objective

The objective of the research was:

- To explore factors influencing patterns of interactions and social networks among actors to supporting innovation processes and knowledge circulation in coffee farming sector in Daro Labu district.
- To identify role played by different actors to supporting innovation process and increasing effectiveness of innovative knowledge in coffee farming sector in Daro Labu district.

If there will be information and insight on how to re-order and re-arrange multiple social networks and attitudes and practices influencing innovation process and knowledge circulation, this could enable researchers and extension workers to better predict future innovation rate and find ways of how to speed up future innovation process in coffee sector in Ethiopia.

1.5. Main and Sub Research Questions

1. What are the factors influencing patterns of interactions and social networks among actors to supporting innovation process and knowledge circulation in coffee farming sector?
    a. What are the attitude, practices and incentives influencing nature of interactive relationships among actors?
    b. What are the formal and informal social networks exist between actors to supporting innovation process and knowledge circulation among coffee farming sector?
    c. What kind of communication linkage, participation and social learning, and negotiation exists among actors in the processes of coffee innovation development?
2. How do the innovation rate and the effectiveness of innovative knowledge can increase among actors?
    a. What are the roles played by different actors in the process of interactive innovation processes and knowledge circulation in coffee farming sector?
    b. What are the knowledge and information need and utilisation behaviour of the actors?
    c. What policy support in place to facilitate innovation processes and knowledge circulation among different actors?

1.6. Outlines of the thesis

The paper contains five chapters. Chapter I explain about the general information, problem statements, and objectives of the study and research questions. Chapter II describes about; literature review and conceptual framework of the study. Chapter III describes the methodological approach used for the research, background information of the study area and methods employed for gathering field data. Chapter IV walks the readers through results of the empirical findings and discussions. Chapter V summarizes the conclusion part of the study and draws recommendation.

CHAPTER TWO:-CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

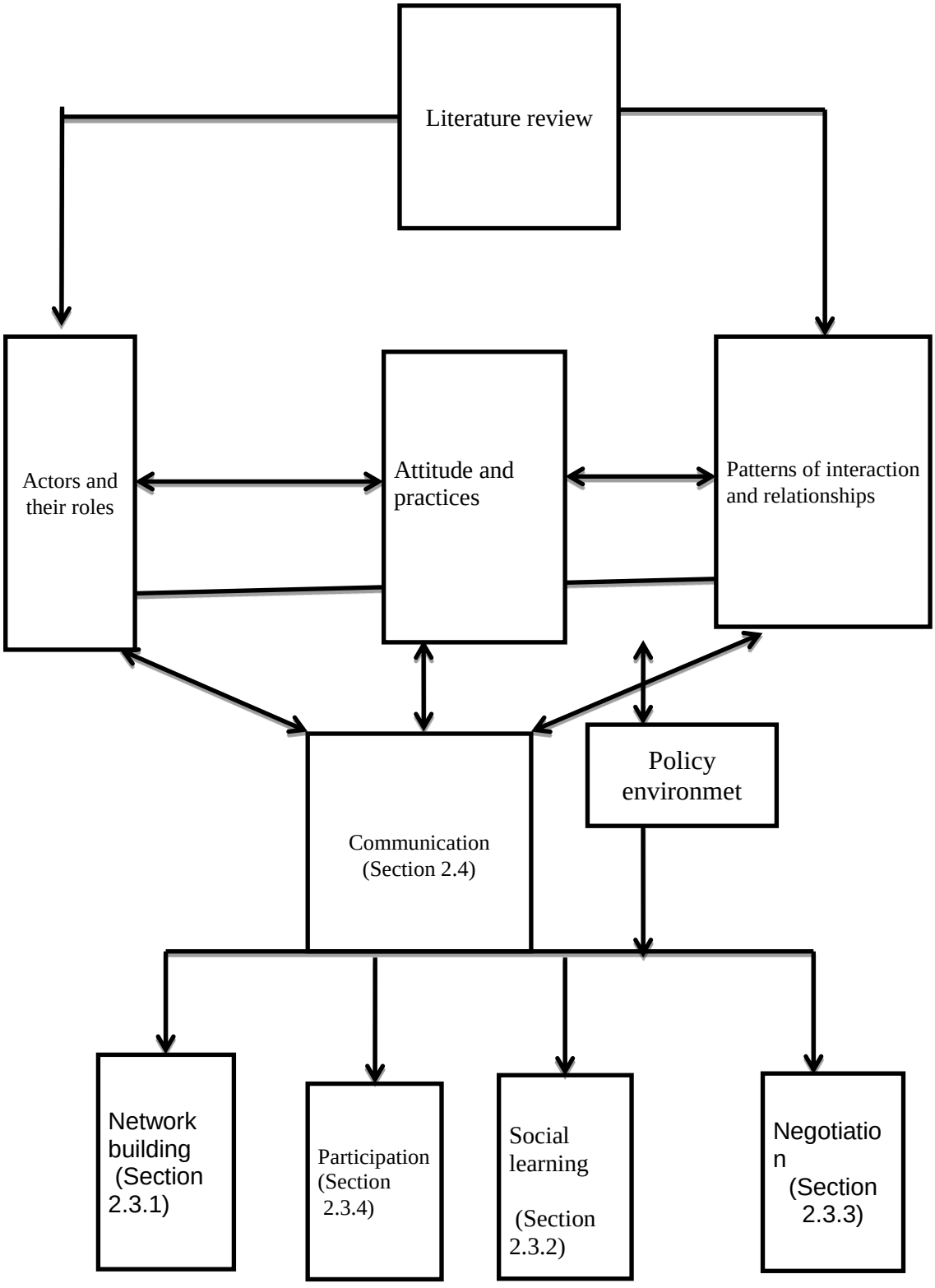
This chapter explains conceptual and theoretical framework for the study processes.

For this research, a theoretical and conceptual framework on agricultural innovation processes, knowledge management and circulation, participation, social networks and/or networking and social learning, negotiation and communication among actors were reviewed and explored in order to provide a basic insight about research processes. (Leeuwis and Van dan ban, 2004) suggested successive innovation as a processes consisting of four key elements (i.e. network building, social learning, participation and negotiation). He proposed the key role of 'communication' in the re-ordering of these key elements and social networks. On the other hand, (Hall et al., 2007:27) cited by Hailu (2009) suggested four main elements or tools to understand innovation processes. These are actor and their roles, patterns of interactions between actors, habits and practices and the enabling environment. According to Edquist (2001) with in system of innovation framework identification of the roots behind the problems is similar as identifying deficiency in the functioning of the system. It is a matter of identifying functions that are missing or in appropriate which leads to problems in terms of relative performance. He summarised four categories of deficient functions of 'system failures' which are partially overlapping:

1) Functions in the system may be in appropriate or missing
2) Organisations may be inappropriate or missing
3) Institutions may be inappropriate or missing
4) Interactions or links between these elements in the system of innovation may be inappropriate or missing

As stated above, the problem of the research might be related to actors' performance and their role, interaction and policy environment, habits and practices (institutions). Based on these literature review discussed, analytical research framework (figure 1) was developed for this study. The framework shows two way of interaction between elements of innovation and institutional factors, roles of actors and policy environments. Therefore, in this chapter this conceptual framework was positioned by literature review as input of the study.

Figure 1: Conceptual framework of the study



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2.1. Perspectives on Innovation processes in Agriculture and Rural Development

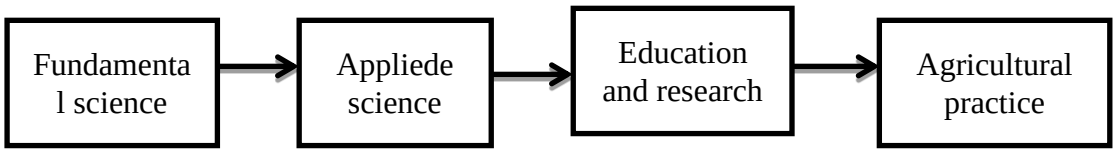
2.1.1. Innovation

Various literatures provide alternatives, yet complementary, definition of 'innovation' (World bank, 2006; Spielman, 2006; Leeuwis, 2004; Engel, 1997). The insight that can be derived from these literatures include: I) knowledge becomes innovation when it is successfully used for economic and social purposes ii) innovation results from the application of 'new' knowledge, accumulated knowledge or creative use of existing knowledge, iii) innovation can be drastic or incremental continuous changes, iv) innovation is not an event, rather it is a process. It is the outcome of continuous effort and of continuous process of experiential social learning through network building and interactions through multiple and heterogeneous actors. , v) the existence and nature of interactions among actors is shaped by economic and social institutions, VI) usually successful innovations have technical and socio- organization dimensions and vii) innovation could lead to improved productivity, commercialization, and income and welfare gain.

2.1.2. A one -dimensional view of innovations

In adoption and diffusion research, the innovation is often treated as a single entity and assumed as it is originate from agricultural scientists, transferred by communication workers and other intermediaries, and are applied by agricultural practitioners ((Leeuwis, 2004) . This mode of thinking is called 'the linear model of innovations' (Kline and Rosenberg 1986 cited by (Leeuwis, 2004) as it draws straight and one directional between science and practice. This notion of innovation is purely technical and did not pay attention to nature, source and dynamics of innovation process that could affect farmer's decision as well as distributional or equity issues related to innovation. This paradigm is criticized for aforementioned drawbacks and failed in particular in developing countries (Roling, 1992; Roling and Engel, 1992; Engel, 1997; Leeuwis, 2004).

Figure 2: The linear model of innovation



Source: adopted from (Leeuwis, 2004)

2.1.3. A multi-dimensional character of innovations

It has been recognised that innovation is not a linear top down process in which new idea or product is developed by agricultural researchers and moves down technology development and ends with the adoption of farmers and finally farmers are blamed as 'laggard' for his /her decision under dynamic and complex environments. Neither it does not take place in isolation; instead it takes place in interconnected networks of actors. Innovation is not only about technology development but also new institutional and organisational arrangements such as new rules, perceptions, agreements, identities and social relationships (Smits 2002, Leeuwis, 2004). This implies that there are many stakeholders networks involved in innovation process, and hence it is not useful to look at 'adoption' as something which happened at an individual level. Furthermore, in these collective point of view of, innovation is consists of a variety of new and interdependent practices that may be implemented by a variety of actors such as male farmers, female farmers, traders, input supplier, transport companies etc., (Leeuwis, 2004).

2.1.4. Innovation processes

Agriculture is one of the industries where a system approach to innovation has been least applied, for several reasons. Institutional barriers and the 'distance' between research and practice mean that, in many countries, farmers' knowledge has only insufficiently been taken into consideration as a possible source of innovation (Scoones and Thompson, 2009).

Innovation processes are increasingly conceptualised as the outcome of collaborative networks where information is exchanged and learning processes happen. Any innovation produces a change in socio-technical configurations, which are pattern of relations between human and non-human elements (Leeuwis, 2008). A literature review presented by Brunori et al., (2008) reveals that an evolution of innovation studies in agriculture showing the progressive shift from 'linear' and 'exogenous' conception of innovation to 'systemic' and 'endogenous' approach defining innovation as a learning processes.

The current paradigms of innovation conveys the notion of innovation as social networks and socio-technical arrangements that could result from the interaction of different actors who have conflicting interests, different objectives and different degrees of social, economic and political power. Innovations do not only consists of new technical arrangements but also new social and organisational arrangements such as new rules, perceptions, agreements and social relationships in which different stakeholders involved. It is the collective process that involves the contextual re-ordering of relations in a multiple social networks (Leeuwis, 2004, Smits, 2000). The researcher adopted these views of definition for this study.

2.2 Knowledge Management and Circulation

Knowledge management is defined as 'the process, by which an organisation creates, captures, acquires and uses knowledge to support and improve its performance (Kinney, 1998). It is also being understood as the exploitation and development of the knowledge assets with in an organisation, aimed at furthering the goals and objectives of the organisation (Metaxiotis et al., 2005).

It has been recently recognised that successful organisations are those who create new knowledge, disseminate widely throughout the community and changed into new technologies and products (Metaxiotis et al., 2005, Hansen, 1999; Leonard, 1999). Further they are explained that perceived knowledge management as a condition of organisational success makes it crucial for agricultural extension experts to embrace and engage in it.

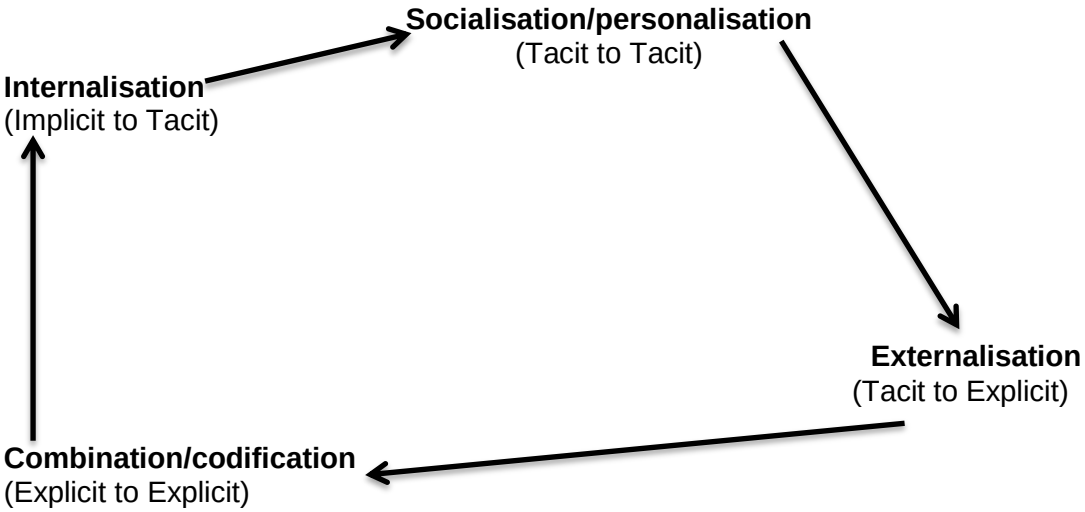
As described by Nonaka and Takeuchi (1995) any attempt at bridging the knowledge divide between communities must be geared toward in acknowledging the importance of knowledge management model (knowledge creation to utilisation) that gives special attention for both tacit and explicit knowledge in decision-making. Accordingly, they described the creation of knowledge into five phases involving four mode of knowledge conversion. These are; first, socialisation (transferring tacit knowledge to tacit knowledge), second, externalisation (transferring tacit knowledge to explicit knowledge), third, combination (transferring explicit knowledge to explicit knowledge) and fourth, internalisation (transferring explicit to tacit knowledge).

Furthermore Hensoen et al., (1999) identified two contrasting strategies of knowledge management: codification and personalisation. Codification knowledge strategy ensures the re-use of explicit knowledge by capturing, classifying and making available knowledge to support routine problem solving. Similarly an action is ensured since knowledge is recycled to guide. The personalisation knowledge management strategy is suitable for one-off, medium to long-term, high risk, strategic problem with no solution precedent. This strategy shares tacit knowledge by helping individuals to engage in relevant conversation to create novel solutions. He concludes that since tacit and explicit knowledge are mutually exclusive,

an organisation effort towards management should be placed on instituting the right strategies that encourages the integration of both knowledge forms.

According to Boateng (2006) the knowledge management model of Nonaka and Takeuchi (1995) and the codification-personalisation model of Hensoen et al. (199) 9constitutes a working model for agricultural extension practices as fundamental step to improve knowledge disposal at farmer's level. Figure 3 below depicts the circular knowledge management model.

Figure 3: process of circular knowledge management



Source: Adopted from Hensoen et al., (1999) Nonaka and Takeuchi (1995)

Moreover, unlike earlier top-down and farmer-first model of technological development (Chambers et al 1989; Sherwood and Larrea, 2001) agricultural innovation scholars place equal emphasis on farmers and scientists knowledge, highlighting the need to integrate diverse types of knowledge at all stages of the recombinant innovation processes. Knowledge circulation between different actors, shaped by formal and informal institutions, is deemed critical for continuous learning and innovation. Thus, learning institutionally involves the gradual build-up of capacities to engage in participatory processes that involve two way knowledge exchanges between farmers and other scientific experts.

Generally, as (Clark, 2002; Malerba, 2002) discusses knowledge can be scientific or technical in nature, or organisational or managerial or it may be implicit. The knowledge can be also acquired from external or discovered internal by reorganisation of internal and indigenous practices and behaviours.

2.3. Conceptual definitions and theoretical background of social networks and/or networking

A social network is a set of individual or groups connected to one another through socially meaningful relationships (Wellham and Berkowitz, 1988). A social network can consist of groups and sub-groups of actors. Before specific characteristics of social networks can be explored, or their quality investigated, the network type being studied in any social capital research must be identified (Stone, 2001).

Robert Putnam (1998 as cited in Stone, 2001) distinguishes between informal and formal networks. Among informal networks distinction is first made between families within and beyond the household, as it is anticipated that family units within one household cooperate and function in different ways to extend the networks of kin beyond the household. Informal 'communities of interest' beyond family and kin include friendships and other intimate

relationships as well as bond among neighbors. Formal networks of social relations focused aspects of life most often described as civic or institutional (Baum et al., 2000). These include associations with formally constituted groups as well as non-group based activities.

According to Kohler et al., (2007) and Hogset (2005) cited by Desselegn (2008) social network affect the diffusion of innovations through social learning, joint evaluation, social influence, and collective action process. Through social learning, people learn about an innovation's existence and characteristics and take advantage of alters experience to lower uncertainties related to adoption.

Agapitova (2005) as cited by Desselgn (2008) argues that social networks might hinder or facilitate innovation adoption and diffusion. He argued that social networks can accelerate technological change by supporting trust, cooperation, circulation and dissemination of new knowledge, process of reciprocal innovation that reduces the distinctions between large and small firms. On the other ways, social networks can hinder innovation by creating barriers to new entrants and thereby limiting opportunities to experiment with new technology.

(Leeuwis, 2004) argued as the importance of networks as key role in contributing innovation can be equalled to establishing novel, effective relationships between multiple human and non-human entities (I.e. the practical activities of 'networking' in innovation, knowledge systems and communicative intervention). On other words, he explained innovation as about network building and/or networking and /or re-configuring existing networks, social learning, participation and negotiations. According to him communication plays central role. These processes are also reviewed based on literature as follows.

2.3.1. Network building and /or networking

According to Engel (1995) networking and/or network building is the methods achieved due to the conscious effort of certain social actor's interactions to size and bond affiliation in order to enhance sustainable development Network represents 'communities of ideas', a space for like-minded people to interact on the basis of common interests, mutual trust and anticipated concern. He further explained that, not so much the manufacture of products rather it is about exchanging knowledge and insight and sense making are the core business.

In focusing on 'mind' rather than 'matter', networking helps to create fundamentally new quality to human cooperation. It enhances inclusive thinking, creativity, and dialogue. But the understanding of networks can never be reduced to the simple 'production' logic so common place in institutional thinking today. The added value of networking is strongly tied to the development of ideas, to shared experiential learning, and to making sense of the world through communication. Networking is all about actors (individual, group, organisations and/or institutions come together for shared goals and build relationships with another body to exchange insight and related goals (Cree/Willard, 2001:9).Plucknet, 1990; and Engel, 1993).

According to Leeuwis (2004) innovation requires co-ordinated action within a network of people. Such a network does not just spring into existence; it needs to be 'constructed'. And because renewal and innovation are at issue here, it will be evident that there is often a need for the forging of new relationships, both in terms of parties involved and in terms of content (Engel, 1995), and for using these to expand windows of opportunity. This may sound simple, but it is often not at all easy because, for instance, existing networks tend to close their doors to 'outsiders', or because certain parties just do not feel that they can be any use to one another. He further summarized that networking as an activity that widens the options and /or increases the opportunity for actors to become involved in a network building, which involves around the creation of new social and technical arrangements-through learning and negotiation along with further specification of network relationships in specific innovation context. The four important aspects of networking he identified include:

- Established personal contact: it is important for organisations including those involved in communicative intervention to make sure that their staffs have informal interpersonal contact with relevant staff or people inside and outside the organisations. Typical mechanisms he suggested include attending or organising workshops and seminars, making visits and participation in social, events etc.
- Making oneself known: - It is important for those whom an informal linkage exist have an adequate idea about the organisation stands for and one needs to somehow communicate what an organisation stands for.
- Maintaining contacts and relationships: - It is about not only establishing contacts but also about maintaining it. It can be important that new and existing contacts are remained regularly about organisations existence and up-to-date information is provided though newsletters, etc.
- Gathering information about others actors networks: It is very important to keep track of contacts and relationships that exist in one's own organisation, but also to document relationships that others are known to have.

To generalize about social networks, (Spileman, 2006) explained social networks as an opportunities to define, limit or facilitate an individual opportunities for social learning by affecting membership or participation in a given innovation process.

2.3.2. Social learning

Young (1956) defines social learning 'as the acquisition of skills, facts, and values which comes about as a result of practice through our contact with other persons.' The basic general concept for such contact is interaction.

Social learning is a relatively new perspective in the roles of framers in agricultural knowledge production and dissemination. It challenges the understanding that farmers as merely passive recipients of knowledge, technology and innovation and demonstrates instead their capacities to innovate and experiment and actively collaborate in their own learning (Margaret, 2008). This view is in contrast with the traditional idea of social learning in education. Woodhill (2002) argued that social learning in the management of agricultural systems as an important learning strategy shaped by social change in concert with sustainable principles. According to Woodhill and Roling (1998), cited by Margaret, (2008) social learning is a framework for thinking about the knowledge process that underlie innovation. It is a mode of knowing that participation theory, practice and ethics in a holistic approach so that learning process becomes much more than mere understanding and communication. Usher and Bryant,(1997) have put it that , social learning facilitates farmer capacities for critical inquiry in which knowledge development is not just a matter of finding out about the world, but also taking action to change it in the quest of a more democratic and viable world. Such social change process is a reflective of learning approach (Korten, 1980; Finger and Asun, 2001) in which people are actively and collectively engaged in building alternatives as a challenge to the dominant of the organization for the production.

In the work of Tesfaye (2003) cited by Dassalegn (2008) the interrelationship between individual and society facilitates social learning in a community. Whether the quest for an alternative originates from individual or group or the entire society, practices that are consistence with the social system are likely to spread in the community. When more people are involved in the practice, it is likely that it will be modified and developed to fit different members of the community.

Margaret (2008) have put it 'the purposive nature of the process of social learning does not happen by accident, but requires conscious design and facilitation. It is an action oriented process closely tied to the knowledge domain. What people know and have come to experience as both material and social reality shape their actions towards social change. Social learning therefore includes both social structure concerned with drawing attention to social forces mediating the learning and knowledge of groups, as well as with individual and group capacities to act. While skills in stimulating group process, creating learning exercises

and stimulating discussions among members of learning networks are key determinants to the quality of social learning, political capital, diverse partnership and material resources are also critical leverage points for change, PP14. ' Margaret (2008) elaborates further networking in agricultural knowledge as the process of learning from and interactively with other farmers in groups and shared commitment to the generation of ecological agricultural knowledge, and the building of supportive social environment for innovations as key motivators in the formation of farmers networks.

Leeuwis, (2004) has put that, at the same time building of network is taking place, something that can be described as a social learning processes must also occur. This means that the parties involved slowly developing overlapping-or at least complementary-goals, insights, interests and starting points (Roling, 2002), and also build natural trust and feelings of dependence and responsibility. This is not 'learning' in the sense of 'knowledge transfer' or 'teaching'; rather it is about the development of different perspectives on reality through interaction with others. It is not just the question of cognitions about the natural and physical world but also of perceptions regarding one's own aspirations, abilities, responsibilities and space for manoeuvre, and of other people's views of reality (Leeuwis, 2002). Exploration of different perspectives is vital in such a learning processes because it is a very important route to' reframing' (Gray, 1997): Learning to look at a situation and one's role in it in a different way.

2.3.3. Negotiation

Negotiation is a process in which parties resolved their common interests by discussing the common problems (Raiffa, 1983). This process may be viewed from perspectives of negotiation situations during which parties jointly building the peace. This perspectives still acknowledges how the practices of common agreements are reached (Bezerman et al., 2000).

Innovation implies changes in the status quo, which is always accompanied by friction and tension, especially in the situation that go further than just optimisation with in established frameworks and goals (Leeuwis, 2004). Such innovations which characterised by the letting-go of existing starting points, goals and assumptions are also known as 'system innovations' or 'transitions' (Rotmans et al., 2001). This kind of innovation and change brings with it, by definition, conflicts of interest between the parties involved and also with the established social and technological system or 'regime' that in many ways needs to be 'conquered' (Rip, 1995). In order to deal with such tensions, and in order to make new agreements and social arrangements, negotiation is essential. Preferably integrative negotiation based up on social learning processes (Aarts and van Woerkum, 2002).

2.3.4. Participation

The word 'participation' can be defined in different contexts by different people. For someone to participate means to 'take part' or 'to be involved'. This literal definition does not much relevant to inform interventionist on how to involve stakeholders in innovation processes. Hence, participation is often defined in a normative and prescriptive terms. In this sense , according to world bank website in (2001) definition cited by Leeuwis and van den Ban" participation is processes through which stakeholders influence and share control over development initiatives and the decisions and resources which affect them". From this definition it can be derived that a process cannot be labelled as 'participatory' if 'influencing 'and 'sharing of initiatives, decisions and resources 'do not occur.

Similarly, different literature suggests various normative principles that must be adhered during participatory processes (Chambers, 1994a, Pretty et al., 1995; Fals Borda, 1998a). From this it can be derived that: all stakeholders should be involved in the participatory processes, participants must have equal opportunities to speak out, multiple perspectives including values, interests and local knowledge need to be explored and taken into account, and participation must lead to the empowerment of stakeholders and power imbalances

among stakeholders need to be rectified as far as possible. Another concept that elaborates more on participation is 'public participation' which captures the central heart of participation by involving different parties. The International Association for public participation (IAp2, 2005) defined 'public participation' as any process that involves the public in problem-solving or decision –making and uses the public input to make decisions. Another way of looking public participation according to (Greyling, 2005): public participation is a processes leading to a joint effort by stakeholders, technical specialists, the authorities and the proponent who work together to produce better decisions than if they had acted independently.

Levels of participation

Different literature provides different levels of participation. The International Association for public participation (IAp2, 2005) categorised into five different levels. These are: The first level is to inform, that is the objective is to provide the public with balanced and objective information to enable people to understand the problem, alternatives and/or solutions. The second level is to consult, which is the objective is to obtain feedback on analysis, alternatives and/or decisions. It involves acknowledging concerns and providing feedback on how public input has influenced the decision. The third level is to involve, that is to work directly with public throughout the process to ensure that public issues and concerns are understood and considered at every stage and directly reflected in the planning, assessment, implementation and management of a particular proposal or activity. The fourth level is to collaborate, that is to work with the public on each aspect of the decision, including the development of alternatives and the identification of the preferred solution. The fifth level is to empower, which is to place final decision-making in the hands of the public. On the other hand the world bank (2002) suggests three levels of participation as ' passive participation' that involves only dissemination of information to stakeholders such as disseminating information during awareness campaign, second level as 'consultative participation' which implies stakeholders are consulted before the organisation makes a decision but they do not share decision-making responsibility, and the third level is as ' interactive participation' that implies stakeholders are involved in collaborative analysis and decision making and learning methodologies are used to seek multiple perspectives.

Importance of participation

Public participation assists decision-makers in establishing the point of sustainability for each project by contributing essential local knowledge and wisdom to project planning and design, and by clarifying the degree to which stakeholders are willing to accept or live with the trade-offs. Thus, public participation assists in making informed decision-makers in making informed and integrated decisions about the sustainability of a proposed policy, program or effective public participation involves people from the outset, pro-actively solicits the involvement of stakeholders representing all three dimension of sustainability (I.e. economic, economic growth, social equity and ecological integrity), provides them with sufficient and accessible information to contribute meaningfully, and builds the capacity of stakeholders to participate (IAP2, 2005). The benefits of effective public participation in achieving sustainable development have been reported by organisations worldwide.

(Lilja and Ashby, 2001) argues that the expected impacts of incorporating stakeholder participation in research are dependent on the stage at which stakeholders (especially farmers as end-users) are involved in the technology development process.

2.4. Communication

Communication is an interactive human process through which people exchange meanings, ideas and experiences, and hence a vital trigger for altering knowledge and perceptions of various kinds (i.e. learning) (Leuwis and Van dan Ban, 2004). They have argued the role of communication in innovation process has been recognised in recent innovation process by facilitating network building though social learning and negotiation and conflict management (i.e.it enhances re-ordering of relations in multiple social actors). Such actors are

communicating with each other about changes in every day matters and events. Moreover, they argued the importance of every day communication among stakeholders as plays crucial roles in reordering of social relationships and emergence of space for change in networks.

According to Chris Garforth (2009) communication is not just telling people, advising people, passing on messages. It is equally – or more importantly – about asking, listening, exchanging, learning together and platform building. A combination of traditional way of farming community (folklore, poems, etc.) and modern communication methods can help communication workers to improve the quality and outreach of their program and enhance social learning (see also Leeuwis, 2004). He further explained that much of the innovation discovered and registered over the last two decades are those of small-scale poor farmers in the south, tropics and beyond living in poverty. Thus, gathering and networking this innovation as social process needs a multiple communicative intervention strategies such as experiential social learning, listening to the life story of the small scale farmers, total participatory and immersion research (see also Chambers, 2007).

CHAPTER THREE: RESEARCH METHODOLOGY

This chapter presents about description of the study area, research strategy adopted and tools employed for data collection. Methods used for analysing data, validation meeting, ethical guidelines and limitation of the research was also discussed under this chapter.

3.1. Description of the study area

Location

The study was conducted in Daro Labu district, West Hararghe zone of Oromiya National Regional State. The capital town of the district, Mechara is located at about 434 km south east of Finfinnee, the capital city of Ethiopia. The district is situated between 7052'10'' and 8042'30''N and 40023'57'' and 4109'14'' E (CTA, 2007).

Topography

The district is characterized by mostly flat and undulating land features with altitude ranging from 1350 up to 2450 m.a.s.l. Ambient temperature of the district ranges from 14 to 26^{o}C with average of 16^{o}C (CTA, 2007).

Rainfall

Average annual rainfall of the district is 963 mm/year. The pattern of rainfall is bimodal and its distribution is mostly uneven. Generally there are two rainy seasons: the short rainy seasons 'Belg' lasts from mid-February to April, whereas the long rainy season 'Kiremt' lasts from June to September. The rainfall is erratic; onset is unpredictable, its distribution and amount are also quite irregular. Consequently most PAs frequently face shortage of rain; hence moisture stress is one of major production constraint in the district (CTA, 2007) cited by (Temesgen, 2011).

Populations

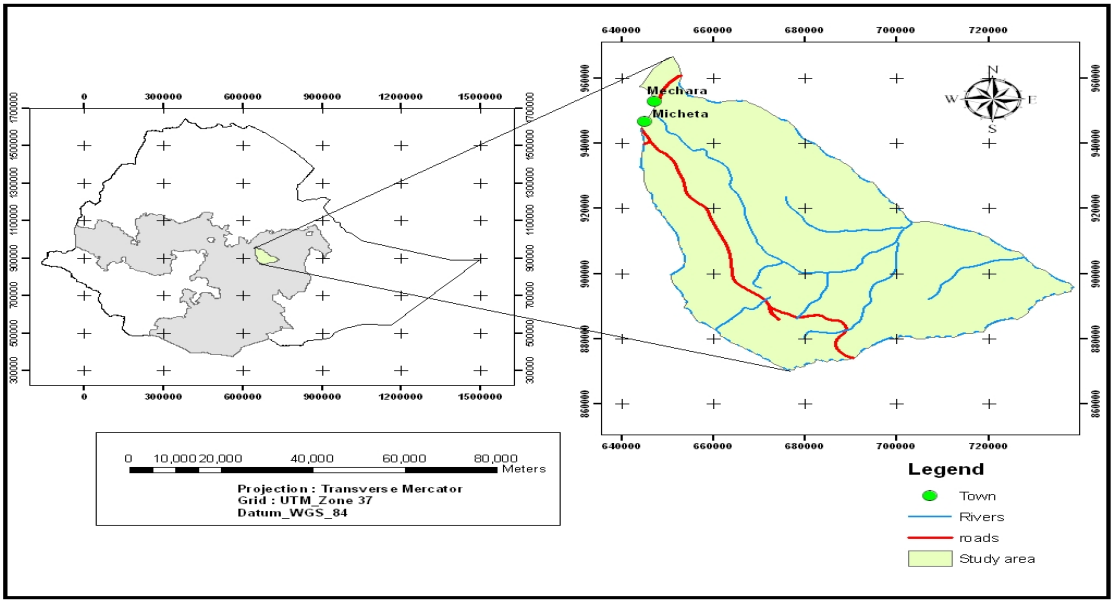
According to (CTA, 2007), the district has an estimated total population size of 198, 918 from which 102, 014 were males and 96, 904 were females. Of the total populations 26,404 are urban inhabitants, whereas 182, 057 are rural inhabitants (DOARD, 2008) cited by (Temesgen, 2011).

Crop production in the district

Farmers in the sturdy area give equal priority to food and cash crop earnings which are revealed in the land allocation patterns and household labor utilization. Land allocation for

different crops mostly follow market situation. Most part of farming land is meant for production of coffee and 'khat' (Catha edulis). These are cash crops that bring high amount of income. Other crops are mostly intercropped in coffee or 'khat' farms. Natural resources in the district are declining due to various man-made and natural factors. Deforestation is serious problems in the district that almost all natural forests are vanished and there is already shortage of construction materials and fuel woods let alone to consider environmental values of the forests. Soil erosion, exacerbated by land mismanagement has caused heavy damages to farm and other lands. Consequently, productivity is constantly reducing; springs and rivers are drying up (DOARD, 2008) cited by (Temesgen, 2011).

Figure 4: Map of the study area



Source: (DOARD, 2008)

3.2. Research strategy

The researcher was decided to adopt 'case study' design for the study justifying the nature of the research topic and the need to get in-depth information (Oliver, 2008). The research strategy was a qualitative exploratory approach developed from the conceptual framework and literature, and based on empirical data. Case study is the methodology that permits the researcher to gain deep insight in complex social setting or social processes in order to have the holistic and meaningful characteristics of the real events (Yin, 1984). On the other hand, (Van der Duin, 2004 and Engel, 1997) recommends the qualitative research methods in innovation process justifying the nature of innovation process. This strategy was designed to enable researcher to achieve the objective of the research.

3.3. Data collection methods

Based on conceptual framework, the researcher was used both primary and secondary data sources for this research. The primary methods employed for data collection was focus group discussions (FGD), individual-in-depth interviews and personal observations.

1. **Focus Group Discussions (FGDs)**

The focus group discussions (FGDs) were carried out with a group of coffee growing farmers. The total numbers of farmers involved in focus group discussions were eighteen (18). The coffee growing farmers were purposively selected in order to minimize biasness that could influence the research outcome. For this method the researcher was brings small number of subjects together to discuss topic of interests. The group numbers were reduced

in small and arranged in a different day in order to ensure that all members can express their opinions freely. The sizes of the group were guided and adjusted in-line with literature evidence. Albrecht et al., (1993) and Wilkinson (2003) indicates the numbers of focus group discussion (FGDs) should be between seven (7) and eight (8). On the other hand, (Sherraden, 2001) states the size of FGDs could be between 8 and 12 in order to get good participation of all members equally. Accordingly, the first group of farmers were eight (8) and the second one was ten (10) from purposively selected Peasant Associations (PAs) respectively. The discussion was guided by detailed checklist (annex 3) that was developed and pretested by the researcher in order to ensure that the all interviewees clearly understood the questions in the same way. The responses were set down on notes. In order to minimise risks of missing respondents information during discussion, development agent and experienced coffee researcher was helped me in taking the notes and facilitating the discussion.

2. In-depth interviews

In this method, the researcher was used an in- individual open-ended interviews checklist in order to explore information about subjects under study. Accordingly, four categories of the actors were interviewed. These are Mechara agricultural research centre, District Agricultural Office, Development Agents at village level, and coffee traders from Mechara and Micata coffee market centre. The first category of interviews was carried out with the managers and leaders from Mechara agricultural research centre and district agricultural office. These respondents were considered from organisational aspects to understand what strategies they put in place to enhance innovation process and knowledge circulation among coffee farmers. The second categories of the interviews were carried out with technical staff of coffee experts and researcher from Mechara agricultural research centre and district agricultural office in order to get information about competencies, knowledge, and roles and responsibilities they play in supporting innovation process and knowledge circulation among coffee farming sector. The third categories of interviews were carried with development agents as they are knowledge broker in rural areas and spends 90% their roles at farmer level. The fourth categories of the interviews were carried out with coffee traders from Mechara and Micata coffee market centre.

3. Direct Observations

In this method the researcher was become immersed and part of the population being studied in order to develop a detailed understanding of the values, beliefs and judgement held by the actors chosen for the study. The observation was systematically recorded as field notes and analysed for content. Additionally, digital camera (photos) was used as a tool for data collection. The researcher was observed and captured situations that revealed specific happenings like group learning at farmer field schools, research stations, on-farm technology demonstrations, joint collaborating activities, and other social networks that come together for social learning, and coffee related innovation activities that are on- going by multiple actors. The detailed checklist used for this method was also provided under (annex 6).

In general analysis of knowledge circulation, patterns of interaction and linkage, factors constraining inter-actor collaboration and interaction, social learning and innovation with the participation of relevant actors, and their role, conditions in place to increase innovative knowledge and collective learning was formed core points of data collection.

3.4. Secondary Data

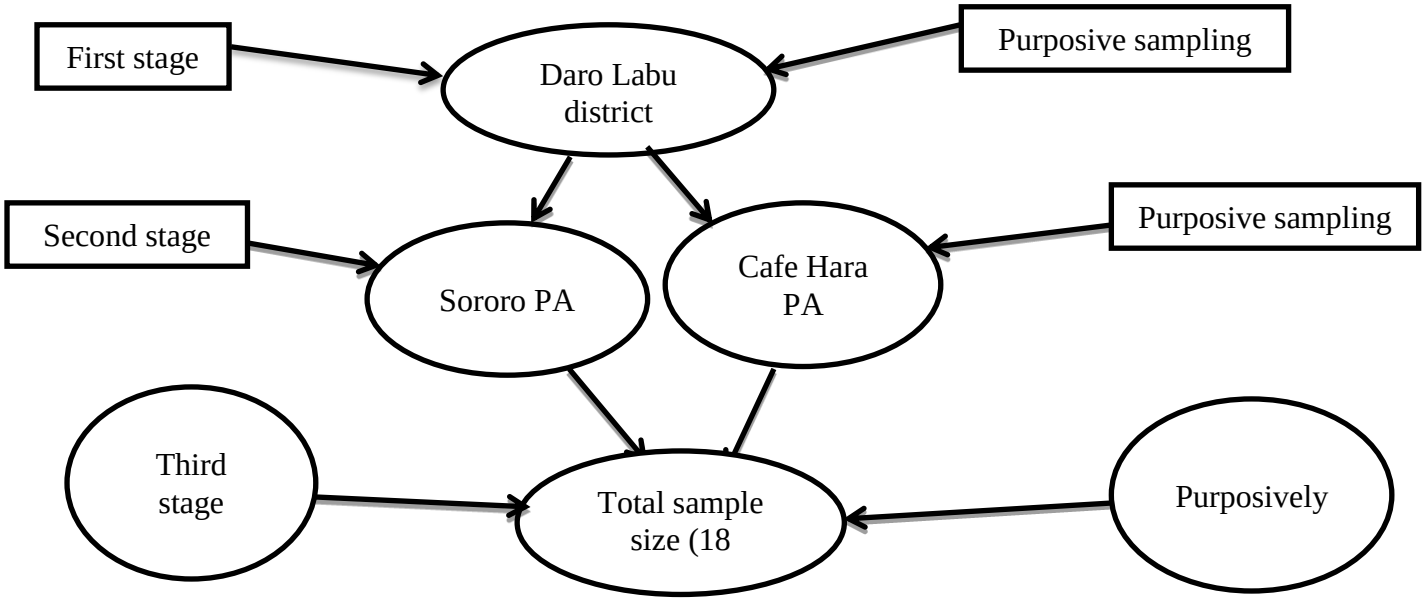
The secondary data was collected by desk study from various literature (internet search, reading books, publications, journals and videos) and documents (both published and unpublished) on the topic in order to provide theoretical and conceptual framework which was used as an input for the study process. The literature reviews were served both as theoretical positioning and empirical base for the analysis of data collected from the field**.**

3.5. Sampling Methods and target respondents

A purposive sampling method was employed for this research in order to minimize biasness that could influence research outcomes. Accordingly, the potential coffee producing sites were purposively selected. Accordingly, two potential coffee producing villages were purposively selected from mid-land and highland with in the relative agro-ecology of the study location.

Besides, snow balling method was adopted during field work to identify the relevant and additional actors that might increase the sample size. In this connections, (Bernard, 1995 pp.97), explained snow balling techniques as important tools in studying social networks and interactions where the object is to find out who people know and how they know each other. By using this sampling method it is possible to identify one or more key informants and through them other interesting actors could be identified.

Figure 5: Sampling method for selecting coffee producers



Source: author.

The sample size of the research units was thirty (30) people consisting of farmers, managers and leader, coffee researchers, coffee experts, traders and development agents. The ratios of males and females respondents were respected during research procedure. This are explained in the following table 1.

Table 1: Sample size of the respondents

Actors/respondents	Numbers
Farmers	18
MARC	
- Manager	1
- Researchers	2
DOARD	
- Leaders	1
- Coffee experts	2

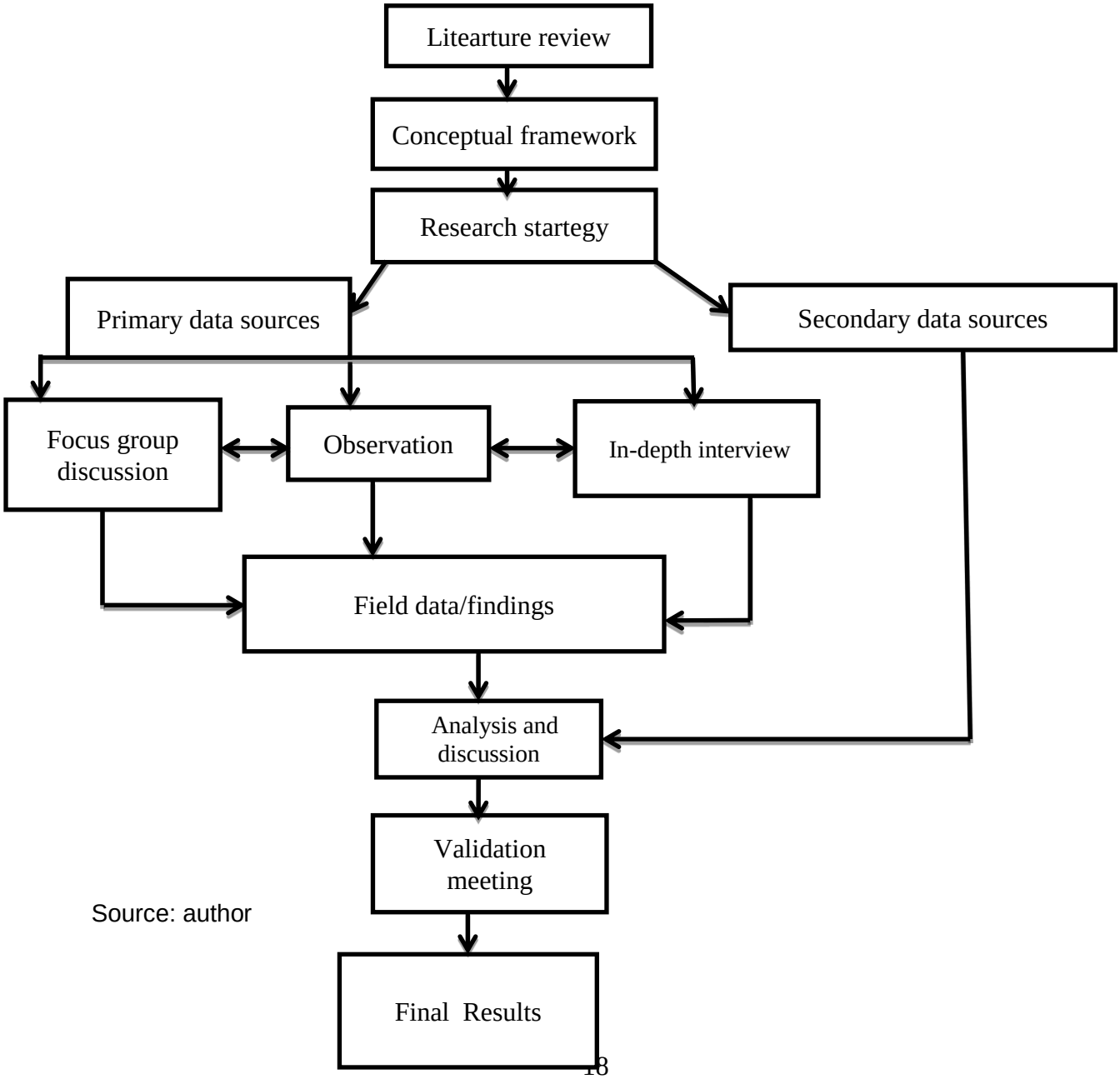
Development agent at village level	
- Sororo PAs	2
- Café Hara PAs	2
Coffee traders	
- Mechara coffee centre	3
- Mecata coffee centre	2
Total respondents	33

Source: author

3.6. Data analysis

The qualitative data collected was systematically analysed by describing, grouping, categorizing, summarizing and discussing the findings under different themes. Finally, the findings were interpreted by texts, figures and tables in order to draw conclusions. The following (figure 6) depicts the overall research methodology and analysis adopted for the study.

Figure 6: Overall research methodology



Source: author

3.7. Validation Meeting

A draft of this research report was presented to the Mechara Agricultural Research Centre (MARC) researchers. The feedback and comments incorporated from the meeting was facilitated the completion and quality improvement of the final draft report.

3.8. Research Limitations

The researcher was tired to adopt and arrange stakeholder meeting in the district during data collection period for validating and triangulating information among actors. However, these does not worked out for different problems such as leaders and managers from different sectors are very busy due to non- agricultural business activities assignment from the government.

3.9. Ethical Issues

The researcher was discussed the purpose, methods and intended use of the research with all actors. The confidentiality and privacy of the information provided by the actors were respected.

CHAPTER FOUR: - FINDINGS AND DISCUSSION

This chapter reports the empirical findings and discussion of the study that was conducted with the target respondents with respect to explore roles of coffee actors and competencies in supporting innovation processes, policy and institutional factors influencing patterns of interactions and relationships, social networks and/or networking, social learning and negotiation exists among actors to supporting innovation process and knowledge circulation. The respondents were different actors from different organisations including: farmers, development agents, coffee researchers, coffee experts, leaders, mangers and coffee traders. The results were based on the focus group discussions, individual-in-depth interviews and personal observations.

4.1. Actors and their roles in coffee innovation processes and knowledge circulation

Individual in-depth interviews and FGDs were used to identify and understand roles of diverse actors (organisations, groups and key individuals) involved in coffee innovation process and knowledge circulation. The result indicates that DOARD, JARC from National Agricultural Research System, MARC from Regional Agricultural Research System, farmers, CIP (phase out), traders, broker and supportive structures (i.e. finance , credit and saving institutions) are the major actors directly and indirectly involved in the coffee sector. The summary of the findings explored are presented in the table below:

Table 2: Actors and their roles in coffee innovation processes and knowledge circulation

Actors	Proposed roles	Limitations and/or missing links with examples
DOARD	• Sharing experience among farmers • Providing training and awareness creation for farmers on coffee agronomy and quality management • Transferring information on marketing for farmers	• Its effectiveness is constrained by limited budget and incentives for development agent at field level • Example: lack of subsiding farm

	• Seedling distribution for farmers • Identifying and recognition of innovative farmers • Credit and input distribution	equipment for farmers
MARC	• Generate knowledge and technology of coffee • Provide training and awareness creation for farmers and extension office and stakeholders • Scaling up of improved coffee varieties.	• Its effectiveness' is limited due to neglect of addressing non-technical arrangements related to institution and market. • Example; lack of creating market space
JARC	• Provide resource and knowledge support for MARC • Generate technology in collaboration with MARC • providing training and awareness creation for farmers and researchers with collaboration of MARC	• Its effectiveness' is limited due to neglect of addressing non-technical arrangements related to institution and market.
Farmers	• Farmers are more active in sharing information through informal social networks related to their innovation, and research outputs	• Its effectiveness is limited by lack of financial mechanisms for scaling up of their own innovations. • Example: lack of budget to reach farmers knowledge in wider community.
Traders	• Provide price and market information • Provide informal advisory council on quality management for farmers • Give around 25% of credit for customer farmers • Distribute sacks for farmers • Constructing of school for farmers at village level • Give advices for farmers on banking system to develop saving behaviours	• Its effectiveness limited due to missing linkage with pubic research system • Examples: traders do not have linkage with research.
ECX	• Play important roles in building the capacities of public, private and coffee producer groups	• Its effectiveness limited due to lack of collective learning

	through facilitating and sharing information related to price, quality and marketing to enhance coffee innovation development.	with grass root farmers and neglect of farmers decision in price setting. • Examples: ECX do not give training at village level except transferring message through extension office.
CIP	• Provide training on coffee agronomy and seedling distribution	• Its effectiveness is limited due to neglect of demand side
Broker	• Provide market information	• Effectiveness is limited due to lack of trust among farmers.
Supportive structures (finance and credit and saving organisation	• Logistic arrangement and financial support	• Their effectiveness is limited by bureaucratic procedures • Example: culture of long processing root for budget approval.

Source: author

Moreover, the respondents were asked the relevance and importance of such information/resources provided by the actors? Accordingly, farmers said 'broker provides inaccurate market information.'

> For instance they said 'due to lack of information at village level, during coffee harvesting the broker comes to the village and tell us the marketing price, in order to link the farmers with whole collectors in the nearby city to sell their coffee. In this track due to benefits they gain from the whole collectors they are telling us price which are less than that of standard price.'

On the other hand, the result shows the relevance of the information in problem solving was less. For instance, one respondent said 'some public actors disseminate knowledge and improved practices with little preferences of farmers (example: bare root coffee seedling distribution, and sustainability and follow-up problems of training provided by the actors were problems to community.'

The relevant actors can be categorized based on their respective roles into enterprise, research, intermediary, demand, policy domain and supportive structures (Arnold and Bell, 2001 cited in Hall et al. 2006). As we understood from the results of table 2 above and my field observation and experience, the traditional top down technology transfer is dominant in the district by diverse actors in which new idea or product is developed by agricultural researchers and moves down developed technology and ends with the adoption of farmers and finally farmers are blamed as 'laggard' for his /her decision under dynamic and complex environments. In this connections, (Leeuwis, 2004) explained the roles of actors in multi-dimensional views of innovation processes which conveys the notions of involving a broad range of activities, geared towards, among others creating platforms, improving insight, explicating tacit knowledge, managing conflict, creating productive group dynamics and

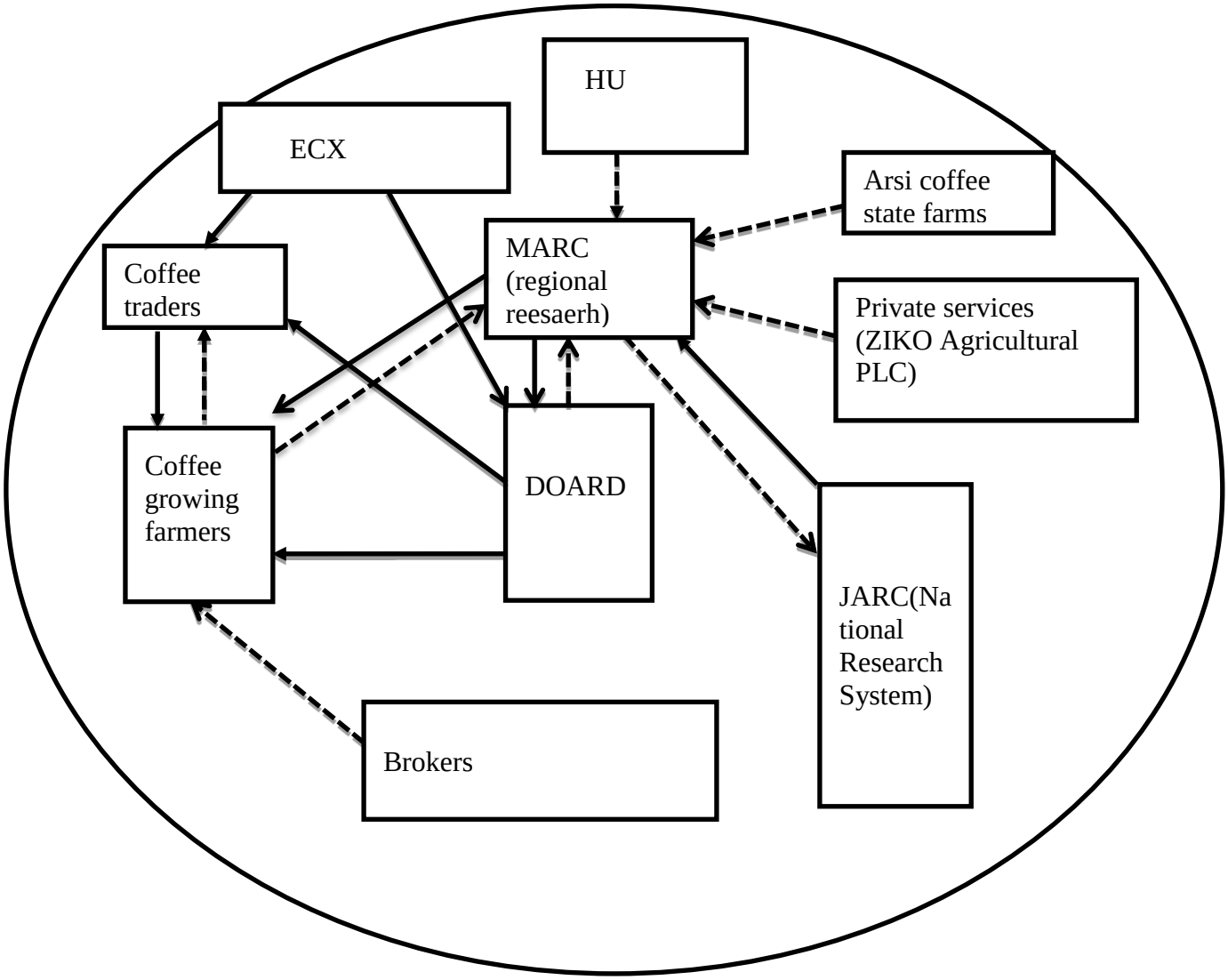
bringing about co-ordinated action. This is practically lacking in the district among coffee actors. Besides, from the results of the table public actors are dominating in different arenas of innovation processes. However, recently various studies explicitly acknowledge the importance of the non-public actors for acceleration innovation processes of coffee actors. In this regard, we do not mean public actors are not important in the innovation processes of coffee farmers. Rather, we mean that in the dynamic changing world public actors should revisit their roles and create institutional spaces for other multiple actors in order to speed up innovation processes and knowledge circulations. For examples, we argue that the public actors should link processes of innovation development with innovative rural farmers, traders, Community Based Organisations (CBOs), farmers Union, cooperatives and other informal local institutions like credit and saving organisations.

4.2. Patterns of interactions and relationships

In this regards, FGDs and interviews with respondents were used to understand patterns of interactions among actors, habits, practices and incentives influencing nature of interactive relationships. Accordingly, the major observations of the findings are presented in the following manner.

Except district agricultural offices and farmers, no two ways of interactions and linkages with public research (MARC and JARC) have been observed for knowledge sharing and learning in the district. DOARD have interaction with ECX for information services related to marketing and quality handling. MARC and JARC have moderate interaction and collaboration for knowledge sharing, innovation development and resource base. Their effectiveness to form multi-stakeholder platform for joint experiential learning and innovation was constrained by various institutional and structural related factors. On the other hand, Haramaya University, private investor (ZIFO agricultural technical PLC) and Arsi coffee state farms have weak interactions with MARC for technology or information services. According to the interview with key leaders and researchers, the research centre does not have adequate capacities to provide the quantities of improved inputs required by the customers.

Figure 7: Interaction among key actors in coffee innovation processes and knowledge circulation



Very rare and weak One-way interaction for information/knowledge services

One-way moderate interaction for information/knowledge services

Two- way moderate interaction for information/knowledge services with non-functional learning

Two-way moderate interaction with limited learning but without feedback

Almost all coffee traders have linkage and interaction with ECX, DOARD and farmers in the district. However, coffee traders do not have any interaction and linkage with public research (i.e. MARC and JARC) though they are relevant actors in the district. The purpose of linkage and interaction of coffee traders with that of DOARD and ECX is to access information's on coffee quality management, marketing and price information. At the same time, the purpose

of linkage and interaction of coffee traders with that of farmers are ranges from providing credit, informal advisory council on quality management, post-harvest handling, and price information. *One respondent of the coffee trader said that;*

> *'Our relations (i.e. Coffee trader) with the coffee growing farmers are very strong and encouraging. He added that, our roles are not only limited to delivery of market price information and quality management, we also construct primary school for farmers in the village.'*

Further questions were asked to understand the missing link, actors or competencies that are constrains the problem solving capacities of the actors through innovation processes and knowledge circulation? The information captured during in-depth discussions with key actor and FGDs reported the following findings.

Lack of competence of human expert (experienced researchers on areas of coffee agronomy, pathology, breeding, socio-economics related fields), weak institutional collaboration, lack of farmers based organisation (for example, cooperatives and community based organisations) , shortage of financial resource, poor rural infrastructure (example: rural road networks, rural market, coffee washing machine ,inadequate capacity and functional mechanisms for scaling-up of farmer innovation , lack of database and networking to assist communication and information, lack of incentives for coffee farmers (for example, improved farm tools and machines and credit supply service), organizational structure and culture that hinder communication flow (for example: top-don hierarchies and bureaucracies), weak market linkage (for example: Poor coffee market development research strategies), inadequate training and awareness creation (for example on coffee quality at farmers and traders level) were observed as the missing link and competencies that are constraining the capacities of actors to innovate in the district.

The respondent explained weak market linkage, weak institutional collaboration and actor linkage as the most constraining missing link in the district. For instance: one leader said that 'public research organisations have a big problem in bridging market gaps and this should take into account, he said.'

According to information of the respondents there are no functional and meaningful social learning exist among actors as the kind of linkage and interaction in supporting innovation process and knowledge circulation involves one -way information transfer methods. In general, different actors have different conflicting views that drive or constrain interaction with each other's. For example, lack of shared vision, limited communication gap, lack of incentives for collaboration, lack of resources, lack of leadership and management are the factors that leads to eradications of trust relationships and finally hinder interaction of actors.

The findings pointed out that though it is contribution towards learning is limited both formal and informal ways of interactions are observed among actors. Moreover, absence of enabling environment like access to ICT and financing organisation and weak coordinating bodies negatively impacts the interactions and partnerships among actors. For example: lack of incentives for collaboration and absence of data base and networking hindered speed of communication flow among actors. Generally, table 3 below summarizes some of these interactions and linkage among actors in the district.
The following table depicts.

Table 3.Typology of linkages and learning occurred among key actors in the district

Type of linkage	Purpose	Type of learning occurred	Example
Partnership DOARD & MARC MARC & JARC MARC and Farmers	- Joint problem solving by technology multiplication - Joint problem solving, learning and innovation through experimentations -Joint problem solving by learning .	Learning by doing	-Seedling multiplication and distribution by DOARD & MARC -Speciality coffee speciality coffee distribution -Training for farmers by demonstrations
Paternalistic - ECX & DOARD -ECX & trader -DOARD & farmers -DAs and farmers	-Delivery of marketing information, knowledge on quality management for farmers -Technology dissemination	- More learning by training, and interacting	-Training and workshop meetings
Networking -Farmers and traders -Innovative farmers and neighbour farmers -Farmers to farmers	- Marketing, credit supply, sharing knowledge and experiences - Sharing own and/or research knowledge and experiences	-Learning by interacting	-Supplying marketing information to customers -Indigenous knowledge exchange through relatives and neighbour

Sources: author

Learning by doing and learning by interacting

The collaborative activities between MARC and JARC program has become an important source of knowledge especially in experimentation activities. The second example of learning by doing is related with farmer's innovations. For example: the innovative farmer discovered the manure locally known as 'kuyyuboo'-a set of fertile soils decomposed by organisms and found to be used as manure by farmers and finally many farmers are applying as fertilizers on their farms. The other knowledge that do not involve active experimentation and testing like individual contact and information exchange, workshop and training is grouped under learning by interactions.

Figure 8: Examples of technology multiplication by public research (learning by doing)

Source: author.

According to the innovation perspectives diverse, more dense two way communications of actors are useful to enhance and speed up innovation successes. From reflections of empirical findings this fact was absent in the study area. In these connections, various literature evidences from Ethiopian land scape confirms this findings. Sipleman et al., (2007) suggests that in spite of government policies on science, innovation, technology, and private sectors investment, there are little incentives to stimulate collaboration and coordination between key actors and other players. This is due to limited capacities at all levels (national, regional and local) to make collaboration practical. In addition, according to the views of (Engel, 1997, Leeuwis and van den Ban, 2004) innovative knowledge arrangements and practices emerge from multiple formal social interactions which facilitate knowledge exchange and networking between researchers, farmers, and extension organisations rather top –down traditional technology transfer mechanisms. Further, they confirmed that inter-organisational collaboration, interactions and linkages initiates and institutionalise the horizontal communication and knowledge exchange among farmers. Thus, public actors should re-arrange the multiple social networks of the actors in order to speed up the innovation processes development and knowledge circulation.

4.3. Attitude, practices and incentives influencing interactive relationships

Established habits, practices and incentives of the organisation make actors to take new roles and facilitate or hinder innovations and influences nature of interactive relationships. Based up on empirical findings of the field data, some actors are habits of interaction with others organisations, tradition of sharing information and experiences with limited capacities, others work in isolation; whereas others are conservative in risk –taking due to various reasons. These findings are discussed below.

a) Knowledge, learning and interaction

Supportive attitude, practices and incentives

Example: Some policy has contributions in supporting innovations.

According to the discussion of the FGDs the respondents agreed experience sharing programs among farmers, recognition and rewarding of model farmers are contributing to the development of the innovations. Leaders, managers and experts at the district level indicated that policy programs such as proclamation of ECX, rewarding of model farmers are contributed to the development of the innovations. On the other hand, coffee traders pointed out that establishment of coffee trade centre at the district level as the path way for the improvement of the sub-sector. This coffee trade centre is based in Mechara and Mecta (two

town city of the district) two years ago with the aim to improve coffee marketing problems in the district.

In general one respondent at the district level said that; '*Although there is little improvement of the policy guidelines for improving coffee innovation sector, there is no mechanism to link stakeholders to gather for effective implementation of the guidelines*.' The respondent explained with examples by saying 'there was advisory learning forum for joint problem identification and learning and implementations known as District- research-extension-farmers linkage forum. But we doesn't see any results of the forum'

Restrictive attitude, practices and incentives

Example: Top-down intervention approach and less attitudes and practices to farmers needs

According to district experts, some approach that has been practiced is top-down. They explained that, few years ago technologies are developed and generated in different agro – ecologies of the farmers and distributed for them and finally the technologies are failed. Besides, district respondents were confirmed that though the full participation of the farmers is not well recognised, the methods of disseminating technologies in different agro-ecologies of the farmers and finally distributing the technologies were passed. Recently public researches are considering impacts of agro-ecologies. Respondents of FGDs pointed out that some technologies were distributed without their interests. In this line, one farmer from FGD said that;

'For example bare root seedling distribution is the big problems to us under moisture stress areas we are living. These problems were started during CIP intervention and still continued by similar actors involved in the sector.

Figure 9: Bare root seedling being multiplied by actors in the district

Source: author.

b) Inclusion of the stakeholders and demand side

Supportive attitude, practices and incentives

The respondent indicated that policy programs such as commercialisation and decentralisation are contributed to the development of the innovations of the sector.

Restrictive attitude, practices and incentives

According to the farmers, lack of identifying the needs, priorities and problems of the communities bottlenecks the rate of innovation generation and circulation. Lack of functional

mechanisms to explore farmers knowledge's are triggered the issues. In this connections (Engel, 1997) confirmed that stakeholders and demand side are important priorities and signals that shape the focus and directions of innovation processes. He suggests innovation system concepts acknowledges the importance of the inclusion of stakeholders, actors and the development of organisational behavioural patterns and polices that sensitive to demand side agendas.

c) Risk-taking to cope with change

Supportive attitude, practices and incentives

Delegation and decentralisation of responsibility and power, at regional and local levels, and market information exchange through ICT on the daily basis between extension office at district level and coffee traders and role of ECX at the country level market information and quality brokerage builds some confidence and trust among actors.

Restrictive attitude, practices and incentives

According to the respondents, fearing of each other, Fearing to take risks, absence of insurance for exporting coffee on the seas, absence of national coffee insurance/subsides are major attitude and practices affecting innovation development. In this connections, (Mytelka and Farinelli, 2003) indicates that one way of mechanisms to be more successful for innovations under dynamic environment and uncertainties is to take risks in order to cope with changing circumstances by building self confidence and trust through fostering and reconfiguring linkages and networks with partners and actors. This helps to stimulate creativity that speed up innovations.

The following table 4 summarizes roles of institutions/organisational habits, practices and incentives influencing pattern of interactive relationships and innovations in the district.

Table 4: Key characteristics of attitudes and practices affecting innovation processes and knowledge circulation among actors in the district

Innovation process and knowledge circulation relationships	Restrictive attitude and practices	Supporting attitude and practices
Interaction, knowledge flows and learning	• Lack of transparency between actors • Absence of learning council • Lack of operational research extension advisory council at district level • Hierarchies of the organisation • Mistrust each other • Lack of incentives • Bureaucratic behaviour of the organisation • Shortage of skilled man power • Lack of database and networking system • Lack of data base and communication among	• Few Experience sharing practice by public sectors • Frequent reward of model farmers • Frequent reward for researcher at national & regional level • Majority of farmers interest to take new innovations • Informal network among farmers • Examples: Experts visiting innovative farmers to share the knowledge to other farmers

	actors • Inadequate demonstration and training service • Weak follow-up which constrains learning and feedback	
Inclusiveness of the demand side	• Absence of joint planning and implementations • Top- down intervention approach • Weak and inefficient linkage among actor • Shortage of facility and resources	• Decentralisation • Commercialisation • Proclamation of ECX on coffee marketing inside and outside the country. Example: coffee quality are improving
Risk taking	• Fearing of each other • Fearing to take risks • Absence of insurance for exporting coffee on the seas • Absence of national coffee insurance and subsides for farmers and traders	• Delegation of responsibility and power at regional and local levels • Example: Controlling their own budget at local levels and self-governance.

Source: author

Reflections and discussions on attitude and practices

The innovation perspectives confirmed that actor's attitude, practices and relationship plays important role for organisation innovativeness. Lack of transparency and mistrust between actors, absence of learning council/forum, hierarchies of the organisation, lack of database and networking system, bureaucratic behaviour of the organisation , weak follow-up which constrains learning from feedback and others(figure 9) below are restrictive attitude and practices by actors that limited innovation process and knowledge circulation. Similar evidence confirms these findings. Sipleman et al, (2007) said that the weak innovation landscape and lacking capacity emerge partially from organisational cultures, particularly among public sector providers of rural services that remain hierarchical, opposed to change and insistently focused on linear top down science. Moreover, (Engel and Solomon, 1997) argues that intervention that intend to develop the capacity for farmer innovations must give due attention to ingredient attitudes and practices and the way these are likely to interact with and fit the outcome of the interventions.

Hence, the findings proved that attitude and practices influences the rate of innovation development. For example, we explored in the above findings that positive attitude and practices like rewarding model farmers encourage farmers' innovativeness. While negative attitude and practices like top-down defined needs and programs discourage innovativeness of the farmers/actors. In this regard, Edquist (1997) pointed out the common attitudes, practices and incentives that regulate the interactions and relations among actors (individuals, groups and organisations) determine the capacity of actors to innovate and experiment. Therefore, exploring these curiosities helped the research to know which attitude and practice facilitate or drive innovation processes among actors. However, the big issue here is to develop innovation system framework that are supporting innovation processes development and knowledge circulations. The innovation system frameworks suggest that

experiential social learning, networking building and negotiation through re-ordering of multiple actors as alternative solutions to the problems (Leeuwis and van dan ban, 2004).

4.4. Social networks and /or networking among actors in the process of coffee innovation development

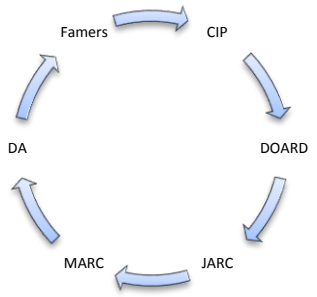
To understand the existence of functional formal and informal networks that are relevant to facilitate innovation process and knowledge circulation focus group discussions were held with farmers, development agents and experts. Accordingly, the major findings of the formal and informal social networks in the district were presented here under:

a) Formal social networks

The finding results showed that formal networks include coffee improvement program (CIP) (phase out now), DOARD, MARC, Development agents and farmers. The major roles of these networks are provision of production knowledge and/or information and input delivery services like training on coffee agronomy (especially planting methods), fertilizer application (compost for coffee), quality management and credit distributions.

- The CIP and DOARD are more active in training of coffee agronomy and seedling distribution.
- MARC is more dominating in technology generation and training intervention. Example: released nationally registered improved coffee varieties for the district and related mandate areas of intervention.
- Development agents are active in information transfer and knowledge brokering at village level. For example: quality ,management and compost application
- Farmers are more involved in sharing of knowledge among them. For example: indigenous knowledge exchange.
- JARC are more facilitating collaborative activities through fiancé, infrastructure, resource base and capacity building.

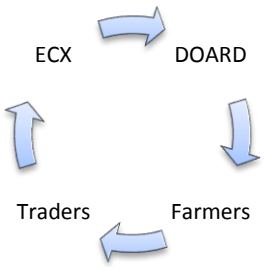
Figure 10: Innovation network for provision of production and knowledge and input delivery services



Source: author

The second formal networks are ECX, DOARD, farmers and traders. The major roles of these networks (b) are mainly focus on quality management knowledge and market information. This are depicted schematically as in the following figure.

Figure 11: Innovation network in the district for coffee quality management and market information



Sources: author

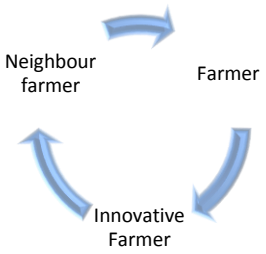
According to the FGD discussion with the farmers: the drawbacks of these formal networks are: lack of demand –driven input distribution, especially bare root seedling distributed by CIP few years back were the big problems to us in moisture stress areas we live in.

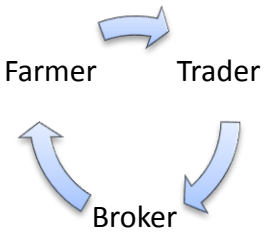
Acceding to the results, the effectiveness of the formal networks are limited due to lack of room to create experiential social learning and unable to give due attention to scale up farmers innovations in wider communities which is likely due to lack of resources.

b) Informal social networks

During discussions with the farmers 3 out of 15 respondents of the farmers knew the different techniques and practices some of their neighbour farmers are using for coffee growing. These farmers learn the techniques through personal contact and visiting the nearby farmers. The other 12 farmers not knew the different techniques and practice their neighbour farmers are using for coffee growing. These informal social networks (i.e. Farmer---farmer and farmer ---trader---brokers are depicted schematically in the following figure.

Figure 12 a: Network for innovative knowledge sharing. Figure 12 b: Market Information and credit services





Source: author

The major roles of network (a) are mainly for exchanging knowledge (i.e. such as indigenous knowledge of coffee growing techniques) and that of networks (b) are to facilitate and exchange market information and credit services.

Figure 13: Farmers and trader network in Mecata coffee center

Source: author.

According to FGDs results relatives, kinship and neighbourhood relations are the informal means of social networks building and information dissemination among farmers.

As we discussed in the above, findings indicate that apart from weak linkage for information transfer in both formal and formal social networks there is no active interactions and relations within and between each networks. There is no functional body coordinating these networks to be functional and effective. As a result there is no social learning happened among the actors. In this regard, Leeuwis (2004) argues that innovation is not only creating new ideas or knowledge rather it is about re-ordering of multiple social networks by professional engaged in rural innovations which are supporting knowledge circulations among actors.

Besides, the finding suggests that apart from limited informal social contacts, more formal groups like CBOs, cooperatives and others institutions are not observed and engaged in the coffee sector. Literature in the Ethiopian contexts confirms these findings. Among others, (Darcon et al., 2006) indicates that there are many informal social networks and civil society organisations in rural Ethiopia. However, integrating and coordinating these networks with other rural institutions poses a great challenge for county's development and growth. Hence, we explicitly argues that recognizing such challenges requires rethinking, re-learning, re-designing policy approach and intervention strategies through bringing diverse actors background together and provoke novel ideas on network building and social learning, and develop capacity to catalyse innovation processes and knowledge circulation among actors. Another important thing that should not be under-estimated in this regard is the importance of communicative intervention and information for activating and building network. In this connections literature confirmed that communicative interventions, strategies and methods plays an important ingredient role in stimulating change and facilitating innovation strategy in order to enhance network building, social learning and innovation in multi-stakeholder setting (Leeuwis, 2004). This may involve a broad range of activities such as platform building, improving insight, explicating tacit knowledge, and managing conflict, creating productive group dynamics and bringing about co-ordinated action.

Within such strong evidences, the research believe that diverse communication intervention and strategies which are important to facilitate innovation process and experiential social learning among farmers, researchers, extension workers and stakeholders in multidisciplinary approach is equally important to trigger innovation development in the coffee sector.

4.5. Communication linkage and participation exist among actors in the process of coffee innovation development

4.5.1. Communication strategies exist at farmer's level

FGDs and in-depth interviews were held with farmers and experts at district level to understand modes of communication strategies used by actors for innovation, knowledge exchange and circulation at farmer's levels. The results captured from farmers and experts indicate the following communication strategies and knowledge exchange employed at farmer's level.

Table 5: Communication strategies at farmer's level

Communication strategies at farmers level	Examples
• Farmer to farmer contact and/or farmers to innovative farmer contact and vice versa	Farmer innovation like manure making, coffee shade and other agronomy practice can be exchanged through farmer to farmer
• Through development agent to farmers	Seedling distribution, market information exchange
• Frequent farmers training by coffee researchers and experts	Training given by coffee experts and researcher on speciality coffee promotion and distribution (MARC, 2010)
• Researcher to farmer contact	Priority identification through survey assessment and technology transfer
• Information exchange through mobile phones	Farmer to farmer, extension agent to farmers and researcher to farmer

Source: author

To triangulate the findings interviews were also made with development agents as they are the most knowledge broker at village level. Accordingly, majority of the DAs explained that training for few farmers at FFS as means of communication strategies to disseminate information and circulate knowledge for coffee farmers. The average percentage of the respondents were also explained that individual informal farmer to farmer contacts as strategies employed to disseminate and circulate new information and knowledge among coffee farmers. While a few of the respondents also explained field demonstration on farmers land, and mobile phones contact as other strategies used by development agents to disseminate and circulate knowledge among coffee farmers in the study areas. For instance, the respondent explained about compost making both at FFS and farmer land as one of areas they trained farmers.

4.5.2. Communication strategies exist among actors at district level

According to the interviews held with development agents, the average of the respondents were said that workshop and mobile phones are the strategies they used to interact and communicate with research centre to get research outputs, and more than average of the respondents were said that individual face to face contacts with the researcher at FFS as the strategies used to interact and communicate with research centre to get information. While a

few of the respondents indicate official letter between organisation as means of communication and information exchange.

To triangulate results key actors (researchers and leaders were also interviewed). Accordingly, the following result indicates communication strategies observed at district level by coffee actors:

Table 6: Communication strategies among actors at district level

Communication strategies for innovation development and knowledge circulation at district level	Examples
- Providing training	Trainings are given by MARC for DAs, farmers and experts
- Disseminating information through extension material development	Sometimes leaflet and pamphlet are developed by MARC to transfer information about production and quality management knowledge.
- Using media	Awareness creation about the recently released variety of coffee by MARC can be made by regional TV and Radio
- Technology multiplication with collaboration of stakeholder	In 2010 about 570, 0000 seedlings were multiplied by with collaboration of stakeholders and actors in the mandate areas (MARC, 2010)
- Letter	- Used to exchange information

Source: author

In general the respondents confirmed that apart from the aforementioned strategies of knowledge and information exchange, there are no other functional mechanisms used by any actors to scale up innovative knowledge for coffee farmers.

Figure 14: Technological innovation

Source: author

Literature on communication strategies for rural innovation strongly argues that what the functions of communication strategies should geared towards supporting social learning and network building while solving problems apart from diffusing ready -made technologies to increase productivity. In this connections (Leeuwis and van dan ban, 2004) indicate key roles of communication processes in supporting network building, social learning, negotiation and problem solving. They also explored roles of clients as active learner in the processes.

Actors are not innovating individually. Therefore, communication strategies are important among actors facilitating networking, social learning and innovation. To do so, multiple communications are paramount importance from planning to implementation. Nonetheless, the empirical findings indicated as there was no communication from planning to implementations. However all in all are not bleak. There was information transfer and exchange among limited actors. But, that was not enough to enhance social learning and innovation. For instance, in the case of farmer innovation there was no functional mechanisms to document and scaling up for further learning and wider impacts in the district. In this relations, (Engel, 1997, Leeuwis and van den Ban, 2004) explained that 'Farmer-to-farmer' contact and the 'Farmer Field schools' approaches enables innovative or trained farmers to pass their knowledge and experiences to their fellow farmers. They argued that these learning can only be possible if and only if functional social networks are existing among farmers. Therefore, from the empirical findings and the aforementioned literature we argue as this is lacking in the district.

4.5.3. Participation of actors in the processes of coffee innovation development

Almost all respondents said that the levels of participation in the organisation do not allow individuals to provide innovative ideas for coffee innovation development and facilitate knowledge circulation among actors through linking stakeholders together. For instance the respondent indicates organisational culture like hierarchies, limited culture of delegating responsibilities for the staff and limited resource. The result revealed that both public research centres (JARC and MARC) who are involved in the generation of coffee innovation development through jointly mobilising of resources, participation of other actors like private or public are nil. According to the information gathered from documents of both centres, there were thirteen (13) collaborative activities that were started in mid-2012 cropping year.
It was also confirmed as there was no participation of relevant actors (i.e. farmers) in the process of innovation development from planning.

Issues affecting participation
From the information collected during FGDs, the following are issues affecting participation of farmers:

- Lack of awareness about importance of participation
- Shortage of financial resources
- Time constraint/irrelevant time of participation with farming activities
- Lack of practice and unable to change what they have learnt from participation
- Illiteracy
- Infrastructure problems
- Lack of need based issues of participation

The empirical findings revealed that frequently the actual practice of participatory and community driven development needs are overlooked. The diverse actors and community issues like political, cultural, religious, and organisational issues that affect participation and innovation doesn't taken into account. Different literature in the Ethiopian innovation landscape confirms these findings. In this line, (Teklu, Gemechu and eta al., 2001) explained that despite professionals who began to appreciate the participation of farmers in technology development many still confined in linear top down approach, where agricultural technology generation and transfer are determined by researchers and disseminated them through extension agent.

The agricultural innovation system scholars (Chambers et al 1989; Sherwood and Larrea 2001) place equal emphasis on farmers and scientists knowledge, highlighting the need to integrate diverse types of knowledge at all stages of the recombinant innovation processes. Knowledge circulation between different actors, shaped by formal and informal institutions, is

deemed critical for continuous learning and innovation. Thus, learning institutionally involves the gradual build-up of capacities to engage in participatory processes that involve two way knowledge exchanges between farmers and other scientific experts.

The findings proved also that failure to appreciate the importance and contribution of actors in intervention design and implementations negatively impacts the intervention goals not to achieve the desired level. Moreover, the empirical findings showed that failure to appreciate and recognise issues affecting community who are confronting dynamic and /or complex environments negatively affects participation and discourages innovation development. In this connections, (IAP2, 2005) suggests different issues challenging and affecting public participation such as limited capacity, lack of experience and understanding of participation, lack of awareness about importance of participation, development issues (i.e. poverty, financial resources, typical industries, health issues, infrastructure problems), language barriers, lack of information and communication technology and illiteracy. Therefore, it is proved from research result that there was no participation among actors in order to link both explicit and tacit knowledge in order to develop effective innovations.

4.6. Social learning for innovation processes and knowledge circulation

Different actors were interviewed to understand functional learning points exist among them for innovation process and knowledge circulation. The results of the field findings captured were presented below;

According to responses of coffee experts and researchers; '*There was no social learning among actors for innovation development as we do not have functional learning forum in the district.'*

According to responses of coffee experts and researchers; '*There was no social learning among actors for innovation development as we do not have functional learning forum in the district.'*

On the other hand, from a total of 15 respondents of FGD, six (6) said that they have learning sessions organised for them to apply new knowledge to their coffee farms or to learn new knowledge to coffee farms. However, the other nine (9) respondents were confirmed as they do not have learning session from any actors organised for them on coffee farming. According to the six (6) respondents the major areas of learning lesson was on coffee production, quality management and marketing information. However, Roling (1992) explored social learning as a mechanisms and processes to explore and build multi-stakeholder platforms in which the challenge is to facilitate learning, problem solving and change.

According to information from DAs one respondent said that;

'There was probably a training session sometimes arranged for farmers may be by 'us' or public research or NGOs which was organised at least twice a year. He further explained that as this training not regular (i.e. it may or might not be arranged regularly), we cannot say we have learning session for coffee growing farmers. But we are playing our professional roles as far as we could.'

As it is pointed out from the above results' learning was not carried out among actors. As we discussed under 4.2., there was no functional network among actors. If there was no functional network and actors do not interact and communicate, and finally knowledge and experience are not exchanged among actors, and there was no learning opportunity among actors during innovation development and knowledge circulation. Similar personal observation and experience confirms these findings. For instance, Research-extension-farmer linkage the learning council was established few years ago in the district. But this council was still not functional.

According to (Gees, 2002; Hommels et al, 2007; Smits and kuhlmann, 2001) cited by Leeuwis and Aarts (2011) discussed that learning as critical point for developing conducive fit between innovations and their environments. Moreover, Leeuwis 2002, Roling, 2002, Freidrick, 1984) confirmed social learning at least to have complementary perspectives on relevant models of realities, goals, problems and boundaries as basis for developing relevant, acceptable and feasible options for change. Thus, data from empirical findings proved that social learning is lacking among actors for innovation processes and knowledge circulation in the district.

In similar fashion, (Kaaria et al, 2004) explained key elements of innovation process as; farmers experimentations, strengthening human capital and social capital, enhancing access to information, linking local knowledge to scientific knowledge, strengthening partnership, strengthening formal and informal institutions to support innovation process and knowledge circulations. In this regards, participation and social learning between researchers, farmers, extension workers and other actors are central to innovation processes. This problems hindered rate of innovation development and knowledge circulation of the coffee sector.

4.7. Negotiation processes exist among actors for innovation processes and knowledge circulation

To understand conflicting interests among actors and their competencies to handle it, FGDs and interviews with respondents were used. According to the empirical results all the respondents said that there were conflicting interests in the organisation and between actors during collaboration. The main issue of the conflicting interests were resource and role conflicts. The respondents agreed that despite conflicting interests among the staff or actors the organisations/actors competencies in resolving it is very limited. The study found out that negotiation processes are not used by the organisation.

> *One expert said that' though management committees are in place to handle the conflicting interests, their skills in solving the conflict is weak.'*

At the farmer's level unfair selection of model farmers and unfair input distribution leads to conflict with the village leader and DAs. At the district level untimely and unfair budget distribution, absence of following rules and regulation (i.e. behaving and acting beyond rules) limited resource sharing, bureaucratic procedures and un-equal treatment by boss leads to conflict. Delegation of staff for non-professional activities also leads to conflicting interest.

The findings revealed that despite conflicting interests among groups, teams or actors, the competencies of the actors in resolving the issues were very less. When the problems unresolved it could leads to discourage participation, justices and transparency among and between actors which in turn hinder innovativeness and knowledge circulations. The empirical study also proved that the competence of the organisation to practice negotiation approach in handling and dealing with the conflicting interests was very weak. Hence, the research explicitly argues that when conflicting interest among individual, group or organisations left unsolved, it constrain organisation capacities to innovate. Literature evidence suggests similar arguments. In views of (Leeuwis and Van dan ban, 2004), whenever stakeholders involved in meaningful social change conflicting interests are likely to emerge, since such changes might have consequences on interests and objectives of the parties. They explained that the conflicting interests should be resolved by interactive process and improved communications. However, this is missing among actors involved in coffee sector in Daro Labu district.

4.8. Information need and utilisation behaviour of the actors

In order to understand information need and utilisation behaviours different actors were interviewed.

The result shows that coffee traders indicate the desire to understand how prices are fixed, how impacts of world trade influences coffee price definition. They also indicate the desire to have good knowledge on quality management. On the other hand, the farmers expressed the need to combat disease like Coffee Berry Disease (CBD) and Coffee Wilt Disease (CWD), the need to get improved varieties which tolerate diseases and drought, the need to access daily market information, Quality management knowledge, credits and subsidies and the need to have learning forum in the villages that deliver knowledge and experiences on coffee.

Figure 15: Farmer coffee field affected by disease

Source: author

The leaders, managers, coffee experts and researchers from public organisations were expressed their needs as; the need to create market linkage, to establish functional learning forum, the need to have effective data base for reporting and improvement of infrastructure, and good financial support. The development agents were explained the need to explore and document farmer's innovations and resource supports.

Development agents were interviewed to discuss the information and knowledge need and utilisation behaviour of the farmers as they are key actors and knowledge brokers in rural areas. According to their reports, 75 % of the farmers in the study areas have high motivation and interest to learn and use new knowledge and information. And 25 % of the farmers do not have interest to learn and use new information and knowledge due to factors. They reported factors like small farm size, interest involved for repaying back the loan for input like credit and fertilizer.

The empirical results showed that the knowledge and information need of the actors are diverse and complex. Most farmers are confronting with different problems and needs pressing technical details (i.e. disease control mechanisms, improved varieties, information and quality management, etc.) to tackle these problems. Experience and literature on rural development perspectives indicates the problem of rural development is complex and changing. Tackling these problems needs innovation brokerage that can play multiple roles ranging from networking, platform building, facilitating social learning to negotiation processes at grass root level. Nonetheless, as we discussed in previous topics this reality is lacking in the study area.

4.9. Policy support for generation of innovation processes and knowledge circulation

This topic was directed by agricultural innovation capacity guidelines (Hall et al., 2006). According to these guidelines the wider policy support and enabling environments can be explored through interviews with key informants. Accordingly, different respondents (i.e. coffee experts, managers and researchers were interviewed in order to explore the enabling environment for acceleration of coffee innovation processes and knowledge circulation.

The overall results showed that national policy reform such as commercialisation, decentralisation, information and communication technologies, strategies of ECX, institutionalize the service to the industry level policy are creating spaces that enable innovations. For instance the respondent indicate proclamation of 2008 on coffee quality control and marketing which endorses and prohibits the export of low quality and ungraded coffee. Moreover, the exemplary result of empirical finding indicate as licence was issued to trade coffee within the country and/or for export and trade in coffee in general including store, transport, dry and wet process, and cleaned and grading coffee) as rapidly creating space that enable innovations.

On the other hand, the respondents confirmed that Ethiopian extension approach, tax policies (i.e. big tax policies on coffee traders), world trade problems on coffee, inappropriate land use policy system, lack of a national coffee learning forum, lack of incentives for stakeholders collaboration, absence of proclamation on access to and benefit of sharing genetic resource and indigenous knowledge, lack of strong National Agricultural Research System (NARS) policy that link actors to gather have profound impact on the innovation of coffee farming sector.

For example: Ethiopian extension approach. The approach is criticised for being top-down (lacks experiential social learning), lack of incentives- subsidizing coffee growing farmers limited capacity of input and credit supply systems, improved quality farm tools and equipment's and follow-up problem. Results indicate that, apart from transferring research based technologies, the approach does not create spaces for scaling up of farmers knowledge. According to the discussion with leaders, development agents, experts and researchers at different levels, the organisation have the following strategies for scaling up of innovative knowledge and circulation.

- Technology demonstration and transfer through establishing farmer research group
- Providing training for different actors like DA, farmers and agricultural offices experts
- Seedling multiplication with stakeholders collaboration

- Giving recognition and reward for model farmers
- Awareness creation through media like TV and radio

In general, the existence of favourable policy approaches for generation and scaling up of agricultural innovation. Recently, due attention has been increasingly given to non-technical innovations by different actors. However, from the findings the research proved as there is no functional mechanism has been put in place for collective learning, scaling up and circulation of innovative knowledge. Though some policy approach has been creating spaces for participation and learning that would enable innovation, the countries extension approach was criticized for being demand-driven and neglecting of diverse actors. In this respect (Lemma, 2008; world Bank, 2006) confirmed though policy priority of the countries has shifted in favour of commercialisation, and the policy has proposed increasing role for private sector and confirms support. yet, public extension systems has not reconfigured itself in line with this policy shift, the emergency of new actors and the increasing needs for innovations of different nature both by its conventional and new clients. Besides, the findings indicated mechanism used by the actors for scaling up of innovations. Nonetheless, we argue that innovation is not only information dissemination and technology transfer but also

organisational networking and institutional arrangements equally important. In this line, (Roling , 2004) explained that scaling-up is not only a question of doing more of the same work i.e. through diffusion of a given technology among farmers but also is about a question of institutional change in marketing chains, consumption patterns, education, government budgets etc. Hence, this is lacking in the district.

CHAPTER FIVE: - CONCLUSSSIONS AND RECOMMENDATION

This chapter delivers conclusion of the empirical findings and draw recommendation based on findings.

5.1. Conclusions

This study presents an exploration of agricultural innovation processes and knowledge circulation in coffee farming sector in Daro Labu district, Ethiopia. Using concepts derived from conceptual framework and tools adopted by research strategy the study explores factors influencing patterns of interactions and social networks among actors and their role to effectively supporting innovation processes and knowledge circulation with regard social learning, networking, participation, negotiation and communication strategies among actors in coffee farming sector.

The empirical findings revealed that there are diverse actors engaged in improvement of coffee innovation sector, with public actors playing the dominant roles though constrained by various knowledge and resource base. It also reported the effectiveness of public actors is more constrained due to neglect of institutional arrangement, demand-driven and market linkage. Moreover, the empirical data also confirmed that the contribution non-public actors are mainly remain untapped.

Habits, practices and incentives of the organisation made actors to take new roles and facilitate or hinder innovations and influences nature of interactive relationships. The study pointed out that different actors have different conflicting views that drive or constrain patterns of interaction and relationships with each other's. Among many factors, lack of shared vision, limited communication gap, lack of incentives for collaboration, lack of resources, lack of leadership and management are the factors that leads to loss of trust relationships. For example: the study explored that among different coffee actors, except district agricultural offices and farmers, no two ways interactions and linkages with public research (MARC and JARC) have been observed for knowledge sharing and learning. The empirical data captured from the field also shows the missing links that are constraining the competencies of the organisations in problem solving and innovation. Among others, lack of farmers based organisation, weak market linkage, lack of database and networking to assist communication, lack of strong actor collaboration and financial constraint were mentioned.

The findings revealed that formal social networks (i.e. Public service providers) plays dominant roles in the provision of production related knowledge, information and resources for coffee farmers. Similarly, other informal social networks like farmers and traders are active in the areas of exchanging indigenous knowledge, coffee quality management, price and marketing information services. This informal network has been constrained by financial base for scaling up local innovation. However, it has been observed that there is no functional body that links these networks within and among them to be more effective.

The findings indicate communication strategies exist among actors for facilitating coffee innovations development and knowledge circulation is very limited. Individual extension contact methods more observed at the farmers level for information. While, limited training and workshops are reported at the district level. Despite growing literature that appreciates and places communication at the central heart of rural innovation for creating social learning and network building, it remains untapped in the Ethiopian rural innovation land scape.

Knowledge and Information need and utilisation of the actors are reported. Accordingly, the information and knowledge need behaviours of the actors are very diverse and complex that needs more technical details which are not being fully addressed. The need to know how prices are fixed, impacts of world trade influences on coffee price definition, how to combat disease, the need to have improved varieties, daily market information, the need to have effective data base for reporting and communication was forms the results captured from empirical data. To deal with these problems in rural development context needs a multiple two way communication strategies and innovation brokerage. Nonetheless, this is lacking among actors in coffee sector. Regarding, information and knowledge utilisation behaviours of the farmer's majority of the farmers have high level of interest for trying and using new knowledge and/or information.

Agricultural innovation perspective believes that the participation of farmers, researchers, extension agents and other relevant actors during technology design and development is crucial in order to facilitate social learning and knowledge circulation. Besides, Community participation plays central role for the success of the development projects. However, the findings confirmed that much of the research priorities are determined by researchers and finally the developed technologies are transferred via extension worker to farmers. Moreover, it is observed that different issues confronting farmers on the daily or regular basis that hindered farmers from participation are equally overlooked. Besides, the research proved that some organisational culture like hierarchies, limited delegation of responsibility and financial resource hinder the staff not to participate in the innovation development jointly with other actors.

The contemporary innovation thinking recognises and gives attention for social learning among actors during innovation generation. However, the findings revealed that social learning was limited among actors during innovation design and development except one-way information exchange. This negatively affects rate of innovation development and knowledge circulation. Apart from promoting hardware technologies/technological innovations attentions has not been given to institutional innovations that are prerequisite for social learning and innovation.

The findings confirmed that conflicting interest are common among actors. Despite conflicting interests among the staff or actors negotiation processes to solve the problems are not used by the actors. Few empirical data report that management committee staff meeting as strategy to solve the issues. However, resolving conflicting interests in "win-win results" are beyond what has been observed from the field. The research generally proved that the competency of the actors to handle and manage conflict interest was very limited.

According to the empirical findings government attention has geared towards achieving more visible innovations through policy focus such as commercialisation, decentralisation, proclamation of coffee quality management and control and public investment in ICT. This has become creating new spaces of learning and innovations for actors. Yet, no functional mechanisms are in place for facilitating collective experiential learning and for scaling out/up of successful experiences to achieve wider impacts. Further, the findings confirmed despite dynamics of changing of Ethiopian agricultural sector policy and intervention, innovation trends tends to follow linear models of technology dissemination through mainly public actors. The existing extension approach is not supportive in favouring innovations and knowledge circulation as it only involves one ways of information/technology transfer.

On the other hand, some policy environment both at the national (i.e., big tax policies on trader, inappropriate land use policy at farmer level, coffee transportation problems) and

international setting (i.e., world trade problem on coffee) were reported as constraining policy environment especially at grass root producers.

5.2. Recommendation

Based on the analysis of empirical findings and discussions the following key recommendations were made.

Recognising the priorities of Ethiopian government placed on coffee and the importance of the commodities for the national Gross Domestic Product (GDP), these findings recommend a number of consideration and policy environment.

- The current Ethiopian policy approach is dominated by linear top-down technology transfer thinking approach. However, innovations do not only consists of new technical arrangements but also new social and organisational arrangements such as new rules, perceptions, agreements and social relationships in which different stakeholders involved. Thus, the policy needs to give additional attention to institutional innovations which take into knowledge of processes consultancy, facilitation and accommodating resources.
- Currently, public service providers are dominating innovation networks of other actors through administration, financing and other services. In this regard, pubic extension services and research should revisit their roles and change their focus in order to re-ordering of diverse actors and create spaces for local innovation and social learning. These include: encouraging the entry of new actors in the demand and supply chain of coffee sector like private actors and Community based organisations (CBOs), definitions of roles and responsibilities for public and private actors and coordination mechanisms.
- Recognising Ethiopia's considerable attention to increase on-farm productivity and commercialisation, due attention needs to be given to its innovation policies and strategies that address market failures.
- Policy needs to play crucial roles by developing appropriate incentives and practices to stimulate actor's behaviour for friendly relations, innovations and inter-organisational collaboration to deliver a more context demand driven approach than supply driven approach.
- Government policy needs to encourage research works on innovation perspectives (both scientific and farmer innovation) in order to get better picture of social learning, networking and negotiation capacity of different actors. In this regards the roles of both public research (MARC and JARC) is an indispensable.
- The study found that informal social networks-farmer to farmer and farmers to traders are also part of innovation network. In this regard, a public actor needs to link these networks to other formal networks for active social learning and knowledge circulation.
- Considering the diverse and complex changing of rural problems in general and coffee sub-sector in particular, coffee farmers need more diverse innovation network with diverse actors both at production and market level to foster innovation processes. In this regard, role of govern on rural innovation policy is indispensable.
- The public actors need to review their communication strategy to improve knowledge circulations and scaling up of innovative knowledge like use of different kinds of media and modern media.

- The public actors need to improve negotiation skills through training and workshop sensitisation.
- The public actors need to lobby responsible body in order to establishing collective learning forum at district level.
- Public actors need to ensure participation of farmers and other relevant actors during innovation development processes.
- In order to ensure innovation capacities of rural farmers under dynamic market environment both regional and national government needs to increase public investment to human capital, rural infrastructure, coffee research and innovation for the sector improvement.
- Participatory and specific agro-ecology based policy making at grass root level that considers priorities, problems, opportunities will be an indispensable solution to critically seize the development objectives of the sector.

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ANNEX 1: Checklist for heads of district level

General information
Respondent name:
Respondent organisation:
Type of organisation:
Date of the interview/focus group discussion: DD/MM/YY
Name of interviewer:
Part 1: pattern of interaction and relationships

1) Who are the different actors (individuals, groups, organisations) rely and interact with your organisation for coffee improvement sector?

No	Name of actors(individual/ group/organisatio	Purpose of interaction			
		Knowledge sharing	Technology/Information services	Resources	Others

	n)	and learning			
1					
2					
3					
4					
5					
6					

2) Is there any collaboration with other actors involved in coffee innovation development? How do you establish such collaboration? What are the benefits gained being collaboration with the other actors (individuals, groups, organisations)?
3) In your opinion/view, what competencies, actors and link is missing but needs to be involved in Coffee innovation process and knowledge circulation in future? (Example, Shortage of public funding, competence of human expert, market linkage, institutional arrangement, collaboration between actors, infrastructure, etc.
4) Which of these missing parts/ deficiencies do you consider to be the most constraining rate of innovation development?
5) In your view, what requirement needs to be done to improve collaboration and linkage with other actors to enhance innovation process and knowledge circulation among coffee farmers?

Part 2: Attitude, practices and incentives (institutions)

1) What are the key characteristics of attitude and practices affecting innovation process and knowledge circulation relationships among actors involved in coffee sector?

Innovation process and knowledge circulation relationships	Restrictive attitude and practices	Supporting attitude and practices
Interaction, knowledge flows and learning		
Inclusiveness of the poor		
Risk taking		

2) Explain the formal and informal rules and regulations that hinder interactions with other crucial actors and performance of your organisation? Example, culture, policies, bureaucracies, etc.
3) How do you think these factors (policies, rules, regulation etc.,) hinder rate of innovation development/flow and knowledge circulation among coffee actors?
4) How do these formal and informal rules and regulations need to change in order to facilitate interaction and collaboration with other stakeholders and promote innovations?

Part 3:- Actors, their roles and activities they are involved

1) What do you regard as key roles in the coffee sector played by your organisation? List up to 5 key roles

2) Describe how you carry out these roles in practical terms? Example research, training and capacity building, input supply, technology promotion, information supply, credit services, cooperative promotion, advisory services, funding and creating market opportunities.
3) How do farmers and other partner involved in planning of policy research and innovation development?
4) How do the potential of farmer knowledge and capacities to innovate and experiment recognised by researchers and experts
5) List a range of actors (private and public c organisation) who play active role in coffee innovation process development and knowledge circulation activities in the district? What roles do they play?

Part 4:- Social learning process and linkage

1) Do you have advisory learning platform council in the district for promoting coffee innovation process and knowledge circulation among actors
2) If yes for Q. 1, above how frequent the workshop and review meeting organised for actors and effective in promoting knowledge circulation?
3) What was the main learning outcome of workshop/review meeting in the coffee sector as individual and a group?
4) What are the kinds of linkage between actors do you have? Do the natures of these links support learning and how?

No	Type of linkage*	Purpose of linkage	Type of learning occurred**
1			
2			
3			
4			
5			
6			

Hints

Type of linkage*

1. Partnership- joint problem solving, learning and innovation
2. Paternalistic- delivery of goods and services with little attention to consumer preferences and agendas
3. Networks- formal and informal and to facilitate information flows
4. Advocacy linkage to policy process- links through networks and sector association to influence policy process
5. Alliance- collaboration in the marketing of products and usually governed by memorandum of understanding
6. Linkage to supply and input and output markets- formal and informal arrangements connecting organisations to raw materials and access to credit and grants at national and international bodies.
7. Contract purchase of technology or knowledge services- learning or problem-solving by buying knowledge from elsewhere

Type of learning**

1. Learning by doing
2. Learning by interacting

5) What factor(s) with in your organisation drive/constrain learning process and knowledge circulation among actors in the coffee sector?
   a. Facilitating factors
   b. Constraining factors
6) What are other factor(s) outside your organisation or at the country level affects learning and knowledge circulation among actors in coffee sector?
7) What are the strategies in place by your organisation to scale -up knowledge of innovative farmers, research outputs and other among coffee farmers?

Part 5:- Negotiation process

1) Do you ever experience conflicting interest in the work place or in any group or with the actor you collaborate?
2) If yes for Q., 1 above, what was the issue of conflicting interest on and how did you resolve the issues?
3) Did the conflicting interest result in the new ideas or not?
4) What is the competence of your organisation in handling and dealing with conflicting interest inside and outside the organisation?

Part 6:- Enabling environment

1) In your view what local, regional, or national policies constrain/limit enhancement of coffee innovation development and knowledge circulation among actors?
2) What set of polices put in place to support coffee innovation process
3) What do you recommend to accelerate rate of innovation process and knowledge circulation for the improvement of coffee sector?

ANNEXE 2: Checklist for coffee experts and researchers

General information
Respondent name:
Respondent organisation:
Type of organisation:
Date of the interview/focus group discussion: DD/MM/YY
Name of interviewer
Part 1: pattern of interaction and relationships

6) Who are the different actors (individuals, groups, organisations) rely and interact with your organisation for coffee improvement sector?

No	Name of actors(individual/ group/organisation)	Purpose of interaction			
		Knowledge sharing and learning	Technology/Information services	Resources	Others
a					
b					
c					
d					
e					
f					

7) What are the competencies and skills of your organisation in problem-solving, creativity and innovation?
8) In your opinion/view, what competencies, actors and link is missing but needs to be involved in coffee innovation process and knowledge circulation in future? (Example,

Shortage of public funding, competence of human expert, market linkage, institutional arrangement, collaboration between actors, infrastructure, etc.?

9) Which of these missing parts/ deficiencies do you consider to be the most constraining rate of innovation development?

10) In your view, what requirement needs to be done to improve collaboration and linkage with other actors to enhance innovation process and knowledge circulation among coffee farmers?

Part 2: Attitude, practices and incentives (institutions)

5) What are the key characteristics of attitude and practices affecting innovation process and knowledge circulation relationships among actors involved in coffee sector?

Innovation process and knowledge circulation relationships	Restrictive attitude and practices	Supporting attitude and practices
Interaction, knowledge flows and learning		
Inclusiveness of the poor		
Risk taking		

6) Explain the formal and informal rules and regulations that hinder interactions with other crucial actors and performance of your organisation? Example, culture, policies, bureaucracies, etc.

7) How do you think these factors (policies, rules, regulation etc.,) hinder rate of innovation development/flow and knowledge circulation among coffee actors?

8) How do these formal and informal rules and regulations need to change in order to facilitate interaction and collaboration with other stakeholders and promote innovations?

Part 3:- Actors, their roles and activities they are involved

1) What are your roles and responsibilities in coffee innovation development and knowledge circulation among farmers and other actors? List at least five key roles you perform?
2) Describe how you carry out these roles in practical terms? Example research, training and capacity building, input supply, technology promotion, information supply, credit services, cooperative promotion, advisory services, funding and creating market opportunities.
3) Do you think that your level of participation allow you to provide innovative ideas for the enhancement of innovation process in the coffee sector? Explain

Part 4:- Social learning process and linkage

8) Do you have advisory learning platform council in the district for promoting coffee innovation process and knowledge circulation among actors?

9) If yes for Q. 1, above how frequent the workshop and review meeting organised for actors and effective in promoting knowledge circulation?

10) What was the main learning outcome of workshop/review meeting in the coffee sector as individual and a group?

11) What are the kinds of linkage between actors do you have? Do the natures of these links support learning and how?

No	Type of linkage*	Purpose	Type of learning occurred**
1			

2			
3			
4			
5			
6			

Hints

Type of linkage*

8. Partnership- joint problem solving, learning and innovation
9. Paternalistic- delivery of goods and services with little attention to consumer preferences and agendas
10. Networks- formal and informal and to facilitate information flows
11. Advocacy linkage to policy process- links through networks and sector association to influence policy process
12. Alliance- collaboration in the marketing of products and usually governed by memorandum of understanding
13. Linkage to supply and input and output markets- formal and informal arrangements connecting organisations to raw materials and access to credit and grants at national and international bodies.
14. Contract purchase of technology or knowledge services- learning or problem-solving by buying knowledge from elsewhere

Type of learning**

3. Learning by doing
4. Learning by interacting

12) What factor(s) with in your organisation drive/constrain learning process and knowledge circulation among actors in the coffee sector?
    c. Facilitating factors
    d. Constraining factors
13) What are other factor(s) outside your organisation or at the country level affects learning and knowledge circulation?
14) What are the strategies in place by your organisation to scale -up knowledge of innovative farmers, research outputs and other among coffee farmers?

Part 5:- Negotiation process

5) Do you ever experience conflicting interest in the work place or in any group or with the actor you collaborate with in coffee sector?

6) If yes for Q., 1 above, what was the issue of conflicting interest on and how did you resolve the issues?
7) Did the conflicting interest result in the new ideas or not?
8) What is the competence of your organisation in handling and dealing with conflicting interest inside and outside the organisation?

Part 6:- Enabling environment

1) In your view what local, regional, or national policies constrain/limit enhancement of coffee innovation development and knowledge circulation among actor
2) What set of polices put in place to support coffee innovation process
3) What do you recommend to accelerate rate of innovation process and knowledge circulation for the improvement of coffee sector?

ANNEX 3: Focus Group Discussion (FGD) checklist for coffee farmers

Name of facilitator:

Date of the focus group discussion: DD/MM/YY

Name of farmers: Please attach one additional sheet paper that provides details of farmers with their age, sex and year of experience in coffee farming.

1) Do you have any learning session organised for you to apply new knowledge to your coffee farms or to learn new knowledge to your coffee farms?
2) If yes for Q1, above what was your main practical learning outcome as individual or group during participation in the session?
3) What are the issues affecting your participation in the group learning?
4) What are the new techniques/practices/knowledge you are using for growing coffee, and where you learn to use it?
5) Do you know about the different techniques and practices that some of your neighbour is doing on coffee sector? If yes, how do you learn it?
6) Describe the active formal or informal social networks working on coffee innovation development sector?

Network 1:-

Network 2

Network 3

   a. What was the role of the network?
   b. What succeeded as a result of its actions?
   c. What were its drawbacks?

7) Please list the organisation/individuals that are related to your coffee innovation development activities? What type of information/resources do you receive? How relevant are such information/resources to you? How often do you get and how?
8) When new innovations on coffee (improved seed, technology) are introduced to the community whom influences you to use to the innovation?
9) Does the innovative farmer or development agent or other actors communicate you about coffee innovation?
10) If your answer is yes for Q10 above, what are the modes of communication strategies they use to communicate you about the new innovation on coffee? How this strategy does relevant for accelerating knowledge circulation among farmers?

ANNEX 4: Checklist for Development Agent

Part1; Social networks and/or networking, roles, social learning and communication

1) What are your roles in the process of coffee innovation development?
   - Facilitating social learning and knowledge circulation among actors
   - Technical and resource support
2) How do you obtain information regarding research outputs (like improve practices, varieties, etc.) on coffee from research centre? Does this method(s) support learning among you?

3) How do you disseminate and circulate knowledge regarding new information and innovation that come from research centre or farmers innovations?
4) Which methods do you think effective to accelerate social learning and knowledge circulation among coffee farmers?
5) What are the knowledge and/or information need and utilisation behaviour of the farmers?
6) What factor(s) do you think hinder knowledge circulation among coffee farmers?
7) What kinds of communication strategies in place by your organisation to facilitate the application and scaling up of new knowledge and/or innovations with in the large communities of coffee sector?
8) What are the existing platforms or stakeholder groups or networks that are (previously were) functioning on coffee farming sector at grass root level?

Network 1:----------

Network 2:----------

Network 3:----------

For each network:

d. What was the role of the network?
e. Who organised it?
f. What succeeded as a result of its actions?
g. What were its drawbacks?
h. When was it established and how would you describe its performance when it is established and now?

9) What do you suggest to accelerate rate of coffee innovation development process and knowledge circulation among coffee actors?

ANNEX 5: Checklist for coffee traders

Name of interviewer:
Name of interviewee
Date of interview

1) What roles you play for contribution of coffee innovation sector? What roles do you perform?
2) What are the methods you use for transferring information for coffee farmer
3) Does information or support you or other traders provide really accurate and support coffee farmers? Example, creating market space like providing appropriate price, et

4) Do you have a linkage and interaction with other actor's engaged in the coffee improvement sector?
5) If your answer is yes for Q4, above, is this interaction and linkage support social learning?
6) What do you recommend for the improvement of coffee sector and knowledge circulation?

ANNEX 6: Checklist for field observations

Tools used	Variables observed and captured
- Note book guided by participant observation - Reflection of daily immersion	Beliefs, values , personal judgement of the respondent for interaction, collaboration, joint mobilisation, technological innovation, institutional innovation
Camera	Farmer field schools research stations, On-farm technology demonstrations, Joint collaborating technological development and related innovation Social networks Fields of coffee farmers Farmer's practice

ANNEX 7: Sample Informed Consent Form

You are invited to participate in a study of exploring agricultural innovation process and knowledge circulation among actors in coffee farming sector in Ethiopia, case of Daro Labu district*).*

We hope to learn *(factors hindering innovation process and knowledge circulation among actors which helps us to establish and design appropriate future intervention strategy that might contribute to speed up innovation process and knowledge circulation in coffee sector).*

You were selected as a possible participant in this study because *(you are selected purposively by research subject as potential and experienced respondent of coffee expert/researcher/trader/farmer/.*

If you decide to participate, we will continue the discussion for 2:00 hrs. . In case any *discomforts and inconveniences encountered we will try to complete the interview time in less than two hours. Your appropriate responses and input for this study will benefit the organization engaged in coffee sectors to design future appropriate strategy in the district besides confirming my studies.*

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission.

Your decision whether or not to participate will not prejudice your future relation with the *Van hall Lareinstein University, part of Wageningen UR Group*.

If you have any additional questions later, please contact (*Kemal Kasim Ahmed)* at *(kemalkasim.ahmed@wur.nl).* I will be happy to answer them.

You will be offered a copy of this form to keep.

_____

You are making a decision whether or not to participate. Your signature indicates that you have read the information provided above and have decided to participate. You may withdraw at any time without penalty or loss of benefits to which you may be entitled after signing this form should you choose to discontinue participation in this study.

_____ _____

Signature Date

_____ _____

Signature of Parent/Legal Guardian (If necessary) Date

_____ _____

Signature of Witness (If appropriate) Signature of Investigator

ANNEX 8: Planning

Date	Activity
Early May to mid -June 2012	Presentation of first draft proposal and drawing of conceptual framework on what researcher have to study or not
2-13 July 2012	Desk study and preparation for data collection
13-18 July 2012	Flight and logistic arrangement with employing organisation for data collection
19 July 2012 to 17 August 2012	Data collection
19 August 2012 to 21 August 2012	Back to Netherlands
22 August to 13 September 2012	Working on data analysis and finalising the report
14 September 2012 before 10 hrs.	Submission of the thesis